

**GSMA 5G TRANSFORMATION HUB**

The world's most innovative 5G solutions



# 5G Network Solutions for Airport Operations

Hong Kong International Airport

Hong Kong International Airport, in partnership with China Mobile Hong Kong (CMHK) and Huawei, has implemented a private 5G network to enhance its operations and provide a better experience for travellers by leveraging the transformative capabilities of 5G. This pilot project is part of Hong Kong International Airport's strategy to incorporate a multitude of radio equipment, a cloud-based Core Network, and a complex redundant transport network. All this will help in the deployment of technologies such as V2X autonomous vehicles, robotics, and a wide range of IoT applications.

中國移動  
China Mobile



# 5G Network Solutions for airport operations

## ⊕ CHALLENGE:

 Previously, the airport relied on a nearly three-decade-old 3G/4G network, which had undergone numerous upgrades, leading to myriad record and drawing formats with no cohesive network or cable map. Moreover, the airport's 24/7 operational schedule imposed strict time constraints on installation activities, presenting additional challenges. In response to these issues, China Mobile Hong Kong (CMHK) deployed approximately 100 workers across the airport, all operating in tandem. The progress of these teams was meticulously monitored remotely, ensuring alignment with the predetermined schedule.

## ⊕ SOLUTION:

 China Mobile Hong Kong deployed a secure and highly efficient 5G cloud-based network at Hong Kong International Airport, providing opportunities for the authority to deliver tremendous applications that were previously impossible or not cost-efficient to install. Simultaneously, the system also offered a superior 5G internet experience to passengers and staff using the public network.

## ⊕ IMPACTS AND STATISTICS:



Impact and statistics  
The Hong Kong International Airport is anticipated to demonstrate effective management of both public and private networks, as well as the SOC (Security Operations Center) surveillance. Rather than deploying two separate teams, a solitary team is tasked with maintaining a hybrid network, fostering administrative efficiency. The implications of this hybrid network extend to financial advantages, resulting in considerable cost savings. These savings are observed not only in capital expenses but also in operational expenses, thus enhancing overall financial efficiency. Moreover, the Airport Authority is presented with the potential to generate revenue through public networks. This is achieved without compromising the independence and security of the public and private networks. This dual management ensures the protection of sensitive data and mitigates potential risks, thereby maintaining a robust and secure network infrastructure.

## ⊕ WIDER IMPLICATIONS:



The Hong Kong International Airport's recent decision to implement a 5G network has profound implications. This pioneering move has the potential to supersede existing industrial applications and fundamentally transform transportation systems. More importantly, it could serve as a catalyst for further technological advancements globally. This business model provides an opportunity for global replication, thereby giving a competitive advantage to those capable of emulating this approach. Additionally, this decision is a noteworthy contribution to the development of smart cities and digital transformation initiatives worldwide. Consequently, such a decision is far from being a mere internal improvement, rather it could herald a new paradigm in the broader technological landscape.

## ⊕ STAKEHOLDERS:



Hong Kong International Airport, Huawei, China Mobile Hong Kong (CMHK)

## SOURCES AND FURTHER INFORMATION



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# Enhanced Connectivity at Hong Kong International Airport: Unveiling the 5G Infrastructure

Delving into the Radio Access Network, Spectrum Architecture, and the Cloud-Based Private Core Network

As part of its ambitious effort to enhance connectivity, the Hong Kong International Airport has unveiled its advanced 5G infrastructure, marking a significant milestone in its technological evolution.

The **radio access network (RAN)** deployed is vast and comprehensive. The system comprises over 4000 C-band indoor radio units, around 500 C-band and mmWave outdoor active antenna units, and 100 high-power radio units. This configuration ensures seamless radio coverage throughout the airport, encompassing all indoor, outdoor, and tunnel areas within the airport island.

Regarding **spectrum and architecture**, the system operates on 400MHz of mmWave Spectrum and 20MHz of C-band spectrum. By supporting both Non-Standalone (NSA) and Standalone (SA) architectures, the system allows for the efficient utilization of available spectrum resources. Moreover, it provides flexibility in network deployment, adapting adeptly to various operational requirements.

Lastly, **the cloud-based 5G private core network** is a significant aspect of this transformation. The solution integrates a cloud-based 5G private core network with geographic redundancy. This design not only ensures a stable and secure private network for the Airport Authority but also leverages the benefits of cloud computing to ensure reliable connectivity.

The unveiling of this 5G infrastructure truly positions the Hong Kong International Airport at the forefront of technological advancement in aviation and beyond.



# Transforming Customer Experience and Unlocking Growth:

## The Power of 5G at Hong Kong International Airport

### Harnessing the Potential of 5G for Enhanced Digital Experience and Technological Advancements

At the Hong Kong International Airport, the power of 5G technology is transforming customer experiences and unlocking significant growth potential. The role of 5G in enhancing digital experiences and fostering technological advancements cannot be understated.

One of the critical outcomes of this transition is the **maximized customer digital experience**. The 5G network infrastructure has enabled a suite of applications that significantly enhance the customer's digital experience. The airport has shifted from traditional private wired or Wi-Fi networks to an enterprise 5G network. This advanced technology helps optimize performance and service quality, taking the customer experience to new heights.

The new infrastructure also plays a crucial role in **unlocking the value of the 5G infrastructure**. With the implementation of the private 5G network, the airport has managed to tap into the full potential and value of 5G. This network revolution has brought improved connectivity, higher data speeds, lower latency, and support for advanced technologies such as the Internet of Things (IoT), autonomous vehicles, and robotics.

Overall, the 5G solution has provided the airport authority with a secure and efficient network, facilitating the deployment of innovative applications, and significantly enhancing the digital experience. More importantly, it has empowered the airport to fully leverage the capabilities of 5G, unlocking new opportunities for growth and optimization. With this move, Hong Kong International Airport is well-positioned to lead the charge in the aviation industry's digital transformation.



# The Strategic Advantage of 5G: Catalyzing Achievements and Outperforming Alternatives at the Airport

## Understanding the Superiority of 5G and mmWave Technologies in Accelerating Operational Goals

The selection of 5G and mmWave technologies at Hong Kong International Airport is a strategic choice, chosen for their capacity to accelerate the achievement of set operational goals and for their superiority over existing solutions.

One compelling reason to adopt **5G or mmWave technology** is the superior speed, security, and massive connectivity it offers compared to existing Wi-Fi technology. Boasting faster data transfer rates and lower latency, 5G enables more efficient communication and data exchange. This efficiency supports the seamless operation of numerous applications, enhancing the overall user experience.

Moreover, **5G offers broader coverage** than Wi-Fi technology, making it suitable for large areas such as airports. It ensures seamless handover between different indoor, outdoor, and tunnel areas, providing uninterrupted connectivity throughout the airport premises. The addition of SIM-based authentication in 5G introduces an extra layer of security, enabling remote management and ensuring the integrity of the private network.

To conclude, the combination of speed, security, massive connectivity, and low latency makes 5G the superior solution in this situation compared to alternatives. Its advanced capabilities and future-proof nature position it as a catalyst for innovation, enabling the realization of the airport's goals in an efficient and effective manner. The selection of 5G and mmWave technologies is not merely incidental but is a strategic and forward-thinking decision to stay ahead in the aviation industry.



# Embracing Transformation with 5G: Navigating Changes, Challenges, and Opportunities in the Airport Industry

## Understanding the Value Chain and Technological Challenges of 5G Integration for a Future-ready Airport Infrastructure

The adoption of 5G technology heralds a significant paradigm shift in traditional systems, largely marked by the reduction or elimination of cable installations. The crux of this transition lies in enhanced efficiency, lower infrastructure costs, and amplified flexibility in equipment placement. The narrative dives into the technological platform and value chain applied, throwing light on the journey of navigating technical challenges and creating impactful changes. It further elucidates the positive repercussions and cost-saving opportunities associated with the solution, shedding light on why it's an attractive proposition for other businesses in the industry. The feasibility of expanding and reusing the existing 5G core network for future projects highlights the strategic importance of this digital transformation.



## Lessons for Global Advancements and Future Prospects

### Unfolding the Trends, Impacts, and Lessons of the 5G Journey in the Asia-Pacific Region

Asia-Pacific's journey with 5G serves as an essential guide to understanding the symbiotic relationship between a strong 5G network and the success of 5G applications. As we envision the future, the 5G landscape in the Asia Pacific indicates a trajectory of continuous advancement and penetration across diverse industries. Key trends include a surge in customized 5G networks catering to unique needs, bolstered by the deployment of Standalone (SA) 5G networks. These developments collectively underline the immense potential and transformative power of 5G technology in the region.

*"Through leveraging the power of 5G technology, Hong Kong International Airport has not only improved operational efficiency but also significantly reduced both capital and operational expenses, demonstrating the transformative potential of this technology in the aviation industry."*



## About the GSMA

The GSMA is a global organisation unifying the mobile ecosystem to discover, develop and deliver innovation foundational to positive business environments and societal change. Our vision is to unlock the full power of connectivity so that people, industry, and society thrive. Representing mobile operators and organisations across the mobile ecosystem and adjacent industries, the GSMA delivers for its members across three broad pillars: Connectivity for Good, Industry Services and Solutions, and Outreach. This activity includes advancing policy, tackling today's biggest societal challenges, underpinning the technology and interoperability that make mobile work, and providing the world's largest platform to convene the mobile ecosystem at the MWC and M360 series of events.

For more information, please visit the GSMA corporate website at [www.gsma.com](http://www.gsma.com).

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## GSMA 5G Transformation Hub

The GSMA 5G Transformation Hub is a source of information on some of the most innovative 5G solutions in the world. This portal contains case studies detailing design, benefits, key players, measured value and the future impact of scaling up these 5G solutions worldwide. The 5G Era is now firmly established and this family of standardised GSM technologies, including mmWave, are being rolled out successfully across the globe. The GSMA 5G Transformation Hub, launched at MWC Barcelona in 2022, provides details of how 5G is best placed to deliver real value for a range of key sectors including manufacturing, energy, transportation, media and live entertainment, smart cities and construction.. Many more case studies will be added, in the coming months, covering even more industries and the GSMA is asking Members to nominate innovative 5G case studies to add to this global digital showcase. The 5G Transformation Hub and this particular Case Study are both sponsored by Qualcomm.

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