China Telecom, Huawei, and Jiushi Tourism Group Build the First 5G-Advanced x AI Network in Shanghai, Transforming Cultural Tourism

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CASE STUDY LEAD:
CHINA TELECOM, HUAWEI, AND JIUSHI TOURISM GROUP

⊕ CHALLENGES

Shanghai, as a global city, needs world-class tourism experiences. Tourists on the popular Huangpu River cruises faced two main issues: poor service due to a lack of multilingual guides, and unreliable mobile coverage caused by signal reflection off the water and signal loss inside metal/thick-walled cruise cabins. This prevented the smooth, always-on AI interactions that visitors expected.

⊕ SOLUTION

China Telecom Shanghai partnered with Huawei to create a seamless 5G-Advanced (5G-A) x AI network that works over both land and water. Along the river, mmWave stations were deployed. Onboard the "Junzilan" cruise ships, they installed special compact indoor devices (LampSite X) and mmWave receivers (CPEs) to guarantee strong coverage inside the cabins. For the service, they used AI glasses from Rokid, which offer real-time translation and navigation. The AI model was specially trained using tour guide data from Jiushi Tourism Group to ensure accurate, multilingual service.

⊕ RESULTS:

Since launching, the 5G-A x AI network has dramatically improved the user experience across land and river. On cruise ships, mobile phone peak download speeds now reach 3.1 Gbit/s and uplink speeds hit 260 Mbit/s. This robust network now powers the personal AI tour guide for every tourist. The AI glasses rental service has proven profitable, generating an annual revenue of CNY X0 million for Jiushi Tourism Group, setting Shanghai as a benchmark for cultural innovation.

Project Background

Shanghai is a leading international metropolis that places great emphasis on its tourism industry. In early 2025, the Shanghai Municipal Government launched its Three-Year Action Plan for Tourism Development (2025–2027), which explicitly calls for using technology to enhance the experience, comfort, and convenience of all visitor services.

The city offers a wealth of attractions, including historic sites, cultural landmarks, natural scenery, and modern architecture. Popular locations such as the Huangpu River, the Bund, and Shanghai Disneyland draw millions of tourists annually. Shanghai is also seeing rapid growth in its cruise economy. However, traditional cruise services often fail to meet modern consumer expectations for personalised and intelligent experiences. The deployment of mature, scalable AI glasses technology presents a timely opportunity to upgrade the cruise experience and drive business transformation.

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Challenge

Business challenges:

1. **Poor Onboard Experience:** The internet experience on Huangpu River cruises negatively affects the overall sightseeing enjoyment.
2. **Service Gaps:** A shortage of translation resources hinders service for foreign language group tours.
3. **Revenue Bottleneck:** The sector urgently needs innovative services to boost revenue and maintain market competitiveness.
4. **Safety Risks:** The inability to monitor the surrounding environment in real-time during navigation poses safety risks.

Technical challenges:

1. **Signal Interference:** The complex reflections off the river surface risk interference with the wideband spectrum used by current networks.
2. **Cabin Penetration:** Cruise ship hulls are made of thick metal, causing significant signal loss and preventing external signals from reaching passengers inside.
3. **Bandwidth Limits:** Traditional solutions lack the bandwidth to support hundreds of passengers needing high-speed data simultaneously.
4. **Signal Blocking:** High-frequency signals rely on a direct line of sight. When cruise ships turn, this line of sight is often blocked, leading to sudden coverage loss.

> Due to the complex signal reflection on the Huangpu River and cabin barriers, the traditional approach of direct coverage from riverbank stations results in poor signal quality onboard

Lu Heng - Senior Expert of China Telecom Shanghai

Solution

At MWC Shanghai, the GSMA hosted a launch event for mobile AI, bringing together China Telecom Shanghai, Jiushi Group, and Huawei. During discussions on the industry's future, the partners unveiled the commercial use of AI glasses for guided tours.

Network foundation:

China Telecom Shanghai and Huawei collaborated on an innovative network solution for both land and water. They combined mmWave networks on land with 5G-A C-Band 3CC indoor networks on the ships. The mmWave base stations were installed along the Huangpu River to guarantee complete coverage inside the cruise cabins. This was achieved by using compact, digitalised indoor devices (LampSite X) and mmWave Customer Premises Equipment (CPE) to ensure reliable, fast feedback.

Key features:

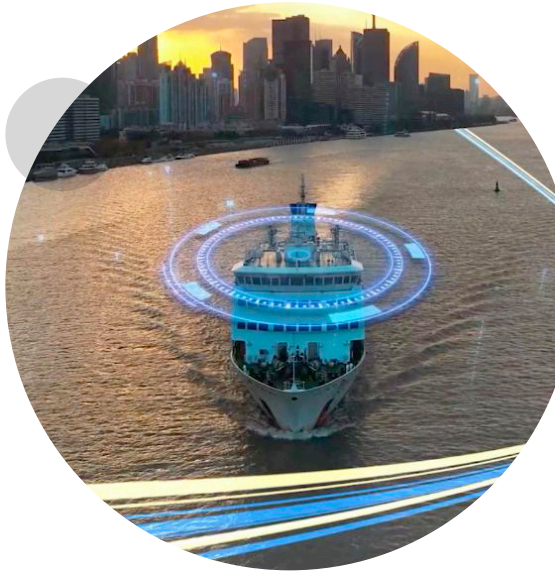
1. **Interference-Free High Frequency:** The mmWave band avoids interference with signals from the riverbanks. It offers an ultra-large bandwidth of 800 MHz, meeting the transmission needs of hundreds of tourists.
2. **In-Cabin Coverage:** LampSite X devices were deployed directly inside the cabins, solving the problem of signal loss through the ship's metal hull. Their large 300MHz bandwidth caters to the uplink and downlink needs of all passengers.
3. **Constant Connectivity:** The mmWave CPEs were installed at the four corners of the cruise ship to ensure a direct, aggregated connection to the mmWave base station from any angle, guaranteeing signal transmission anywhere on board.

Application enablement:

China Telecom Shanghai partnered with Rokid to deploy the AI glasses solution.
The glasses are equipped with cameras, microphones, and earphones to provide multilingual guidance and sightseeing information. Crucially, the navigation overlay is presented directly in the wearer's view, avoiding the distraction and inconvenience of constantly looking down at a phone or map, which enhances both the immersion and safety of the tour.

Key features:

1. **Personalised Multilingual Guide:** The AI tour guide glasses offer on-demand sightseeing information in multiple languages, solving the guide shortage for less common languages and significantly boosting visitor satisfaction.
2. **Enhanced Safety Monitoring:** RedCap Cameras installed on the ship use the 5G-A network to send real-time footage to the control centre. The AI analyses this feed to detect potential collision risks, significantly improving navigation safety.



Deployment

By the end of 2025, China Telecom plans to cover all key areas inside and outside Shanghai's outer ring road with 5G-A, ensuring an ultimate land tourism experience. Of the 18 cruise ships operated by Jiushi Tourism Group on the Huangpu River, two have completed their network reconstruction, with the rest scheduled for completion by November 2025. The rollout follows a pilot-first, gradual expansion strategy.

On the network side, mmWave base stations along the river are being prioritised, with onboard device implementation happening in phases. By June 2025, ten of these mmWave base stations were deployed. Drive tests confirmed impressive performance: peak download rates reached 8 Gbit/s and uplink rates hit 800 Mbit/s. The reconstruction of the two pilot ships is complete, and the rest are in progress. Separately, the AI glasses model is being continuously trained using site-specific data to unlock more functions through iterative development.

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Result

Improved visitor experience

With the wide deployment of 5G-A networks, visitors now enjoy a superior experience. Field tests show that on cruise ships, 5G-A mobile phones achieve a peak download speed of 3.1 Gbit/s and an uplink peak of 260 Mbit/s. This high capacity means visitors can instantly stream 4K river views and upload high-definition photos without interruption. They also benefit from the innovative AI glasses for intelligent guiding and real-time translation, making their tour convenient and seamless.

Increased wireless traffic of carriers:

The new 5G-A network not only improves the visitor experience but also drives new traffic for the carriers. Passengers streaming 4K live broadcasts and HD videos while onboard significantly increase overall wireless data usage.

Safer cruise ship operations:

Operationally, the project enhances safety. Real-time HD footage from cameras across the ship is sent to the command centre via the 5G-A network. The AI analyses this feed instantly to detect potential collision risks, making cruise navigation much safer.

Better profitability:

The project delivers clear economic returns. Holiday passenger volume is expected to surpass 4 million annually, and the initiative is projected to generate an economic income of CNY X0 million for the operating entities each year.

Prospects

During MWC Shanghai 2025, the Huangpu River Cruise Ship Showcase attracted significant attention, prompting multiple carriers to quickly follow up by launching their own river and offshore coverage solutions. Looking ahead, China Telecom Shanghai is expanding the innovation by planning to reuse existing phone booths to launch a city-wide AI glasses rental service. This will allow tourists easy access to immersive City Walks featuring multilingual guides and real-time translation, injecting new technological energy into Shanghai's urban tourism.

After the delivery of this project, it is anticipated that a commercial virtuous cycle can be achieved through AI glasses rental, with an estimated return on investment (ROI) within six months.

Zou Bin - Manager of Jiushi Tourism Project at China Telecom Shanghai

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 gsma.com

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About the GSMA Foundry

The GSMA Foundry is the go-to place for cross-industry collaboration and making positive change happen, supported by leading technology organisations and companies. By bringing together members and key industry players, engaging, and unifying the end-to-end connectivity ecosystem, the GSMA is solving real-world industry challenges.

Our vision is to unlock the full power of connectivity so that people, industry, and society thrive. This enables the mobile industry's mission: to connect everyone and everything to a better future.

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China Telecom

China Telecom is a leading ultra-large-scale telecommunications operator in China. Recognized for multiple consecutive years in the Fortune Global 500 rankings, the company operates the world's largest broadband internet infrastructure and technologically advanced mobile communications network. Its core business encompasses a full suite of integrated information services, including mobile communications, internet access and applications, fixed-line telephony, satellite communications, and ICT integration solutions.

For more information, visit: www.chinatelecomglobal.com

Huawei

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