

**GSMA 5G TRANSFORMATION HUB**

The world's most innovative 5G solutions



# 5G Delivers Smoother Travel in Bangkok

**Krung Thep Aphiwat Central Terminal Station**

Krung Thep Aphiwat Central Terminal Station has deployed a private 5G network, supported by edge compute, to improve operational efficiency, safety and security, and enhance the passenger experience. For example, the 5G network is supporting customer service robots, automated wheelchairs and real-time image recognition to enhance safety and security.

**true**



# 5G Delivers Smoother Travel in Bangkok

## ⊕ CHALLENGE:



Serving hundreds of thousands of passengers daily, the new station needed reliable high capacity wireless connectivity both to support its operations and to enable travellers to easily access information and entertainment services. Conventional wireless networks couldn't meet the station's latency and security requirements – the stakeholders didn't want to transmit confidential local data over the Internet.

## ⊕ SOLUTION



True says the station's 5G network, which is supported by edge compute, enables high-definition video streaming, robotics, artificial intelligence, and location-based automated wheelchair services. For example, the 5G-based security and safety system captures video images from more than 120 cameras to proactively detect emergencies, incidents, and security threats, leading to prompt responses and

improved passenger and staff safety. Image recognition software is used to detect suspicious objects that pose a risk to passengers and property, while the system can send alarm signals to notify authorities to provide assistance or stop trains in case of emergencies.

## ⊕ IMPACTS AND STATISTICS:



The new 5G network provides coverage throughout Krung Thep Aphiwat Central Terminal Station, which is more than three times larger than old Bangkok station of Hua Lamphong at nearly 300,000 square meters. From January 2023, regional rail services, involving 56 trains a day, switched from Hua Lamphong to Krung Thep Aphiwat Central Terminal Station. Built between 2013 and 2019 with a budget of 34.14 billion baht (about US\$1 billion), the new station has 24 platforms – compared with Hua Lamphong's 14 – and capacity to serve more than 600,000 passengers daily.

## ⊕ WIDER IMPLICATIONS:



Thailand's Ministry of Transport is aiming to develop Krung Thep Aphiwat Central Terminal Station into a transportation hub equivalent to the world's leading railway stations and a central axis for travel, encompassing all modes of transport, including land, water, and air. The focus is on providing convenient, fast, and safe services to the public, facilitating travel to every destination. To that end, the ministry recognises the potential of 5G to efficiently enhance public services, and benefit citizens and Thailand as a whole.

## ⊕ STAKEHOLDERS:



Krung Thep Aphiwat Central Terminal Station, Ministry of Transport, Office of the National Digital Economy and Society Commission, True Corporation Plc.

## SOURCES AND FURTHER INFORMATION



<https://truebusiness.truecorp.co.th/en/home>





# Dedicated 5G Delivers Smoother Travel in Bangkok

## 5G PROVIDES HIGH-SPEED, LOW LATENCY COVERAGE ACROSS A NEW 300,000 SQUARE METER STATION

A dedicated 5G network is helping Krung Thep Aphiwat Central Terminal Station serve hundreds of thousands of passengers every day. Deployed by mobile operator True, the 5G network underpins the Smart Station Pilot Project, which aims to enhance the overall efficiency, connectivity and passenger experience within this major new transport hub.

True says the 5G network, which is supported by edge compute, delivers high-speed, low-latency connectivity, enabling seamless data exchange and coordination among different transport systems, optimising resource allocation, minimising downtime, improving overall productivity and leading to smoother passenger flows. In particular, the 5G connectivity is supporting high-definition video streaming, robotics, artificial intelligence and location-based automated wheelchair services.

The new 5G network provides coverage throughout the 300,000 square meters of Krung Thep Aphiwat Central Terminal Station, which is more than three times larger than the old Bangkok station of Hua Lamphong. From January 2023, regional rail services, involving 56 trains a day, switched from Hua Lamphong to Krung Thep Aphiwat Central Terminal Station. Built between 2013 and 2019 with a budget of 34.14 billion baht (about US\$1 billion), the new station has 24 platforms – compared with Hua Lamphong's 14 – and capacity to serve more than 600,000 passengers daily.

Following the installation of 5G, travellers are greeted by connected service robots that can communicate in both Thai and English. The robots can provide passengers with travel information, recommendations on attractions, and basic assistance, such as guiding them to the right platform if they lose their way. They can also alert their human colleagues when extra help is needed.

With 5G coverage throughout the station, passengers can use their handsets to access high-speed internet, communication services, and entertainment options. They can take advantage of personalised information, interactive maps, and real-time updates on schedules, delays, and other relevant travel information. True says this enhanced passenger experience contributes to increased customer satisfaction and loyalty.

Krung Thep Aphiwat Central Terminal Station is also equipped with 5G-connected wheelchairs, designed to transport infirm passengers around the station. Disabled and elderly passengers can choose an automatic wheelchair that will automatically move to the target area, after the user specifies a destination. It can then return to the home or another service point. Alternatively, users can choose a semi-automatic wheelchair, which suggests a route to the chosen destination, but the user controls the travel themselves.

The station's 5G network enhances safety and security by enabling real-time monitoring and video surveillance. It is designed to proactively detect emergencies, incidents, and security threats, leading to prompt responses and improved passenger and staff safety. The security system uses 5G to capture video from more than 120 security cameras, which are monitored via artificial intelligence. The system can issue alerts in real-time, so staff can rush to help passengers in the event of an emergency or if they stray into dangerous zones. For example, the system can detect individuals walking on the yellow warning lines or falling onto the track and then send real-time alerts to the station staff. Image recognition software is used to detect suspicious objects that pose a risk to passengers and property, while the system can send alarm signals to call for assistance or to stop trains in case of emergencies.

More broadly, True notes the Smart Station Pilot Project is creating new experiences and learning opportunities for the public through the widespread use of 5G technology, while showcasing Thailand's technological capabilities.





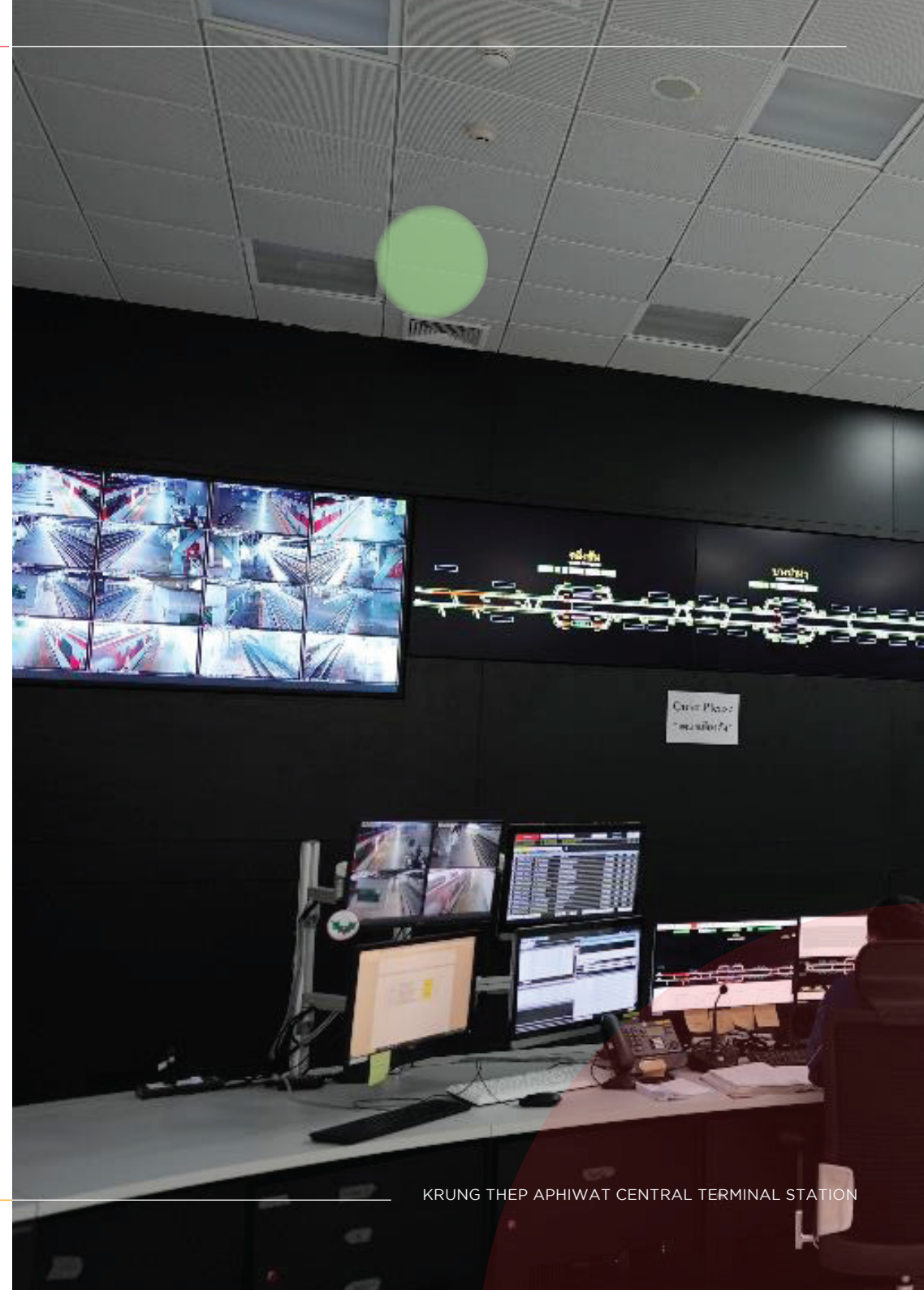
# 5G delivers a **step change** in capabilities

The deployment of a dedicated 5G network was the optimum way to meet Krung Thep Aphiwat Central Terminal Station's connectivity needs, according to True. Manat Manavutiveth, CEO of True, says that 5G's advanced capabilities enable seamless integration of smart sensors, cameras, and other devices throughout the transportation hub. "In comparison to alternatives, such as previous generations of cellular networks or Wi-Fi, 5G stands out due to its unmatched speed, capacity, reliability, and suitability for supporting a wide range of advanced applications and services," he adds. "It provides the necessary foundation to fully leverage the potential of emerging technologies and ensure a seamless, connected, and technologically advanced transportation hub."

To ensure reliable coverage of 5G signals throughout the station, True and its partners had to manage network congestion, optimise signal propagation in the relatively high-frequency 2600 MHz band, and deliver seamless handover between 5G cells.

Compared to unlicensed technologies, such as LoRa, Sigfox, and Wi-Fi 6, which operate in specific frequency bands and have a relatively short range, 5G provides broader coverage and supports more diverse use cases. Unlicensed technologies are typically suitable for applications with lower data requirements and shorter-range connectivity, while 5G is designed to deliver high-speed, low-latency connectivity across a wide range of applications and industries, according to True.

By providing cloud computing capabilities and an IT service environment at the edge of the cellular network, the station's edge compute capacity is designed to lower latency and protect privacy by keeping passenger data local: the station's 5G wireless devices can access their related servers in the local data centre. True notes that traditional 4G networks cannot provide adequate latency and security for accessing confidential local data over the Internet.

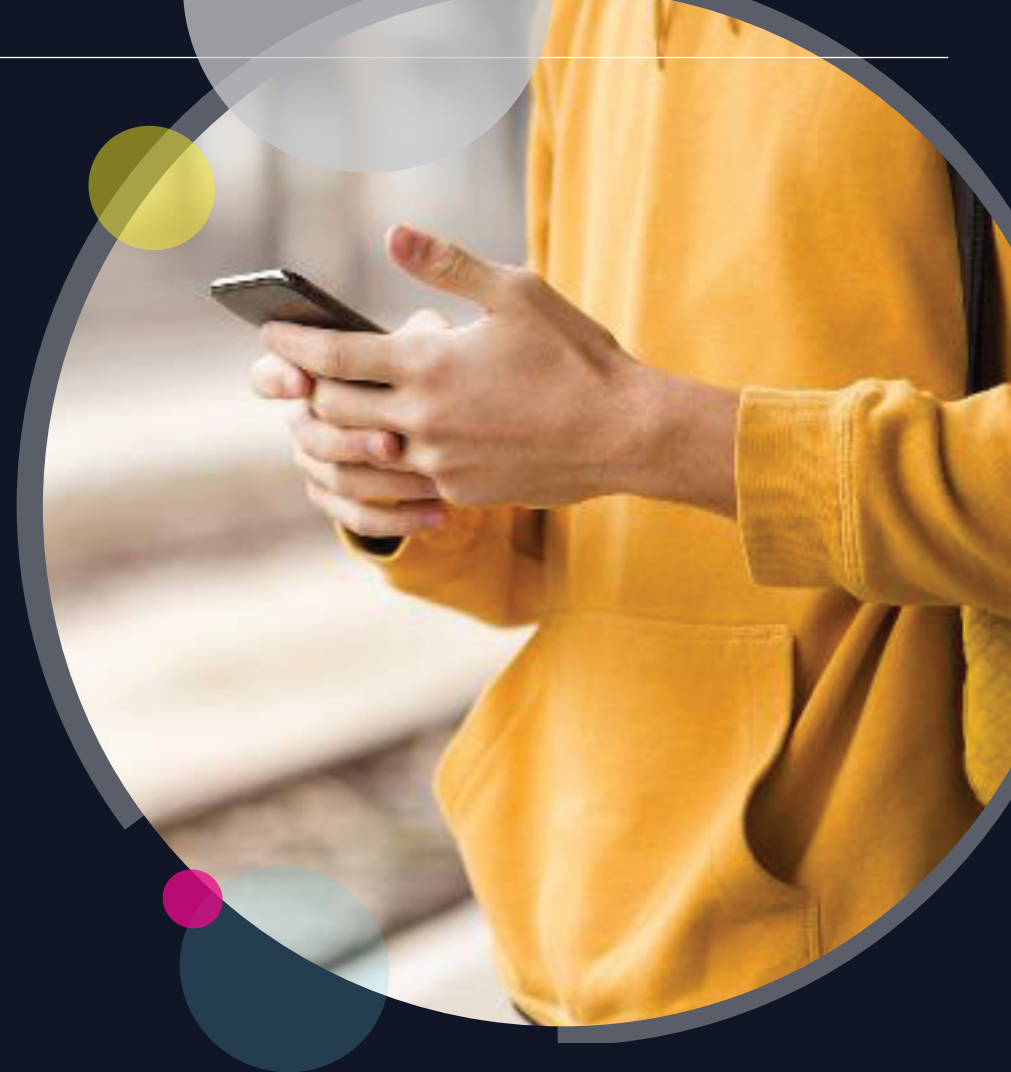




## A future proof platform for broader collaboration

As 5G technology is designed to be highly-scalable, it is well-suited to accommodating increasing data demands, emerging services, and evolving customer needs, enabling Bangkok's new smart station to continue to meet the changing needs of passengers, and remain at the forefront of technological advances in the transportation sector. Future enhancements may involve deploying additional small cells and improving network density, to ensure comprehensive coverage within the station and its surrounding areas.

The Smart Station Pilot Project is intended to foster collaboration among various industry stakeholders, including transportation companies, technology providers, start-ups, and research institutions, to drive innovation, co-create new services, and enhance the overall ecosystem within the transportation industry. "Overall, adopting the solution at the 5G Smart Station provides businesses in the transportation industry with opportunities to enhance operations, improve customer experience, access innovative technologies, foster collaborations, and future-proof their services," explains Manat Manavutiveth. "It enables them to stay competitive, attract more customers, and drive growth in an increasingly digital and connected world."





## A future proof platform for broader collaboration

With the 5G network in place, the station can collaborate with third parties to offer new services, such as e-commerce integration, smart parking solutions or mobility-as-a-service platforms. True notes that the Smart Station Pilot Project could be integrated with other urban infrastructure and services through collaborations with local government agencies and stakeholders to implement smart transportation systems, smart energy management, and intelligent public safety solutions. By becoming a key component of a smart city ecosystem, the station would contribute to the overall sustainability and efficiency of Bangkok.

Thailand's Ministry of Transport is aiming to develop Krung Thep Aphiwat Central Terminal Station into a transportation hub equivalent to the world's leading railway stations and a central axis for travel, encompassing all modes of transportation, including land, water, and air. The focus is on providing convenient, fast, and safe services to the public, facilitating travel to every destination. The ministry recognises the potential of 5G technology to efficiently enhance public services, and benefit citizens and Thailand as a whole.



## A future proof platform for broader collaboration

Indeed, Bangkok's Smart Station Pilot Project is a good example of how governments in the Asia Pacific region are collaborating with industry stakeholders to create an enabling environment for 5G development. Indeed, the region "has witnessed successful public-private partnerships in deploying 5G networks and driving use case development. These partnerships leverage the strengths and resources of both public and private sectors to accelerate 5G adoption," True notes.

There is also potential for Krung Thep Aphiwat Central Terminal Station to explore partnerships and collaborations with international transportation hubs and networks to provide seamless travel experiences for passengers traveling between different countries, while facilitating international connectivity and cross-border collaboration in customs, immigration, and security.

Looking ahead, the station plans to leverage advances in artificial intelligence, blockchain, and edge computing to further optimise its operations, improve passenger experiences, and enhance security and safety measures. "The development of 5G technology in the Asia Pacific region will be characterized by increased network coverage, the emergence of standalone 5G, industry-specific applications, edge computing, digital transformation, and collaboration," concludes Manat Manavutiveth. "These trends will pave the way for transformative changes across industries, driving economic growth, innovation, and improved connectivity experiences for individuals and businesses."





## 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).

Follow the GSMA on Twitter: [@GSMA](https://twitter.com/GSMA).

---

## 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.

[www.gsma.com/5GHub](http://www.gsma.com/5GHub)

---

## About this case study

This case study is for information only and is provided as is. The GSM Association makes no representations and gives no warranties or undertakings (express or implied) with respect to the study and does not accept any responsibility for, and hereby disclaims any liability for the accuracy or completeness or timeliness of the information contained in this document. Any use of the study is at the users own risk and the user assumes liability for any third party claims associated with such use.