

## CASE STUDY

# Smart City Taiwan – Taiwan embraces the 5G era, delivering smart solutions to sports stadiums and factories

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The 'Smart City Taiwan' initiative was launched in 2018 by Taiwan's Industrial Development Bureau (IDB) under the Ministry of Economic Affairs (MOEA). Its aim is to further the accomplishments of past nationwide projects to digitise large swathes of Taiwan's infrastructure and public services, using innovative solutions to solve the challenges facing government, business and citizens in a modern economy. The 'Smart City Taiwan' initiative utilises a range of 'smart' technologies, such as IoT, Big Data and AI.

Solutions are provided as part of a so-called Public-Private-People Partnership (PPPP) model, bringing together the public and private sectors, alongside academic institutions such as the Industrial Technology Research Institute (ITRI). Taiwan's central government has committed to implementing policies that enable the delivery of solutions to address issues identified by local governments – with the aim that this collaborative approach can create solutions that can be exported globally.

Smart City solutions have to date been implemented in 22 cities and counties across Taiwan, even overseas to address issues around transport, healthcare, agriculture and governance.

This report looks at the rollout of 5G networks in Taiwan and how the new mobile technology is being used to deliver smart factories and smart sports stadiums.



## Taiwan gears up for 5G

5G is gathering pace across Asia Pacific with many markets established as global 5G pioneers. According to GSMA Intelligence, 5G will account for almost a quarter of all mobile connections across Asia by 2025<sup>1</sup>.

There are five mobile operators in Taiwan: Taiwan Mobile, Chunghwa Telecom, FarEasTone, Taiwan Star Telecom, Asia Pacific Telecom (APTG). All five acquired 5G spectrum in auctions that completed in January 2020, spending a total of TWD138 billion (\$4.6 billion), and are now building out their networks<sup>2</sup>.

Market-leader Chunghwa Telecom, for example, launched the country's first 5G network on 30 June and is aiming to have one million 5G subscribers within a year of launch and 10,000 5G base stations in place by 2022, investing TWD27 billion in the rollout<sup>3</sup>.

According to GSMA Intelligence, 5G networks will have been rolled out to cover 83 per cent of the Taiwanese population by the end of 2025, with 5G accounting for 48 per cent of consumer connections.

However, the consumer market is only one part of the 5G story and it is thought that the enterprise segment could be more valuable for 5G providers. Research firm Polaris recently forecast that the global 5G

enterprise market will grow by a CAGR of 57.2 per cent over the next seven years, reaching a total value of \$31.4 billion by 2027<sup>4</sup>.

The following Smart City case studies showcase some of these new 5G enterprise use cases.



## 5G delivering smarter factories

One area where 5G is having a transformative impact is on factories, where the technology can be used to transform industrial controls and automation.

In Taiwanese factories modern production lines are expected to be highly flexible to support, for example, low volume runs and use of an increasingly diverse range of materials. This has led to rising labour costs due to the necessity of frequent manual inspections.

The smart factory solution by Inventec Corporation being implemented in Taoyuan City has combined deployment of a private 5G network with AI-powered image recognition to deliver an automated production line. Large volumes of images are transferred via the 5G network to the cloud where AI and deep learning algorithms are used to perform product component identification – reducing “false positives” and the need (and cost) of manual review.

The solution has achieved an accuracy rate of more than 90 per cent and reduced manual review costs by more than 50 per cent.



## 5G enhancing spectator experiences at sports stadium

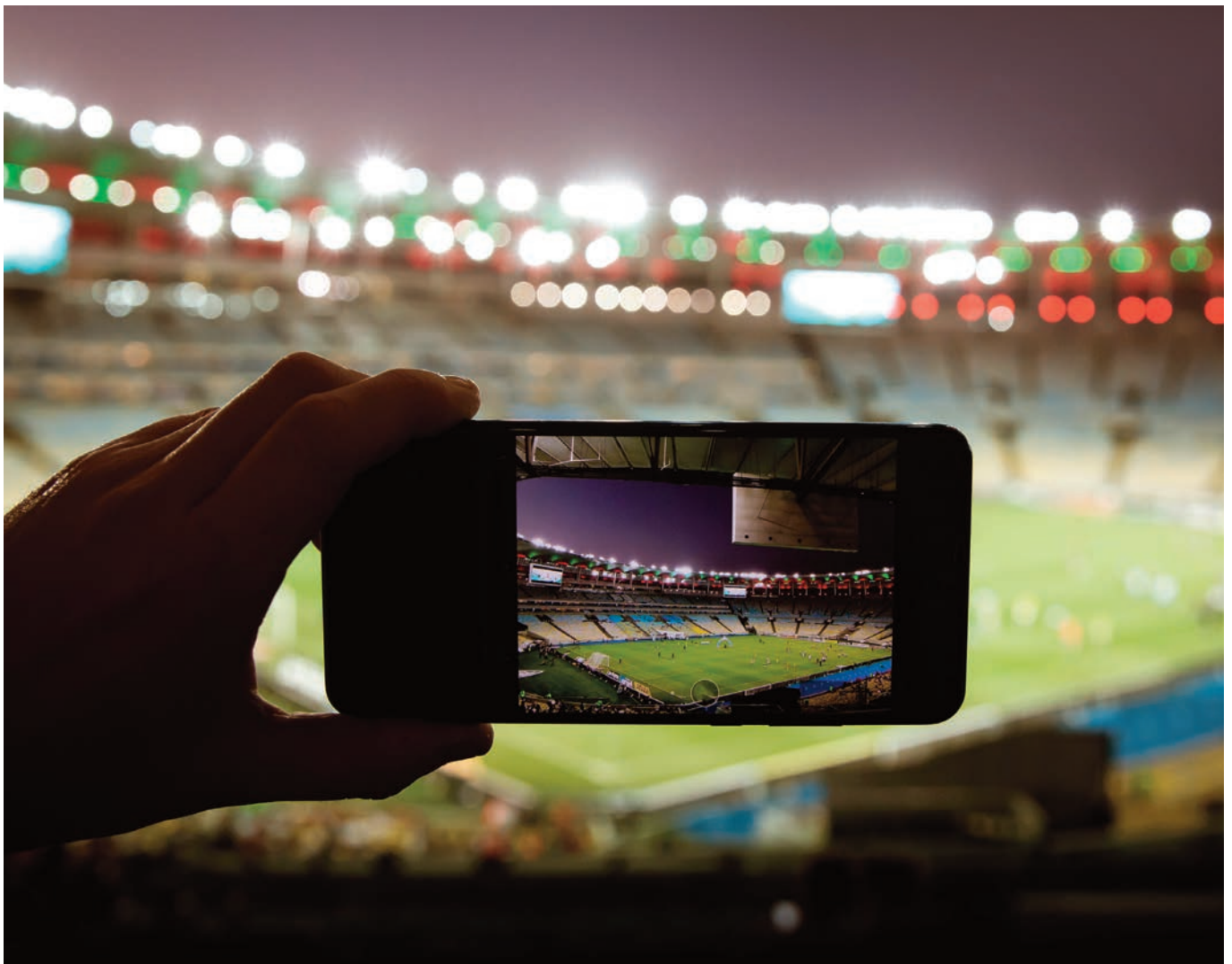
5G is being installed into sports stadiums across Taiwan to provide a range of interactive features for fans in attendance, including personalised services. The high bandwidth and low latency properties of 5G (compared to earlier mobile generations) means it is able to deliver immersive VR, 4K media live streaming, and instant 3D replay, dramatically enhancing the experience for spectators and unlocking new revenue streams for Taiwan's sports industry.

In baseball stadiums, for example, the technology is being used to transmit holographic projections and 3D replays of key events. Meanwhile, 4K panoramic cameras are deployed around the stadium, enabling spectators to view online live streams from multiple angles.

The baseball teams themselves can also benefit by using a VR training platform that allows their players to practice by facing virtual pitchers based on real opponent data.

The solution is also used to increase stadium security – for example, via the ability to monitor visitors and provide alerts for security issues.

One of the first deployments in Taiwan occurred at the Xinzhuang Stadium, home of the Fubon Guardians, which launched its 5G stadium solution in July 2019 in conjunction with Taiwan Mobile<sup>5</sup>.





INDUSTRIAL DEVELOPMENT BUREAU,  
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### About the Industrial Development Bureau (IDB)

Industrial Development Bureau (IDB) is the administrative agency of the Ministry of Economic Affairs of Taiwan. IDB serves the role to formulate industrial policies, and to oversee various industries including metal & mechanical, information technology, consumer goods & chemical, knowledge services, as well as sustainable development in Taiwan. It is also the governing agency for the Smart City Taiwan initiative. The initiative aims at utilising all types of smart technologies (such as IoT, Big Data and AI) to effectively integrate local, industry, and civilian needs. With support from central government, collaboration and integration between local governments and industry stakeholders has resulted in many successful Smart City solutions originating from Taiwan being delivered to the global marketplace.

For B2B meeting requests with the companies in this case study or further inquiries, please email [service@communications.org.tw](mailto:service@communications.org.tw)



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<sup>1</sup> <https://www.gsma.com/mobileeconomy/asiapacific/>

<sup>2</sup> <https://www.mobileworldlive.com/asia/asia-news/taiwan-5g-auction-raises-4-6b>

<sup>3</sup> <https://www.commsupdate.com/articles/2020/07/01/chunghwa-telecom-and-taiwan-mobile-commercialise-5g/>

<sup>4</sup> <https://www.polarismarketresearch.com/industry-analysis/5g-enterprise-market>

<sup>5</sup> <http://cpblstats.com/fubon-guardians-taiwan-mobile-5g-smart-stadium/>

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