Transportation Communications Group Inmarsat: Global News Delivery System Facilitates the Development of Digital Applications in the Media Industry (Postprint)

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Abstract

We are honored to have Mr. Guo Chunqi, Senior Vice President of Land and Aviation Markets at Transportation Communication Information Group Co., Ltd. (hereinafter referred to as "Transportation Communication Group"), for this exclusive interview. Mr. Guo will share the Group's 30-plus years of experience in providing Inmarsat transmission services for news media and discuss how the Inmarsat global news transmission system is advancing digital applications in the media sector.

Full Text

Interview: Inmarsat Global News Transmission System Empowering Digital Applications in the Media Industry

We are honored to have Mr. Guo Chunqi, Senior Vice President of Land and Aviation Markets at Transportation Communication Information Group Co., Ltd. (hereinafter referred to as "Transportation Communication Group"), for this exclusive interview. Mr. Guo will share the Group's 30-plus years of experience in providing Inmarsat transmission services for news media and discuss how the Inmarsat global news transmission system is advancing digital applications in the media sector.

Reporter: Transportation Communication Group was established in 1979 and has now reached its 42nd year. Could you please introduce the Group and its relationship with Inmarsat?

Guo Chunqi: The predecessor of Transportation Communication Group was Beijing Ship Communication and Navigation Co., Ltd., established in 1979 with

the approval of the State Council. In 2017, it was renamed Transportation Communication Information Group Co., Ltd. After more than 40 years of development, the Group has become a backbone enterprise in China's mobile satellite communication services sector. The Group has consistently kept pace with new developments in international mobile satellite technology, gradually building a comprehensive, technologically advanced, and service-oriented Beijing International Mobile Satellite Earth Station that provides maritime, land, and aviation broadband services. By integrating resources from the Inmarsat system, the International Cospas-Sarsat Programme, the BeiDou Navigation Satellite System, the transportation broadband satellite communication system, highway fiber optic networks, and the Global Maritime Distress and Safety System, the Group has constructed a comprehensive satellite-based emergency response, information communication, and positioning/navigation service system. This has formed a globally covered, convenient, and ubiquitous broadband satellite communication network characterized by interconnected systems integrating space and ground infrastructure.

As China's designated agency for Inmarsat affairs, the Group is responsible for constructing and operating China's Inmarsat ground station, undertaking investment, construction, management, and operational services for maritime satellites in China. It handles billing and settlement for all Chinese coastal stations and the Beijing International Mobile Satellite Earth Station, serving as China's only legally authorized international ship communication accounting settlement institution with Accounting Authority Identification Code (AAIC) CN03. Transportation Communication Group is Inmarsat's sole legally authorized operator and partner in China. In 2016, the Group obtained a basic telecommunications business license from the Ministry of Industry and Information Technology, becoming a national basic telecommunications operator. In May 2016, it officially received the "Telecommunications Network Code Number Resource Use Certificate of the People's Republic of China," being approved to use the 1749 number segment for satellite mobile communication services and achieving interconnection with China's three major basic telecommunications operators' public networks. This broke the previous restriction that domestic public users had to activate international direct dialing to call Inmarsat phones, providing customers with secure private network communication services.

Reporter: Transportation Communication Group provides Inmarsat communication services for various industries. Could you elaborate on its application services for the media sector?

Guo Chunqi: Transportation Communication Group has maintained partnerships with traditional media organizations including domestic television stations, radio stations, and print media for over 30 years. The Group's Inmarsat communication solutions support high-definition and standard-definition video transmission, enabling real-time interactive, multi-angle, intuitive single-person live streaming and multi-camera live broadcasting. These capabilities meet the transformation and digital development needs of the media industry and have

become an indispensable news transmission method for news organizations.

The Inmarsat real-time news transmission solution employs optimized encoding technology tailored to the fourth-generation Inmarsat network characteristics to achieve optimal video quality. Using Inmarsat for video live streaming significantly improves picture quality and enhances image continuity, sharpness, color saturation, and other aspects to meet the needs of converged media video broadcasting. Additionally, the high-quality video live streaming solution provided through Inmarsat channel multiplication is a multi-channel bonding communication system based on the combination of OpenVPN and policy routing. It implements a working mechanism for rational distribution of IP data at the transmitting end and convergence at the receiving end. The system can achieve transmission rates approaching 1 Mbps by bonding two Inmarsat terminals, substantially improving bonding efficiency and data transmission stability. This enables high-quality video live streaming that meets the requirements of large-scale multi-camera productions. Currently, domestic media most frequently use the fourth-generation Inmarsat L-band system. The fourth-generation equipment is compact, portable, and easy to operate, with global signal coverage unaffected by weather or rain fade, ensuring that frontline journalists can quickly establish a stable news reporting environment at news scenes.

Reporter: You just mentioned the fifth-generation Inmarsat GX system. Could you provide specific details about the fifth-generation services and their applications in the media industry?

Guo Chunqi: Today, all industries are undergoing information technology and intelligent transformation. Whether maritime, aviation, or land-based operations, all require large-bandwidth satellite communication systems to support modern IT and intelligent big data transmission and processing needs for equipment, systems, and interactions. To effectively address customer requirements, the International Maritime Satellite Organization invested US$1.2 billion to develop and deploy the fifth-generation Ka-band mobile broadband satellite network system, providing users with a unique global high-speed mobile broadband service called Global Xpress (GX). The Ka-band was selected for this broadband satellite system due to its advantages in satellite resources, orbital positions, and frequency resources. The system is combined with the L-band fourth-generation Inmarsat satellites to provide users with globally covered mobile broadband satellite services.

Each Inmarsat satellite has 89 fixed spot beams and six high-capacity steerable beams, with a designed service life of 15 years. Individual transponder capacity can reach 50 Gbit/s. The fixed beams provide uplink and downlink data transmission rates of 5 Mbps and 50 Mbps respectively, while the steerable beams provide 10 Mbps uplink and 100 Mbps downlink rates. The steerable beams can be adjusted as needed to achieve hotspot area coverage, respond to global emergencies at any time, and possess capabilities for capacity-on-demand and guaranteed bandwidth services.

The fifth-generation Inmarsat GX system covers maritime, land, and aviation domains. All terminal manufacturers must undergo strict Inmarsat certification. The GX6075 is a specialized land-based device that is robust, stable, and portable, meeting aviation transport standards. The parabolic antenna automatic satellite acquisition system is simple to assemble and convenient to use, requiring only 10 minutes for setup. With an LCD display screen based on an Internet user interface, the terminal's weight and antenna size are even smaller than current Ku-band antennas. Its global unified service can satisfy the media industry's needs for global news reporting.

China joined the International Maritime Satellite Organization as a founding member state in 1979. With State Council approval, the Group participated in the organization under the name Beijing Ship Communication and Navigation Company.

Reporter: In recent years, converged media has developed rapidly. What services does Transportation Communication Group provide for converged media clients?

Guo Chunqi: As one of the rapidly emerging new industries, converged media platforms are favored by numerous individuals and enterprises for their characteristics of fast timeliness, broad reach, and significant impact, exerting profound influence on all sectors. Converged media technology represents an innovative communication concept, with diversified information transmission paths in all-media communication. Unlike traditional transmission equipment working methods, more applications adopt digital technology and integrate shooting, storage, compression, editing, and production into a complete set of processes.

Transportation Communication Group's Inmarsat converged media real-time news transmission solution can effectively combine the advantages of traditional and new media, centralizing information sources. Leveraging Inmarsat's global coverage, full-time availability, and stable bandwidth network advantages, the solution can integrate collected images, text, audio, video, and animation materials through transmission technology processing and deliver them to different media platforms. This enables real-time and stable news transmission, enhances content interactivity, experience, and convenience, provides rich news information for users, meets diverse user needs, and achieves resource integration, content compatibility, promotional integration, and shared benefits.

CCTV's 2012 Jiaolong 7,000-meter deep dive and the 2020 Fendouzhe manned submersible missions in the Mariana Trench both utilized Inmarsat news transmission system solutions for multiple large-scale news live broadcasts. Our company actively participated in developing the Fendouzhe 10,000-meter deep dive live broadcast plan, conducted multiple in-depth discussions to seek optimal solutions, and jointly performed multiple feasibility tests with CCTV in advance. During the implementation, the high-speed and stable data communication quality of Inmarsat strengthened users' confidence in live broadcasting. The pandemic created significant difficulties and uncertainties for equipment

transportation overseas and posed challenges and risks for technicians' onboard installation and commissioning. We overcame these adverse factors to complete the overall system construction on schedule and with quality assurance, ensuring the smooth implementation of the established plan. To guarantee flawless live broadcasting, Transportation Communication Group's satellite earth station provided dedicated support during the broadcast period, with business departments participating deeply throughout the process and coordinating with Inmarsat 24-hour monitoring of communication link status. This professional and timely technical support provided strong backing and assurance for the successful broadcast.

(Reporter: Li Jing, Media Convergence Interview)

Note: Figure translations are in progress. See original paper for figures.