



Delivering Real-time Translation

China Mobile is integrating real-time captions into its advanced video-calling service.

Highlights


- China Mobile plans to launch a real-time translation service for video calls during 2023
- As of April 2023, there were more than 20,000 users piloting a beta service
- The service doesn't require a software download
- The new functionality is underpinned by Huawei's cloud-native New Calling platform

Technology is bringing down long-standing language barriers. Thanks to advances in artificial intelligence, it is now feasible to provide accurate real-time transcriptions or translations of speech during a video call. That could be very valuable for business people participating in international online meetings, for travellers visiting a foreign country or for people with hearing difficulties. China Mobile plans to launch a commercial real-time translation service during the second half of 2023, which will provide people with text captions in their own language during video calls. Unlike Internet-based apps, users can access the real-time translation service without downloading any software. The capability is being embedded into the handset's native phone calling

capabilities, which support number-based calling, removing the need to add contacts to an app.

As well as making it easier for business people and travellers to communicate with contacts speaking in different languages and dialects, the new intelligent translation feature is also designed to recognise and translate body language and sign language. Pioneering research by Albert Mehrabian, Professor Emeritus of Psychology at the University of California, suggests human interactions rely heavily on non-verbal communication. According to his 7-38-55 Rule, 7% of meaning is communicated through spoken words, 38% through tone of voice, and 55% through body language.

Voice-to-text: barrier-free communication



Voice call
+
Voice-to-text conversion
Translation

Video call
+
Voice-to-text conversion
Large font display

- **Application scenario:** the elderly or people with hearing impairments

Real-time translation across languages



- Language translation

- **Application scenario:** business and cross-country travelers

The elderly should also benefit: China Mobile says it will offer large font captions (see graphic) that could make video calling much easier for anyone with failing faculties. According to the UN's World Population Prospects, the number of people aged 65 and over has reached 700 million, and by 2050, the number of elderly people aged 65 and over will exceed 1.5 billion. Due to hearing and eyesight loss, this demographic can struggle with video calls and are at risk of being left behind by an increasingly connected society. According to the World Report on Hearing, over 1.5 billion people worldwide have experienced hearing loss, and it estimates that nearly 2.5 billion people will have some degree of hearing loss by 2025.

Pilots in several provinces

In January 2023, China Mobile and Huawei jointly started 'beta-user' recruitment in Zhejiang, Jiangsu and Guangdong provinces for a real-time translation pilot. As of April 2023, there were more than 20,000 beta users enjoying the free service, according to Huawei.

If they have a compatible device¹, the beta users can subscribe to the real-time translation service by sending a text message, or by contacting the operator's customer service channels. China Mobile estimates that about 80% of its customers have a compatible device. Although Apple's iPhones don't yet support telcos' video calling services, Android-based smartphones generally support these capabilities.

The rollout of real-time translation services follows on from the launch of 5G ultra-HD video calling by China's three leading operators in May 2022. The trio have included video calling services in their service packages, so that video calling shares the minutes-of-use quota in the service packages with audio calling and is not separately charged.

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"For China Mobile, video calling is very popular," says Hugh Wang, the Vice President of CS & IMS domain of Huawei. "There is a very solid base: China Mobile's data shows that over 80% of video calls are successful in China...it's supported by China Unicom and China Telecom as well. The top three carriers have just finished the interconnection of the different carriers, so, for example, a China Mobile user can call to a China Telecom user. In China, the basic fundamental network is ready," he adds.

China Mobile, China Telecom and China Unicom all deployed IBCFs (interconnection border control functions) in 2021, making cross-VoLTE network interworking possible, according to Huawei.

China Mobile has yet to announce how it will monetise real-time translation, but the feature could see strong uptake among business users, in particular. Huawei estimates that real-time translation services will bring tens of millions of dollars in revenue by 2025.

¹ A device that supports the ViLTE (video over LTE) or ViNR (video over New Radio) standards

Hugh Wang anticipates that people will want to subscribe to the service on an ad-hoc basis. “For example, if you can speak English, you don’t need the service all the time,” he notes. “So maybe when you’re travelling you can subscribe to this service: You just pay the fee, maybe for one month or for two months. But after that you can just stop the service.”

Employing IMS enhanced by 5G

While real-time translation services can be deployed on 4G VoLTE networks, China Mobile is taking advantage of 5G enhancements to the IP multimedia subsystem (IMS) to enrich the user experience. Zhejiang Mobile (part of China Mobile) and Huawei say they have made a host of improvements in the IMS network architecture and systematically optimised network indicators, such as latency and resolution. The new service is underpinned by Huawei’s cloud-native New Calling platform, which is designed to be an end-to-end solution, encompassing life cycle management and service orchestration.

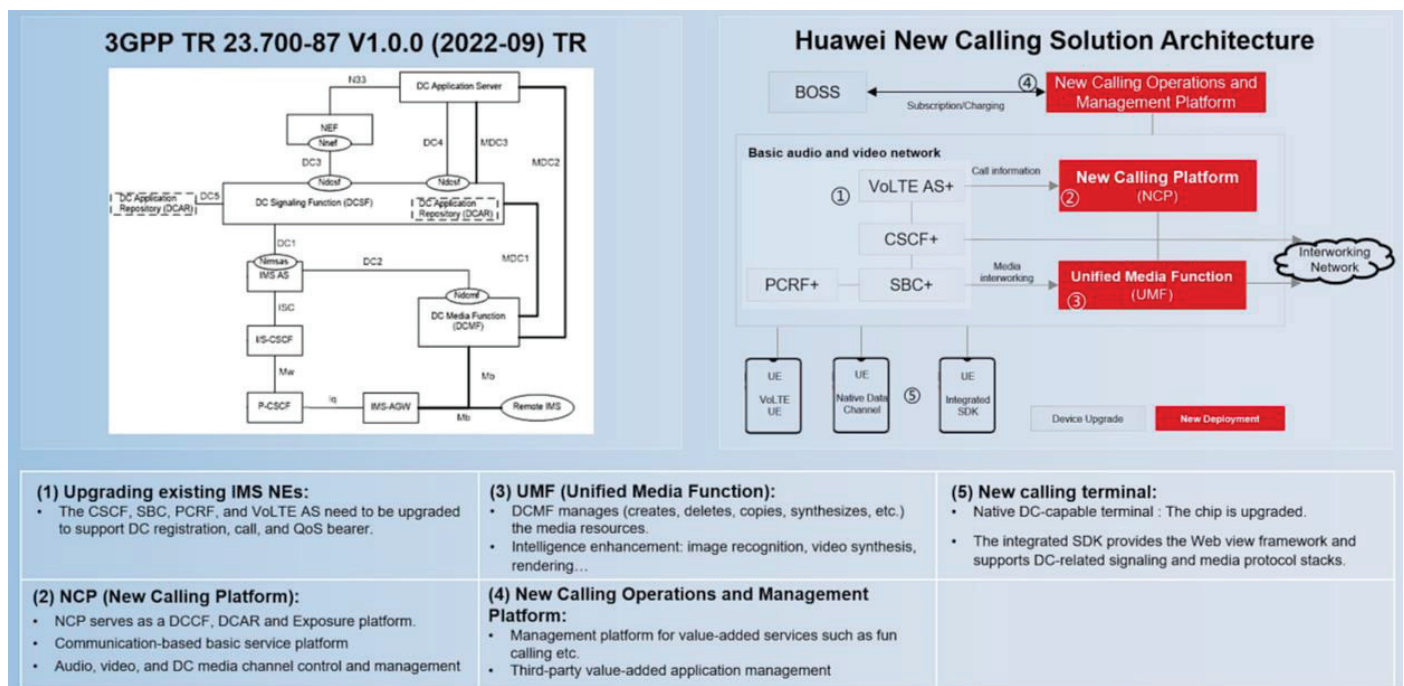
“5G New Calling is now one of China Mobile’s strategic products,” says Sun Shiwei, Deputy General Manager of Marketing Operations for China Mobile Group. “5G New Calling upgrades the traditional calling services by providing richer media and real-time in-call interaction, which brings a brand new user experience. We will enhance the collaboration with industry partners to accelerate the development of 5G New Calling in 2023.”

Huawei developed the New Calling platform by building a Unified Media Function (UMF), and corresponding operations support systems on top of the IMS (see chart). Huawei says the UMF provides media rendering and composing capabilities, empowering service innovation.

Telcos’ IMS-based video calling services could have advantages over so-called over-the-top (OTT) alternatives. “OTT applications have several shortcomings such as unstable service quality and complex installation and registration processes,” says Huawei. “In contrast, operators provide services based on user numbers, freeing users from complex installation and registration processes. In addition, operators use dedicated channels on IMS to provide services. As such, users can enjoy services with a determined service quality.”

For Huawei, the speed of development of its New Calling services will rely on two aspects: the popularity of VoLTE/VoNR networks and the maturity of the ecosystem, which is comprised of chips, terminals, networks, services and industries. The company says New Calling services would benefit from broad availability of devices that are compatible with 3GPP TS 26.114, which defines a new IMS Data Channel architecture, and was standardised in March 2020. This architecture overlays a data channel upon existing IMS voice and video channels to meet data apps’ requirements in terms of latency, bandwidth, and reliability.

Huawei says some leading operators are promoting this approach, and it expects the first compatible devices to become available during 2023, paving the way for new features. “Basic interaction functions, such as screen sharing and AR marking, will enrich service scenarios and remotely instruct the customer





to install the device or rectify faults,” Huawei adds. “This service effectively improves user satisfaction and service efficiency.”

In 2021, China Mobile and Huawei jointly proposed the establishment of the New Calling work group. At the 5G World Congress in August 2021, this work group was formally established and now has more than 10 members, including China Mobile, Huawei, Ericsson, Vivo, Xiaomi, and Zhanrui.

In December 2021, 3GPP initiated NG_RTC in R18, which is conducting in-depth research on how to optimise the IMS Data Channel architecture and deploy IMS media plane as a service. The project clarifies that the media and control planes must be separated and a unified media plane must be adopted in the IMS Data Channel architecture, thereby simplifying the IMS media network architecture. Also in December 2021, the GSMA released a white paper describing the IMS data channel technology and its industry vision, and proposing requirements for IMS data channel-based communication services.

A fresh start for carrier video calling

The new approach is designed to address issues that have held back telcos’ video calling propositions in the past, such as cost, a lack of interoperability and network coverage, and limited device support.

“In 4G, operators’ VoLTE services are not widely used,” says Huawei. “However, 5G brings great opportunities for operators to develop video calling services as essential services. Terminals that support video calls are becoming commonplace...Moreover, VoLTE roaming and cross-network interworking are gradually deployed. All of these changes lay a solid foundation for the large-scale commercial use of video calling.”

China Mobile regards 5G video calling services as strategically important. “Leading operators are looking for ways to innovate with voice and video, which has been a long time without innovation,” notes Hugh Wang. “New Calling gives end users a good chance to have a better experience.” Huawei says 5G VoNR facilitates stable, smooth, and crystal-clear video calling, while 5G UHD video calling outperforms OTT services by using dedicated channels to ensure optimal user experience.

Real-time transcription and translation should also give 5G video calling an edge over OTT alternatives. Once they have deployed IMS and video calling, operators don’t need to make a major investment to enable real-time translation, according to Hugh Wang. Operators can deploy real-time translation capabilities either by employing software-as-a-service from a specialist third party or by integrating translations capabilities into their core network.

Huawei says that some telcos outside China are also very interested in this service, flagging that operators in Brazil, Thailand and the Middle East are either doing or planning proof of concept/trials

As usage grows, the service will generate data that can support machine learning and further improve the accuracy of the translation. Hugh Wang anticipates its ability to decipher different regional accents and pronunciation will improve over time. “We want to ensure that the accuracy is high enough for commercial usage,” he adds. Similarly, the service will also get better at recognising body language and sign language, which can have subtle differences in different cultures.

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Hugh Wang - Vice President of CS & IMS domain of Huawei.

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About Huawei

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