Endless Technological Innovation, Media Convergence Underway: Postprint

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Abstract

The "Founder Changxiang All-Media News Gathering and Editing System" was selected by the National Press and Publication Administration as a 2020 innovation case for deep integration development in China's newspaper industry. As the core product of the "Founder Ultra-Convergence Smart Media Solution," it has been widely deployed across more than 300 media organizations nationwide since its official launch. The system has conducted proactive and valuable explorations into cutting-edge technology applications, yielding solid and effective experience that has propelled the deep integration and development of the newspaper industry. This paper shares technical construction insights based on the system's features and practical implementation cases, aiming to provide references and inspiration for the technical development of media convergence transformation.

Full Text

Continuous Technological Innovation: The Journey of Media Convergence

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Abstract: The "Founder Changxiang All-Media News Editing System" has been selected as an innovative case of deep integrated development in China's newspaper industry by the National Press and Publication Administration in 2020. As the core product of the "Founder Hyper-convergence Smart Media Solution," this system has been widely adopted by over 300 media organizations nationwide since its official release. It has made active and beneficial explorations in cutting-edge technology applications, accumulated solid and effective experience, and promoted the deep integrated development of the newspaper industry. This paper shares technical construction ideas based on the characteristics and practical cases of the Founder Changxiang All-Media News Editing

System, providing references and insights for promoting technical construction in media convergence transformation.

Keywords: media convergence; all-media; technical platform; artificial intelligence; hyper-convergence

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The Founder Changxiang All-Media News Editing System leverages mobile internet, cloud computing, big data, and artificial intelligence technologies to serve as the foundational framework for transforming newspaper operations and enabling integrated development. It provides a support system for newspapers to achieve convergence between print and digital platforms, interactive engagement, resource integration, and process reengineering. The system enables news processing and publishing across multiple channels and formats—including newspapers, websites, mobile apps, Weibo, WeChat, and television stations—within a single, independent editorial system.

By supporting real-time interactive planning, editing, review, and publishing processes, the system optimizes and extends traditional linear workflows while providing collaborative work and online communication functions to meet the development requirements of converged media operations. It consolidates team editorial capabilities, enables efficient cross-departmental collaboration, and unleashes productivity. The platform facilitates multi-channel production and publishing, rapid organization of productive forces, mobile collaboration, and content coordination, completing the production cycle from "mobile (editing)" to "mobile (reading)." It provides technical support for numerous media organizations in content innovation, process reengineering, and management system restructuring.

The Founder Changxiang system offers media convergence a mobile, intelligent all-media technology platform, an integrated all-media matrix production platform, and a converged production management platform. According to statistics, nearly 60,000 journalists and editors daily activate the "Hyper-convergence Mobile Editorial Department" to interact in real-time with editorial offices or readers, rapidly completing news planning, writing, review, and publishing. During the pandemic, this mobile editorial department provided round-the-clock, uninterrupted support for news production.

1. Mobile, Intelligent All-Media Technology Platform

The platform innovates mobile-based editorial and review process management, leveraging the speed and convenience advantages of mobile intelligent 5G terminals to address journalists' needs for filing stories from various locations, editors' mobile review requirements, and leaders' mobile approval needs. Through the

"Hyper-convergence Mobile Editorial Department" (mobile news gathering and editing), it enables mobile news production methods and mobilizes core editorial business functions. On mobile devices, users can conveniently and quickly execute the entire editorial workflow—including planning, gathering, editing, reviewing, and publishing—anytime and anywhere. It facilitates mobile command, content aggregation, collaborative editing and review, rapid approval, and multi-terminal publishing for core news production operations.

[Figure 1: see original paper] Hyper-convergence Mobile Editorial Department

Big data assists news gathering and editing by deeply integrating data with business applications. The system provides local hot topics, various categories of trending news, curated recommendations (column subscriptions), layout comparisons, event tracking analysis, and dissemination analysis, offering more intelligent big data support for news planning and writing processes.

[Figure 2: see original paper] News Dissemination Analysis

AI-powered assistance combines Founder' s proprietary AI capabilities with third-party intelligent services through the Founder AI Middle Platform, delivering optimal intelligent services to media organizations. Integrating Natural Language Processing (NLP), artificial intelligence, and content structuring technologies, the system provides intelligent proofreading functions. Based on NLP technology and knowledge graph management engines, it enables intelligent semantic analysis, hot topic aggregation, extraction of person, organization, and geographic information, intelligent tagging, keyword extraction, intelligent summarization, intelligent writing, clue discovery, dissemination tracking, and copyright early warning.

Leveraging computer vision and speech processing technologies, the system achieves speech recognition and synthesis, intelligent extraction of valuable information from images and videos, intelligent early warning of sensitive information, identification of pornographic, gambling, and drug-related content, intelligent classification, cross-modal search, intelligent image matching, and intelligent short video production. These capabilities comprehensively empower media production to advance into the realm of intelligent operations.

2. Integrated All-Media Matrix Production Platform

The unified editing platform enables one-click publishing of manuscripts to newspapers, magazines, websites, client apps, Weibo, WeChat, Douyin, Toutiao, Penguin Account, and other relevant publishing platforms. It provides unified review and control over pre-published content for new media, focusing the planning, gathering, editing, review, and publishing processes for both new media and print media on a single platform. The system tracks the review and publishing status and dissemination effectiveness of all manuscripts across client apps, WeChat, Weibo, websites, and other terminals, while supervising and inspecting the review and control process.

The all-media production method supports one-manuscript multi-publishing, unified editing, unified review, and multi-channel release. It facilitates real-time interactive planning, editing, review, and publishing processes, consolidating team editorial capabilities, enabling efficient cross-departmental collaboration, and unleashing productivity.

UGC & PGC Multi-channel Contribution: The system provides correspondents, journalists, and editors with the ability to complete one-click writing of app and website manuscripts on both mobile and PC platforms. Without switching systems, users can quickly publish content across web portals, apps, newspapers, and micro-media platforms.

[Figure 3: see original paper] Correspondent Contribution Platform

Standardized Resource Management: The all-media resource center uniformly aggregates and manages manuscript resources, image resources, audio-video resources, newspaper products, new media products, and internet resources, gradually establishing a resource management system based on data + applications. This completes the construction of foundational data and basic applications for the newspaper' s all-media resource management platform. The system enables unified storage, multi-dimensional classification navigation, unified display, intelligent retrieval, and resource statistical analysis for data and files including graphic and audio-visual material resources and all-channel media product resources. All data is visually displayed, and resource adoption is implemented according to user permissions, reducing resource management costs and improving resource utilization efficiency for newspaper organizations. It provides data support, intelligent assistance, and external expansion services for content production, creating value-added data products.

Customizable Editorial Work Platform: According to different stages of media convergence development or all-media construction requirements, the system can build planning centers, gathering centers, editing centers, publishing centers, resource centers, and assessment centers to achieve scenario-based workflows and flattened operations. Each journalist and editor can perform operations such as topic reporting, clue tracking, task management, manuscript library access, big data analysis, media matrix management, and statistics within the same interface based on their respective work scenarios.

Founder Changxiang All-Media News Editing System has currently implemented news gathering, editing, and publishing process reengineering in various media units at central, provincial, municipal, industry, and district/county levels in China, achieving practical results and gaining high industry recognition. Both the "Guangzhou Daily Newspaper Group Converged Media Platform" and the "Yangcheng Evening News Newspaper Group Big Data-Based Print-Web-App Converged Media Platform" won the first prize of the 9th "Wang Xuan News Science and Technology Award" in 2019. Meanwhile, beneficial attempts have been made in the radio and television industry, publishing houses, and journalism schools, with multiple relevant cases in

government propaganda departments and large enterprise units. The system has fundamentally changed the implementation approach of informatization construction in the media industry, accelerated the intelligent transformation of media, promoted the introduction of more new technologies and applications, and provided a powerful technical support platform for building a workforce with all-media thinking and converged media product production capabilities.

The following sections interpret the technical platform construction at different stages of media convergence development through case studies of the "Science and Technology Daily Mobile All-Media Intelligent Integrated Service Platform," "Jiangxi Daily Newspaper Converged Media Editing Platform," "Yantai Daily Hyper-convergence All-Media Platform," and "Chaoyang District Converged Media Center."

3. Converged Production Management Platform

Visualized Management: Based on distributed technology architecture and microservices concepts, the system provides customized visual display solutions tailored to media users' business scenarios. It dynamically displays user-concerned business production data and internet data analysis results in real-time synchronization, including clue discovery, planning command, interview progress, manuscript circulation, publishing status, proof monitoring, and dissemination analysis, achieving visualized editorial command, converged process monitoring, and news decision support.

Fine-grained Management: The system comprehensively covers converged media product assessment management, automatically aggregating multi-dimensional KPI indicators from new media and print media channels and supporting diverse assessment models. It integrates data from various publishing formats—including text, images, video, and audio—across channels such as Weibo, WeChat, websites, mobile apps, and print media. According to the newspaper' s converged media assessment methods, the system conducts multi-dimensional quantitative evaluation of manuscripts, enhancing the fine-grained management level of converged media editorial business assessment.

[Figure 4: see original paper] All-Media Performance Assessment

[Figure 5: see original paper] Assessment Summary Report

3.1 Science and Technology Daily Mobile All-Media Intelligent Integrated Service Platform

In recent years, Science and Technology Daily has been comprehensively promoting media convergence development. With the China Science and Technology Information Database as its "root platform" and scientific innovation and popularization as its two wings, it has developed into a large-scale central mainstream media organization with four newspapers, five websites, two periodicals, and multiple mobile terminals. It has established reporter stations in

33 provinces (autonomous regions, municipalities) across China and 14 overseas correspondent stations abroad.

Before project implementation, each platform (four newspapers, three websites, two apps, two Weibo accounts, one WeChat account) operated independently with dispersed business process systems. The value of news materials was limited, and planning, gathering, editing, and publishing management was difficult. Additionally, the habit of using WeChat for office work could not guarantee content security. The organization urgently needed a mobile, intelligent, and integrated business platform to support editorial operations.

3.1.1 Construction Achievements The mobile all-media intelligent integrated service platform for Science and Technology Daily, constructed by Founder Electronics, fully integrates mature and advanced technologies such as mobile internet, big data, and artificial intelligence. Aiming for "unified repository, tailored utilization" and focusing on further consolidating and strengthening Science and Technology Daily' s position as the main propaganda front in science and technology, effectively disseminating party and state-related publicity, the platform has built an open, diverse, and integrated production process system. It has constructed an intelligent editorial production platform, achieving deep integration of production and management across the newspaper' s "print, web, micro, and app" platforms, providing a power engine for the "Science and Technology Information Database" construction, and serving to continuously improve the newspaper' s communication power, guidance power, influence, and credibility.

3.1.2 Comprehensive Integration of Mobile, Intelligent, and All-Media Mobile editing is the first major highlight of the Science and Technology Daily project. Editorial staff can handle all editorial-related matters anytime and anywhere, free from time and space constraints, achieving mobilization of core "planning, gathering, editing, review, and publishing" business functions. Intelligent editing relies on big data technology to provide internet hot topics, clue services, and industry information to assist editors in news planning, gathering, and writing. The integrated platform aggregates all news materials from the newspaper, standardizes business processes, shields complex back-end operations, and achieves an integrated editorial workflow. It supports the newspaper in process reengineering, unleashing editorial productivity, improving overall safety supervision of media information editing and publishing, enhancing published content quality, and achieving the construction goal of unified manuscript repository with tailored utilization.

3.1.3 Topic Selection and Planning Process The system transformed the original offline topic reporting method using WeChat groups into an online system for topic submission, distribution, review, meeting discussion, task assignment, and manuscript association, standardizing the topic selection and

planning workflow and enabling full-process monitoring and traceability of manuscripts.

3.1.4 Video Production Process The system provides mobile fast-editing functions for audio and video. Through the mobile editing app, users can quickly perform video splicing, production, transcoding, and review, ultimately generating multimedia manuscripts with text and images for use by new media channels such as websites, apps, Weibo, and WeChat.

3.2 Jiangxi Daily Newspaper Converged Media Editing Platform

Supported by advanced converged media technology, Jiangxi Daily has built a unified converged media editing platform based on the strategy of "mobile-first, one-time gathering, multi-format generation, and multi-channel dissemination." This platform achieves interconnectivity in content, platform, and management, integrates existing resources, and expands communication fields. It introduces an all-media performance management system to encourage and incentivize high-quality production and high-level operation of news products across different platforms, promotes transformation in thinking, concepts, and working methods among personnel, reduces collaboration costs between different roles, and builds an all-media workforce that meets all-media production requirements.

The converged media editing platform serves as the content production platform for Jiangxi Daily' s integration of traditional and new media. With the construction goals of improving news production efficiency and enhancing news product quality, it promotes media convergence transformation and upgrading, and comprehensively enhances the party media' s communication power, guidance power, influence, and credibility.

3.2.1 Strengthening Audio-Video Management Capabilities To adapt to the media convergence trend of audio-video news development and enhance visual expression effects of news products, the platform innovates multimedia content production based on original text and image editing operations. It features accelerated audio-video upload, custom transcoding, media asset cataloging, unified storage, fast editing, and intelligent processing, meeting comprehensive audio-video requirements for different publishing platforms (apps, Douyin accounts, self-media accounts, etc.) while seamlessly integrating with existing content production workflows. Currently, audio-video gathering, editing, review, and publishing operations have been implemented across three media units: Jiangxi Daily, Information Daily, and Jiangnan Metropolitan Daily.

3.2.2 Building a Deeply Integrated All-Media Content Production System Without changing the organizational structure and departmental settings, the platform builds a "gathering + editing + review + publishing" process mechanism from content materials to the full range of news products across website, app, social media communication matrix, and newspaper channels. It sup-

ports intra-departmental review, cross-departmental review, leadership review, and full-channel product review. The converged media editing platform can produce news products required by each publishing channel, providing adapted support for rapid release, such as setting or creating cover images and WeChat sharing images needed for new media publishing. In mobile editing, it enables editing, review, and mass messaging of WeChat graphic messages to achieve rapid social media news release, promoting the transformation from flat publishing to social and interactive converged publishing, and deeply integrating all-media content production.

[Figure 6: see original paper] Jiangxi Daily Newspaper Converged Media Editing Platform

3.2.3 Building a Mobile-First-Based Converged Assessment Model
To strengthen the news production and propaganda influence capabilities of mobile apps, the newspaper conducts comprehensive, multi-dimensional assessment of all manuscripts published in print and on the Ganpo Cloud Jiangxi Daily app. Combining the final publishing status in both print and app channels and considering the communication characteristics of different channels or manuscript classification attributes, the assessment integrates basic personnel scores and communication effect bonus scores from the perspective of evaluating journalists' and editors' production achievements. It focuses on encouraging user-centered news content that influences social audiences, incentivizing editorial staff to accurately grasp user preferences and social hot topics during topic selection and gathering. Simultaneously, it promotes the transformation of traditional business personnel toward new media operations, intensifies media personnel and business integration, balances internal and external assessments, and enhances media influence.

3.3 Yantai Daily Hyper-Convergence All-Media Platform

Yantai Daily Media Group has built a "Hyper-Convergence All-Media Platform" consisting of one center and three systems. The center is the all-media "Central Kitchen"command center, while the three systems include the hyper-convergence all-media editing system, all-media video studio system, and "Media +" smart media communication system.

[Figure 7: see original paper] Yantai Daily Hyper-Convergence All-Media Platform

Under the guidance of the hyper-convergence all-media platform, the group breaks media boundaries and departmental divisions, reconstructs the gathering, editing, and publishing process with the all-media central kitchen as the core, and creates a work pattern of "one-time gathering, multi-format generation, multi-channel dissemination." By building the hyper-convergence all-media editing system, it has transformed from a traditional newspaper to an all-media news agency integrating "print, web, app, and micro" platforms. The group

launched the hyper-convergence mobile editing client, whose "mobile collaborative workgroup" function provides a "green channel" for breaking news.

3.4 Beijing Chaoyang District Converged Media Center

In the construction of the all-media news editing system for Beijing Chaoyang District Converged Media Center, the platform combines the center' s construction planning and objectives with its actual conditions (editorial team resources, hardware configuration resources, news resources, etc.). Through a single platform coordinating all media-related businesses, it fully leverages mobile internet technology advantages, providing big data, cloud storage, and mobile technologies to achieve integrated production workflows for news content planning, gathering, editing, review, and publishing, as well as upload-download processes, intelligent analysis, and communication supervision. The project follows the dual integration of news reporting laws and news technologies, constructing effective and professional media convergence business processes to maximize news dissemination. Through intelligent planning and editing, it enhances professional news planning and writing capabilities. Through mobile news office operations, it facilitates convenient convergence across professional fields such as news repository, planning, proofreading, editing, and publishing for various media units. Through public opinion analysis and early warning, it obtains professional public opinion reports to identify tendentious statements and viewpoints, greatly facilitating the center' s news propaganda work and leveraging its distinctive features.

Conclusion

Technological innovation is endless, and media convergence is an ongoing journey. With the maturation and application of 5G, mobile short videos, intelligent audio-video processing, artificial intelligence, AR/VR, and blockchain technologies, the media industry will embrace new development opportunities.

Founder Electronics will consistently adhere to a "user-centered" approach for technological innovation and refinement, developing products, technologies, platforms, and services that meet the needs of media convergence development. The company will continuously integrate cutting-edge innovative technologies, communication theory research, models, and intelligent algorithms with actual business scenarios of media convergence development, continuously enriching and improving the "Founder Hyper-convergence Smart Media Solution." It will provide a series of supports for news organizations' content creation and decision-making, ultimately helping news organizations establish deeper connections with users and reshape the public opinion field. In the new era of smart media with deepened media convergence, Founder Electronics will provide continuous momentum for the integrated development of the media industry, drive progress through technological innovation, and work hand in hand with media industry colleagues to jointly explore the new era of smart media.

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