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“Content + Technology” Driving Deep Integration of Mainstream Media: A Case Study of Xinhua Newspaper Media Group’s Exploration Postprint

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Abstract

With the continued vigorous development of the digital economy, digital technology plays an extremely important role across various industries and sectors, and media convergence has also entered a new stage of continuous deepening. This article, from the perspective of Xinhua Newspaper Media Group’s advancement of in-depth media convergence development, elaborates on the important role of new media technology within this context, and through the exploration and practice of Xinhua Newspaper Media Group in driving in-depth media convergence via the “content + technology” dual-wheel drive, provides experience and reference for media peers.

Full Text

“Content + Technology” Driving Deep Integration of Mainstream Media—A Case Study of Xinhua Daily Media Group’s Exploration

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Abstract: With the continuous vigorous development of the digital economy, digital technology plays an extremely important role across all industries, and media convergence has entered a new stage of continuous deepening. This article elaborates on the important role of new media technology from the perspective of Xinhua Daily Media Group’s promotion of deep media integration development, providing experience and reference for media peers through the Group’s exploration and practice of “Content + Technology” dual-wheel driving for deep media integration.

Keywords: Party newspaper; media convergence; content and technology; digital economy

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In 2013, General Secretary Xi Jinping first formally mentioned media convergence development, pointing out that mainstream media cannot be marginalized and must solve the problem of “ability panic.” He emphasized the need to “accelerate the integrated development of traditional and emerging media, and fully utilize new technologies and applications to innovate media communication methods,” thereby driving innovation in propaganda and ideological work methods and elevating media convergence to the height of national ideological construction and propaganda and ideological work.[1] In September 2020, the General Office of the CPC Central Committee and the General Office of the State Council issued the *Opinions on Accelerating the Deep Integration Development of Media* (hereinafter referred to as the *Opinions*), requiring the acceleration of integration between traditional and emerging media to build a batch of new mainstream media with strong influence and competitiveness as soon as possible, and to establish a full-media communication system with content construction as the foundation, advanced technology as the support, and innovative management as the guarantee.[2] In recent years, Xinhua Daily Media Group (hereinafter referred to as the Group) has continuously explored and practiced, promoting the deepening development of media convergence with a “Content + Technology” dual-wheel drive.

1. Grasping Development Trends and Building a Digital Development Pattern

With the continuous development of 5G, artificial intelligence, cloud computing, big data, AR/VR, blockchain and other technologies, changes in news content dissemination methods and presentation forms have accelerated the replacement of the media landscape, thereby driving changes in the public opinion ecology. The technological development of newspaper media has roughly experienced three stages. In the first stage, the technical department mainly focused on managing equipment, with its primary responsibility being technical support. In the second stage, technology became an important support for content production, serving as the hard “chassis” for media convergence development. In the current stage, technology serves as the engine, empowering content production and driving the deepening development of media convergence.

2. Establishing Three Consciousnesses to Leverage Sustained Technological Power

In 2014, General Secretary Xi Jinping defined the construction goal of media convergence as building new mainstream media that can disseminate the voice of the Party and the people and possess strong influence, clarifying key development objectives for China's media convergence. Mainstream media must build such network platforms to open channels for communicating with the grassroots people, better approach and serve the masses, and construct a mainstream public opinion landscape. In building its technology platform, the Group fully considered the needs of city and county-level converged media, extended channels to the grassroots level and integrated resources, improved the four-level development layout of central, provincial, city, and county levels, and allowed the broad masses to participate in information production and dissemination, expanding the influence territory of mainstream media.

2.1 Strengthening Standard Consciousness to Ensure Open and Sustainable Technology

The Group has always advocated and promoted standardization. In building the all-media command center, it changed the previous monolithic architecture model and adopted a “middle platform + microservices” architecture. Through microservices technology and DevOps continuous integration mode, it formed a standardized and modular development system where each service can be independently expanded and upgraded. The Group has built a “converged middle platform” with mobile middle platform, data middle platform, and intelligent middle platform as the main components, cooperating with multiple parties on technology, unifying technical frameworks and data standards, and forming a mobile-first, standardized data exchange and capability service middle platform. Simultaneously, it applied new technologies such as “fingerprint technology and multi-domain architecture.” By embedding fingerprint services of the all-media command center in various business systems, each manuscript has a global unified ID as its “identity card.” As manuscripts flow between systems, they carry this unified ID, enabling full lifecycle monitoring of manuscript history and tag marking, achieving full-process connection between multiple systems and providing source data for all-media assessment. The multi-domain architecture can not only provide platform support for various media within the Group but also conveniently provide platform support for city, district, and county-level converged media, as well as pan-media cooperation units.

2.3 Focusing on Ecological Consciousness to Integrate into the Digital Economy

The *Opinions* point out that advanced technology should be used to lead and drive integrated development, making good use of the revolutionary achievements of information technologies such as 5G, big data, cloud computing, Internet of Things, blockchain, and artificial intelligence. It is necessary to advance

structural reform on the supply side of content production, expand high-quality content production capacity, innovate content presentation forms, and enhance content dissemination effects.[2] With the arrival of the digital economy era, technology empowering business will become the future development focus. Expanding the convergence path around new technologies has become an industry consensus, but how to use new technologies to empower media business development is a common exploration topic for all. This requires mainstream media to give full play to their content advantages, keep pace with new technologies such as blockchain, artificial intelligence, knowledge graphs, and algorithms, continuously update and iterate, and comprehensively improve business capabilities, data capabilities, and service capabilities. The Group's project construction carries the "open" gene. During the construction process, it has made new attempts in mobilization, integrated integration, and ecological cooperation, gradually building a bridge with county-level converged media centers. Relying on the all-media command center, the Group has provided converged media platforms, entry publishing, and content services for Party affairs, government affairs, and enterprises, now serving more than 140 Party and government website clusters and over 2,000 registered Jiaohui accounts, initially forming a "Content + Technology" cooperation ecology centered on "Xinhua" media production capabilities, promoting industrial digital development and building a new communication landscape.

3. Overcoming Three Major Challenges to Advance Deepening Integration

Deep media convergence can be said to be an endogenous transformation of media driven by technological development.[5] In recent years, traditional media has been strongly impacted by new media, with user numbers and advertising operations experiencing cliff-like declines. Under this unfavorable overall environment, the Group has carefully laid out its portfolio of 14 newspapers, 8 periodicals, 13 news websites, 10 mobile clients, and 109 micro-media accounts, building a modern communication system where Party newspapers pursue "depth," clients pursue "speed," websites pursue "comprehensiveness," and all-media pursues "convergence." In the process of media convergence, content and technology are complementary and mutually reinforcing, and both are indispensable.

3.1 Building an Integrated Platform to Solve Resource Fragmentation Pain Points

With the development of Internet technology, the informatization level of mainstream media plays a crucial role in the degree of media convergence. The previous siloed architecture, where each system was independent and data was isolated, easily created information islands, consuming enormous human and financial resources but ultimately becoming mere "potted plants" for show. This requires that the top-level design of informatization construction meet current

media business needs, fully considering integrity, practicality, and scalability. As a provincial Party newspaper, the Group follows the requirements of improving the four-level integrated development layout of central, provincial, city, and county levels, building a mobile platform with Internet thinking. The Group's "Jiaohui Point News" client has over 30 million users; the "Ziniu News" client has exceeded 18 million downloads; the "New Jiangsu" client has nearly 10 million downloads; the "Xinhua V-View" client has become a uniquely influential AR/VR video media nationwide; and the "Recording the Moderately Prosperous Society Project · Jiangsu Database" project has opened channels for 13 prefecture-level cities in the province, publishing over 300,000 data entries. Relying on big data applications, the Group's various media serve industries and localities, including rural revitalization, tourism, digital economy, and social development, providing public opinion and information services to more than 200 users across various industries.

3.2 Adhering to Problem Orientation to Clear Blockages in Technology-Content Integration

Relying on policy promotion and the advantages of new media technology platforms, mainstream media have built their own media convergence technology platforms. Formally, traditional media seem to have completed the transformation and layout of all-media, but problems still exist, such as imperfect systems and mechanisms, independent operation of various business platforms, and inadequate integration of content resources.[6] The Group has always taken "practical and user-friendly" as the measure of system construction effectiveness. To achieve this, it must first deeply understand content needs. In the early stage of the all-media command center project, the Group established a "construction team" and a "requirements team." Through research, summarization, and extensive solicitation of opinions, it avoided rigid application and "image projects," conducting development and optimization based on actual needs. During the system trial operation phase, the Group attached great importance to the transition and connection between old and new systems, handling the synchronization of old data and managing the relationship between existing system usage habits and system changes brought by new business development. After the system officially went online, multiple rounds of problem and suggestion collection were conducted, with timely upgrades and iterations according to business changes. Through project construction, mobilization, community building, and interaction have been applied to the Group's business internally. Employees of all media units and departments can conduct instant communication, office editing, and other work through one client and one login.

3.3 Strengthening Effect Orientation to Give Good News Wings to Soar

Under the trend of media convergence, while mainstream media possess high-quality content, they should better utilize advanced technology to form synergy,

allowing emerging Internet technology to shift from being a variable in media convergence to an increment that enhances communication effects and amplifies the Party's voice, reaching ordinary households and giving full play to the effectiveness of the "four alls" media. Since the launch of the Group's all-media command center, both the quantity and quality of content production have improved. The Group won 5 China News Awards in 2018, 9 in 2019, and 7 in 2020, entering the first echelon of national provincial media. H5 works increased from 71 in 2018 to 973 annually now. Jiaohui Cloud live broadcasts grew from 201 in 2019 to 650 annually now. Live broadcasts such as "Jiangsu Medical Team Departs for Huangshi," "Dialogue with COVID-19 Recovered Patients," and "Provincial Health Department Epidemic Prevention and Control Guidelines" have simultaneously attracted over 300,000 online viewers. In terms of intelligent media expansion, more than 300 data reports have been formed, providing strong support for editorial planning. During the epidemic, big data epidemic reports were provided daily and weekly as part of the provincial reporting materials. Technologies such as data news, machine writing, and intelligent voice have been widely used in the Group's new media, including integrated media products like "Viewing Jiangsu Development Through High-Frequency Words in News Reports," AI Robot Singing, and "Century Bright Colors" intelligent colorization of old photos. In terms of command coordination, comprehensive mobilization has been achieved, doubling the efficiency of office document circulation. Remote collaboration and real-time video linkage have played important roles in daily work, branch management, and epidemic response, better serving local social and economic development.

4. Practicing Three Major Paths to Create a Xinhua Model

Content and technology are not simply additive in form but must be deeply integrated. The development of technology determines the success or failure of media convergence. Whether traditional or new media, only by taking advanced technology as support and adhering to integrated development can mainstream media grasp the direction of public opinion in the emerging communication landscape and tell China's stories well.

4.1 "Content + Technology" Resonance: Mutual Integration of Two Teams

Under the impact of Internet media, mainstream media must be driven by the "Content + Technology" dual wheels and further innovate in content presentation forms and communication methods to firmly occupy the commanding heights of public opinion and continuously enhance the communication power, credibility, and guidance of mainstream media. Xinhua Daily strives to create an industry model and explore the path for deep integration of "Content + Technology" in newspaper media. First, establish a normalized working mechanism. Technical personnel participate throughout the entire editorial planning and news production process, truly coming and integrating together. Technical

staff take turns attending editorial linkage meetings and planning sessions daily, deeply engaging in content production. Editorial personnel gradually develop technical awareness and actively learn about new technologies and applications. The deep integration of the two teams has created many refreshing integrated media products, such as the “Listen·See Moderate Prosperity” series of H5 products that integrated over 100 videos and audio clips. Empowered by technology and focusing on the characteristics of “listening,” “seeing,” and “integration,” it recorded the vivid course of building a moderately prosperous society in all respects and won the first prize of the China News Award in 2021. The “From Setting Sail to Leading” red root-seeking activity used various technical means such as AI and H5 to deeply explore the spiritual connotations carried by red cultural relics, vividly demonstrating the glorious journey of the Communist Party of China always standing at the height of history and continuously achieving victories in revolution, construction, and reform and opening up. Second, implement an organized working model. The Group established a big data studio composed of technical and editorial personnel to brainstorm on key propaganda, emergencies, in-depth reading, and epidemic reporting analysis. Initially, the communication power analysis reports produced by technical personnel were incomprehensible to business personnel, and the analysis needed by editorial personnel was not understood by technical personnel. After a period of adjustment, they gradually achieved thinking integration. Since its establishment, the big data studio has published 235 big data analysis reports and over 100 data news pieces, such as the “Big Data Analysis Report on Media Coverage of Epidemic Prevention and Control,” “2021 Yangtze River Delta Integration Summit Big Data Report,” “2021 Yangtze River Delta Health Summit Big Data Report,” “2021 Two Sessions Big Data Analysis Report,” and “Xinhua Daily First Half-Year ‘In-Depth’ Manuscript Big Data Analysis Report,” playing a supporting role in big data analysis, leadership decision-making, news planning, and public opinion analysis.

4.2 “Independent + Cooperative” Co-construction: Effectively Integrating Multi-party Resources

First, focusing on self-reliance. The *Opinions* point out that it is necessary to strengthen forward-looking research and application of new technologies in the field of news communication and promote independent innovation of key core technologies.[2] Mainstream media still lack technical autonomy and technical resource reserves. They should adhere to “openness” to strengthen technology, actively strengthen cooperation with leading Internet technology companies and universities, form an industry-education-research development model, make various resources serve their own purposes, promote the implementation of research results, form independent core capabilities, achieve the transition from technology “following” to technology “leading,” and accelerate the media’s move from “convergence” to “deep convergence.” In recent years, through technology introduction, deep business engagement, and cooperative innovation, the Group has trained its technical team, continuously improved its technical transformation

level and independent development capabilities, and launched self-developed products such as the “Xiaoxin Intelligent Media Voice Platform,” “Xiaoxin Activity Platform,” virtual digital exhibition hall, and “Diligent and Honest Xinhua” client. Second, introduce cooperation. The Group has extensively cooperated with leading Internet companies and research institutions. For example, it established Jiangsu’s first “5G Converged Media Laboratory” with Jiangsu Mobile, launching series such as “5G+4K+VR Live Broadcast,” “5G Message Two Sessions Communication,” “5G Message Anti-Epidemic Communication,” and “Party Congress 5G Message Information Communication,” breaking traditional models, innovating communication forms, providing one-stop services for users, and achieving remarkable communication effects. It also established an “AI Intelligent Media Laboratory” with Neusoft and Baidu, with its intelligent voice and intelligent proofreading products applied to various media channels. In addition, it continues to explore cooperation in big data think tank services, intelligent media assets, intelligent recommendation, intelligent interaction, ultra-high-definition video, VR/AR, and other areas, demonstrating the integration achievements of advanced technology and media business.

4.3 “Promote + Lead” Together: Letting New Technology Take Root

The *Opinions* emphasize the need to vigorously cultivate all-media talents, implement more active, open, and effective talent introduction policies, and enhance the attractiveness and competitiveness of mainstream media talents.[2] Media convergence is also the convergence of people and thinking. It includes not only the convergence of new technology and media but also the integration of business personnel’s thinking and the deep integration of technology, business, departments, and resources in the news production process. First, enhance the technical cognition of editorial business managers. Through excellent case introductions, case analyses, lectures, and training, the Group enables editorial business managers and leaders to deeply understand new technologies and better apply them to news production. In business practice, the transformation from traditional “one pen” to “all-media” helps them know what technologies exist, what they can do, and inspire planning creativity. From the initial state where editorial personnel were surprised by the “Light Up Wuhan” creative idea while technical personnel thought it was just a line of code, to later jointly planning creative works like “Long Bridge Lying on Waves! The Most Beautiful Picture Scroll from the Yangtze River Economic Belt,” as well as the Yangtze River Delta series and “Post-90s Generation Steps Forward” and other high-quality products, the level of technology application and creativity has been comprehensively improved. Second, improve the technical capabilities of editorial business personnel. The Group focuses on comprehensively cultivating and enhancing the “18 skills” of all-media editorial personnel, promotes technical application training for editorial staff, and develops information technology application capability training courses for business personnel, issuing technical certification certificates upon passing assessments. This enables editorial personnel to make good use of technical means, master platform usage proficiently, and exert plat-

form effectiveness. Technical personnel play the role of a “bridge,” improving the technical literacy of Group employees, enhancing frontline personnel’s technical cognition, technical consciousness, and new technology application capabilities, and continuously deepening the application of new technologies in content production.

At present, the digital economy is developing rapidly. General Secretary Xi Jinping pointed out that it is necessary to promote the integrated development of the digital economy and the real economy, grasp the direction of digitalization, networking, and intelligence, promote the digitalization of manufacturing, service, agriculture and other industries, use new Internet technologies to conduct all-round and full-chain transformation of traditional industries, improve total factor productivity, and give play to the amplification, superposition, and multiplication effects of digital technology on economic development.[7] Xinhua Daily Media Group will take this instruction as the fundamental guide, explore around industrial digitalization and digital industrialization, make great efforts, increase technological development, build a powerful technology-driven engine, and help promote deep media integration.

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

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