Research and Exploration of the Technical Platform for Converged Media Centers in the Context of Media Convergence: Postprint

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Date: 2023-10-08T00:00:00+00:00

Abstract

Currently, with the continuous development of omnimedia, there have emerged full-process media, holographic media, all-staff media, and all-effect media, leading to profound changes in the public opinion ecology, media landscape, and communication modes. Facing these impacts and challenges, how to adapt to the characteristics of emerging media and utilize the achievements of the information revolution to deepen media convergence development constitutes a common challenge confronting all media, including enterprise media. This paper explores the construction path of a big data-supported technical platform for converged media centers under media convergence, conducting innovation and adjustment in aspects such as news production, public opinion analysis, ideology, brand building, and comprehensive management, thereby achieving certain effectiveness in advancing media convergence to deeper levels.

Full Text

1. Background of Converged Media Center Technology Platform Construction

Promoting the integrated transformation of traditional media represents a crucial reform in the communications field and a primary task for news and propaganda work. Since the 18th Party Congress, the CPC Central Committee with Comrade Xi Jinping at its core has attached great importance to media convergence development. On September 26, 2020, the General Office of the CPC Central Committee and the State Council issued the "Opinions on Accelerating In-Depth Media Convergence Development," which calls for accelerating the integration of traditional and emerging media across institutional mechanisms, policy measures, process management, and talent technology. The goal

is to establish a batch of new mainstream media with strong influence and competitiveness as soon as possible, gradually build a mainstream public opinion pattern that integrates online and offline channels and coordinates internal and external propaganda, and create an all-media communication system based on content construction as the foundation, advanced technology as the support, and innovative management as the guarantee. This document provides clear direction and specific development requirements for advancing media convergence [1].

With the rapid development of online media, traditional media industries based on Internet technology have gradually expanded toward multi-domain development while leveraging big data to broaden their business scope. Traditional media typically employs big data technology to aggregate and summarize required data content, thereby establishing development strategies and plans, building converged media, and enhancing dissemination capabilities. In other words, traditional media utilizes big data technology to gradually establish converged media information platforms, which can both promote the development of converged media and effectively advance the business development process of traditional media. At this stage, as a product of information network development in the current era, integrated media must not only rescue traditional media such as magazines, newspapers, and television but also innovate them, presenting them to audiences in new forms. Using new media technology to achieve media convergence and improve media technology to rapidly popularize media integration is both a requirement of the Party and the state and a demand of the times. Against the backdrop of the big data era, for converged media to achieve sustainable and robust development, it must utilize big data platform technology to realize interactive information sharing, establish a relatively sound service system, enhance the interoperability between data and the functionality of converged media platforms, and expand the dissemination scope and influence of converged media.

2.1 Definition of Media Convergence

"Media convergence" can be considered an earlier exploration of the concept, first proposed by Professor Ithiel de Sola Pool from the Massachusetts Institute of Technology. Its original meaning referred to the trend of various media forms evolving toward multi-functional integration. In subsequent developments, the concept of "media convergence" was enriched to form "media integration," with a representative viewpoint being the "three overlapping circles" proposed by American futurist Nicholas Negroponte. This perspective suggests that the "broadcasting industry," "computer industry," and "publishing industry" will exhibit overlapping and converging development trends under the digital wave [2].

2.2 Definition of "Converged Media"

The converged media discussed in this paper refers to the comprehensive integration of different media forms—such as radio, television, and newspapers—that

share common ground while offering complementary advantages. This integration occurs across personnel, content, and propaganda aspects to achieve a new media model characterized by "resource interoperability, content compatibility, mutual propaganda integration, and shared benefits." Converged media represents both a tangible, visible behavioral entity in terms of content, manpower, and promotional methods, and an operational service unit focused on users, content, and data. It transforms four service modes—broadcasting, new media, newspapers, and television—into a unified service behavior, thereby enhancing media credibility, dissemination power, and influence.

3.1 Design Principles

To build a more robust converged media system, we adhere to fundamental principles of usability, scalability, security, openness, and efficiency. Based on storage technology, media technology, and network technology, we follow a basic approach to converged media platform construction that emphasizes deep integration of news planning and media operations, integrated operation of media resources and comprehensive performance, visualized management of network-wide hotspots and public opinion trends, and real-time scheduling of editorial staff. We aim to create a comprehensive operational and management platform with data archiving, aggregation, and distribution functions, uphold open-closed principles, continuously enrich business functions within the framework, optimize and integrate resources, and improve the actual utilization rate of the system.

We combine top-level design with grassroots innovation, strengthen Internet thinking, highlight platform and sharing functions, and integrate new technology development and applications. Through the construction of provincial company converged media centers, we promote the integration of content, technology, platforms, teams, and management to achieve comprehensive integration of news resources, full integration of information data, and real-time display of news products, thereby realizing full business online collaboration and end-to-end process integration.

3.2 Construction Standards

During the converged media platform construction process, we strictly comply with industry or national standards regarding traditional media systems, equipment interfaces, multimedia systems, and system construction wiring. (1) System equipment must meet the standards of AES/EBU digital studio audio, ITU-R BT.601, and SMPTE259M digital studio video signals. (2) Information technology software quality must meet the requirements of GB/T16260-1996 "Information Technology—Software Product Evaluation—Quality Characteristics and Guidelines for Use" and GB/T17544-1998 "Information Technology—Software Packages—Quality Requirements and Testing."

3.3 Requirements Analysis

We aim to build a high-quality converged media center information system and a large-scale propaganda work platform that operates 24/7, provides full system coverage, and expands into multiple domains. We are accelerating the construction of a converged media center with functions including product integration, team integration, concept integration, management integration, platform integration, and technology integration. Fully considering the actual conditions of the company' s propaganda business, we comprehensively build a converged media center technology platform that includes modules for converged media collection and editing, content distribution, public opinion analysis, ideology management, and brand building. This promotes effective integration of news propaganda resources and full integration of information systems, establishes a media convergence dissemination matrix, and forms a large-scale propaganda pattern.

4.1 Construction of Converged Media Collection, Editing, and Distribution Module

The construction of the converged media collection, editing, and distribution module adopts a "central kitchen" production model, forming a new news collection and editing operation pattern of "integrated planning, one-time collection, multiple generation, and diversified dissemination." This enables full-process supervision of the platform, end-to-end data tracking services, one-click publishing of proprietary media content, and one-click submission to social media. It supports online full-process management and process monitoring of news strategy, collection, editing, review, and distribution, and builds a collaborative creation and sharing mechanism for news production, thereby improving the efficiency of news collection and editing work. The main functions include [3-4]:

The content production function realizes full-process control from manuscript creation, writing, to review, forming a complete chain-like closed-loop model. During news production, it supports short video production and intelligent proofreading functions, supports the three-review and three-proofreading process for different types of media manuscripts, realizes intelligent proofreading, automatic positioning, and one-click correction of manuscript content, and provides a highly efficient news production model.

The resource sharing function forms a unified provincial news resource management database, with content primarily sourced from audience uploads and web crawlers. It realizes process management for intranet and Internet resource upload, deletion, review, and inventory query. By employing AI facial recognition and tag classification methods, it forms multi-dimensional resource query conditions and achieves efficient and convenient full-text retrieval functions.

The content distribution function realizes unified management and one-click distribution of manuscripts across the company' s proprietary media platforms,

as well as one-click submission to social media and tracking of dissemination status.

The effectiveness evaluation function employs embedded tracking technology to monitor equipment access in real-time within custom monitoring cycles, analyzing product usage conditions across websites and mobile terminals. It constructs a dissemination power index analysis model to calculate the dissemination influence of website news and the dissemination index of new media, forming a manuscript dissemination influence ranking.

4.2 Construction of Public Opinion Analysis Module

The public opinion analysis module primarily relies on powerful Internet data capture and big data analysis technologies to achieve real-time public opinion data monitoring and public opinion guidance effectiveness monitoring across the entire network. By employing artificial intelligence technology, it establishes a public opinion guidance and disposal work system, optimizes and improves public opinion management processes, and achieves real-time public opinion data monitoring, early warning, and guidance effectiveness monitoring across the entire network. This enhances public opinion analysis capabilities, strengthens the application of public opinion big data, and comprehensively improves the professional level of public opinion guidance. The main functions include:

The collection and monitoring function supports monitoring and collection of various media information, including company media and Internet website information, and supports full-process control of public opinion collaborative disposal to realize public opinion information reporting management. Simultaneously, it actively employs video and image recognition, speech conversion, and text analysis technologies to achieve blind-spot-free, full-coverage monitoring of public opinion hotspots across the entire network.

The situation assessment function conducts full-network monitoring of topics and public opinion events, multi-dimensionally mining data on dissemination status, media influence, traceability information, and netizen impact to form a foundation for scientific assessment. It automatically associates and clusters public opinion information, implements trend analysis, topic tracking, tendency analysis, and dissemination chain analysis to achieve multi-dimensional intelligent assessment of public opinion information.

The public opinion reporting function automatically generates drafts of "Public Opinion Reports"and "Public Opinion References"based on real-time public opinion monitoring and directional tracking information. It simultaneously realizes automatic abstract generation, report proofreading, report hierarchical review, and automatic report distribution functions, greatly improving the production efficiency and quality of "Public Opinion Reports" and "Public Opinion References" while meeting customers' process management requirements for public opinion reports.

4.3 Construction of Ideology Module

The ideology module construction primarily implements the ideology work responsibility system, carrying out digitalized and standardized management of "task lists" and "responsibility lists" for ideology work, and realizing digital management functions for ideology. It implements the "two alls" principle to ensure ideology security and improve the information management level of company ideology. The main functions include:

The team management function strictly controls all company news practitioners, implementing dynamic management of company news personnel, spokespersons, online commentators, and internal and external expert teams. This includes establishing personnel information databases, maintaining basic personnel information by various units, approving personnel changes, and analyzing personnel teams.

The position management function strictly controls ideology positions, implementing dynamic management of all communication platforms such as proprietary official media accounts, dynamic control of official media responsible persons and operation and maintenance personnel, and approval and filing management of eight major ideology positions including various news media and online media, publications, associations, courses, and forums that are supervised or hosted, ensuring that all positions are manageable and controllable.

4.4 Construction of Brand Building Module

The brand building module primarily optimizes and improves brand building workflows, strengthens process control of brand building, and achieves unified management of corporate social responsibility and public welfare management, brand identity, exhibition display, and other work across the company' s system units. It provides effective technical support for corporate brand building and enhances corporate brand value. The main functions include:

The public welfare management function realizes real-time reporting and aggregation of public welfare work brand development processes, establishes a public welfare brand database, and creates milestone models by integrating public welfare brand database resources. It supports real-time reporting functions for public welfare brand development process information and aggregates and statistics reported information to form a brand database.

The brand stories function aggregates brand story works in various forms such as corporate micro-videos, H5 pages, radio dramas, and literary works. It realizes centralized storage and management of digital materials, conducts in-depth mining and re-creation of excellent brand stories, and leverages the influence and media resources of the converged media platform to facilitate comprehensive promotion and focused publicity of excellent brand stories.

The brand influence monitoring function conducts Internet big data monitoring analysis and data statistics for brand influence based on the indicator system

and measurement principles for central enterprise brand influence from relevant departments and an Internet big data factor model. Based on calculation results of six brand influence elements—brand attention, brand reputation, brand value, brand innovation, brand rule-making power, and brand credibility—it processes the six element indicators through dimensionless unification to make their magnitudes basically consistent, ultimately forming the brand influence evaluation results for central enterprises.

4.5 Construction of Comprehensive Management Module

The comprehensive management module primarily addresses comprehensive affairs management for propaganda work. Through platform function construction, it realizes comprehensive systematic management of annual performance, monthly propaganda reports, personnel information, and notification management for propaganda work across system units, thereby improving the comprehensive management level of news propaganda. The main functions include:

The performance management function conducts multi-dimensional statistical evaluation and visual presentation of propaganda work performance for various units. It supports multi-dimensional data statistical analysis functions according to the propaganda work performance evaluation system, enables one-click report generation by unit, and provides download functions.

The notification management function supports sending message notifications to different targets through the system, such as system notifications, unit notifications, and user notifications, with notification content supporting text and attachments. It realizes system message push functions for related businesses and supports users in synchronously sending mobile SMS reminders through the SMS platform.

The data management function establishes a work database containing business training, rules and regulations, meeting documents, identity manuals, and other content to realize cloud storage of work materials.

5.1 Innovate Related Technologies to Continuously Improve Media Convergence Level

Media convergence is not a time inflection point but rather a process. As technology advances, media convergence will continue to deepen. Currently in a major development period of media convergence, all media and enterprises are actively striving to be trendsetters of this era, which has exposed many technical and security issues in media convergence. To truly achieve an integrated media platform, future efforts must continuously innovate related technologies, introducing more advanced and targeted technical means to realize the transformation from deep integration to comprehensive integration of media.

5.2 Strengthen Security Awareness to Ensure Information Security Under Media Convergence

The integration of new media and traditional media not only brings a huge leap in propaganda effectiveness but also introduces information security issues. Personal information leakage and hacker virus invasions may cause enormous losses to individuals or enterprises. Therefore, future development of media information platforms must also prioritize information security, safeguarding information through innovative firewall technologies, encryption technologies, and data backup technologies to ensure normal platform operation.

5.3 Formulate Relevant Laws and Regulations to Provide Institutional Guarantees for Media Convergence Development

The development of any industry 离不开科学完善的规则政策. The major development of media convergence has equipped news dissemination with richer and more convenient channels, while audience media literacy remains at a relatively low level. In this context, "inadvertent mistakes" can easily lead to major disasters. To ensure the healthy development of converged media technology platforms, the state should formulate relevant laws and regulations to better facilitate the development of converged media, providing legal basis when relevant legal disputes arise.

5.4 Optimize the Media Industry Structure to Continuously Adapt to Era Development

The arrival of the media convergence era has created tremendous impact on traditional media but also presents opportunities for new media development. In China, the media industry currently exhibits faster development and transformation in southeastern coastal regions while slower transformation in western regions, indicating that a large portion of the converged media technology platform market remains to be explored. On this development path, media industries across regions must actively respond to information technology development, clarify their positioning, and continuously optimize the media industry structure to achieve long-term development.

In summary, through the implementation of this converged media center technology platform research and exploration project, we have expanded news clue channels, realized news planning and scheduling, improved news content production efficiency, and developed diversified content production methods. By introducing intelligent proofreading technology for news content review and continuously improving company resource database management, we have expanded resource types and optimized system performance, achieving improved efficiency in company news collection and editing work. Through platform-based management of company media operations, we have realized unified review and one-click publishing functions for media content, as well as post-publication dissemination data analysis, effectively improving the integrated management level of

company news propaganda media and maximizing and optimizing propaganda effects. By expanding public opinion monitoring scope, improving monitoring accuracy, and introducing functions such as public opinion situation assessment, intelligent early warning, and collaborative disposal, we have enhanced public opinion information management levels. Through system construction for data presentation, we can intuitively reflect news propaganda work achievements and improve the informationization level of news propaganda in data analysis and results presentation.

Supported by big data, the path for converged media construction continues to expand, playing a crucial role in the healthy development of converged media while effectively promoting the optimization, transformation, and upgrading of the entire industry and the stable development of society. Relying on big data technology helps build more complete converged media main technology platforms, promotes the deployment of converged media, and establishes a comprehensive media convergence platform based on leading intelligent cloud computing technology and rooted in media big data resources. This promotes the complementary advantages of emerging and traditional media, advancing toward integrated development.

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