

Development and Application of Broadcasting Technology in the New Media Era: Postprint

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Abstract

The rise of the new media industry has provided new perspectives for technological development in the media and broadcasting sectors. Particularly in the new media era, both the application methods and application fields of broadcasting technology have undergone certain changes. As an entirely new media form, new media organically integrates content such as self-media platforms, online television, and online stores, and its information dissemination speed far exceeds that of other media forms, especially demonstrating distinct advantages in big data storage and other aspects. Thus, the development and advancement of new media technology directly impact the exchange of information and commodities among the public. However, the integration between broadcasting technology and new media currently still faces certain challenges. Therefore, to enable broadcasting technology to occupy an advantageous position in the new media domain, it is necessary to contemplate the entry points for transformation of traditional broadcasting media forms, clarify existing opportunities, and identify the actual requirements for broadcasting technology application in the new media era.

Full Text

Development and Application of Broadcasting Technology in the New Media Era

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Abstract

The rise of the new media industry has provided fresh perspectives for the development of media and broadcasting technologies. In the new media era, both the

application methods and domains of broadcasting technology have undergone significant changes. As an entirely new media form, new media organically integrates self-media platforms, internet television, online stores, and other content, with information dissemination speeds far exceeding those of other media forms, particularly demonstrating clear advantages in big data storage. Evidently, the development and advancement of new media technology directly influence public information exchange and commodity transactions. However, the integration between broadcasting technology and new media still faces considerable challenges. Therefore, to secure a favorable position for broadcasting technology in the new media landscape, we must identify entry points for transforming traditional broadcasting media, clarify existing opportunities, and understand the practical demands for broadcasting technology application in the new media era.

Keywords: New Media; Broadcasting; Technology; Self-Media Platforms; Internet Television

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To truly understand a technology's application methods, we must analyze its current implementation forms and identify existing problems and deficiencies, thereby providing a reference for clarifying technical requirements. At present, broadcasting technology application in the new media era still exhibits numerous shortcomings, primarily concentrated in information transmission, network penetration rates, and information volume. Specific applications mainly include digital broadcasting technology, computer network technology, FPGA technology, and others. To accurately grasp development trends, we must optimize control systems and platforms based on these technologies to ensure organic integration between new media and broadcasting technology.

1.1 Information Transmission Stability Issues

Audio media predominantly employs broadcasting technology, and conventional radio and television stations demand high-quality audio output. Consequently, many broadcasters' data broadcasting, audio transmission, and online transmission services struggle to achieve satisfactory results through broadcasting technology. Furthermore, audiences face various influencing factors during program listening, such as signal interference and the impact of station network bandwidth on reception frequency, all of which degrade information transmission stability [1]. Whether in urban or rural areas, broadcasting facilities operate in relatively complex environments. In remote regions particularly, wind, snow, extreme temperatures, and high-magnetic environments adversely affect information transmission hardware. For hardware reliant on electronic compo-

nents, these factors accelerate component aging, impair equipment operational stability, and increasingly exacerbate information transmission instability [2].

Additionally, since transmission often depends on robust network speeds, relatively low network penetration rates result in poor network stability in certain regions. Users experience lengthy waiting times when receiving images, videos, and other content, creating a subpar viewing experience that negatively influences their evaluation of digital broadcasting programs [4].

1.2 Low Network Penetration Rates

For audiences today, mobile phones and laptops have become daily necessities. However, despite relatively high penetration rates for mobile terminals and networks, audiences in second- and third-tier cities have not widely embraced watching programs through digital broadcasting platforms. Consequently, traditional methods remain the primary viewing mode for most audiences in these cities. Therefore, to genuinely improve network penetration rates, we must emphasize the role of internet channels in new media broadcasting technology and optimize relevant channels. This reveals that China's current media broadcast program audience remains unstable [3]. New media development depends heavily on network penetration conditions, and many regions suffer from relatively poor network stability due to inadequate telecommunications infrastructure.

1.3 Insufficient Information Volume

Information constitutes the foundation of internet-related services, and in the new media era, information dissemination speed and quantity occupy a central position. Videos, images, and other media have found increased application in information dissemination, particularly on new media-dominated platforms. However, many radio and television stations currently limit themselves to uploading programs to internet platforms without improving information services, resulting in insufficient information volume on these platforms. This demonstrates the need for organizations to reform and enhance information volume to address relevant challenges [5]. Presently, many media organizations have not optimized and adjusted their content according to new media development trends, further aggravating information insufficiency. Under these circumstances, users turn to content from other new media platforms, directly affecting the listenership and viewership of new media platforms employing broadcasting technology. Over time, users lose confidence in media organizations and no longer actively consume their content [6].

2.1 Digital Broadcasting Technology

Practical application demonstrates that digital multimedia broadcasting technology provides audiences with richer, higher-quality information. Digital broadcasting technology itself possesses significant market potential and can inject momentum into economic development. Particularly for outdoor enthusiasts,

its application brings greater convenience [7]. Digital broadcasting technology better ensures information and data accuracy because digital signals effectively avoid electromagnetic interference in transmission while protecting audio quality. In terms of user experience, audiences can hear clearer, more authentic sound, effectively guaranteeing program quality [8].

2.2 Computer Network Technology

Traditional broadcasting and television backend operations involve substantial workloads and create considerable pressure for staff, who must confront numerous challenges. However, computer systems enable easy control over program scheduling and modifications in the backend, significantly improving staff efficiency while making program production and broadcasting more rational and standardized. This allows personnel to devote more time to program design and creation [9].

2.3 FPGA Technology Application

Video program smoothness and clarity are critical factors in television broadcasting and viewing. However, conventional broadcasting television technology is vulnerable to multiple factors, making it difficult to effectively guarantee video smoothness and clarity in practice. FPGA technology application can significantly improve video playback quality, enabling high-definition video playback. This technology not only enhances transmission quality but also elevates the overall standard of television technology. As competition in the broadcasting and television industry intensifies, organizations employing FPGA technology can effectively strengthen their core competitiveness. Practice has also shown that FPGA technology can shorten technology upgrade cycles, accelerating the pace of broadcasting technology renewal and laying a solid foundation for overall program quality improvement [11].

2.4 SDH Technology Application

SDH technology demonstrates excellent performance in circuit transmission, switching, and multiplexing, while also showing good results in optical and microwave transmission. Its application scope is relatively broad and can be employed during network dynamic management and maintenance periods, thereby improving resource utilization efficiency. Additionally, SDH technology enhances system flexibility, simplifying later maintenance work and effectively controlling maintenance costs. However, applying SDH technology requires digital signal processing first [12].

3.1 Further Optimization and Improvement of Control Systems

Technology application relies on system perfection—only complete systems can maximize technology's potential. Therefore, relevant organizations must further optimize and improve their control systems. Specifically, they can employ

professional equipment to enable control systems to possess one or multiple stable signal transmission channels that maintain good compatibility with related equipment. In practical applications, various advanced technologies should be actively introduced to solve traditional technology's shortcomings and problems, effectively improving broadcast program quality. In wireless broadcast program intelligent monitoring systems, audio signal comparison technology is widely applied to further guarantee signal and program quality. Generally, the audio comparison algorithm employed in these systems combines time-domain and frequency-domain algorithms as a similarity comparison algorithm. During use, program playback is susceptible to other factors that may cause changes or playback failures, requiring schedule adjustments. Computer technology enables autonomous control without staff intervention, and in subsequent periods, if special circumstances arise, computer systems can automatically replace problematic programs with alternatives. During this period, as the broadcasting and television industry continues developing and people's demands increase, television programs' timeliness and interactivity may be affected, but computer technology can promptly eliminate various problems [10].

Specifically, the system works by real-time acquisition of broadcast demodulation signals and source audio signals, employing a multi-dimensional vector angle cosine algorithm to complete similarity measurement in the time domain. Two-channel audio delay synchronization point positioning generally achieves correlation search through three-level audio window partitioning. Similarity determination requires calculating high-energy frequency point frequencies in the frequency domain as characteristic values [13].

3.2 Ensuring Network Platform Integrity

New media has integrated into every aspect of our lives, becoming a daily necessity. Broadcasting domain network platforms require not only internet technology but also computer technology, while communication technology and multimedia technology have also found extensive application. The fusion and application of these technologies have facilitated the emergence of network platforms, revitalizing modern broadcasting technology. Consequently, functional diversification of modern broadcasting technology will be the main development direction. In this context, broadcast network platform construction becomes crucial. Generally, network platforms require components such as broadcast production networks, integrated service networks, and broadcast control transmission networks. Alternatively, constructing new network platforms enables comprehensive resource utilization and sharing. Such comprehensive network platforms can provide better broadcasting services to the public, particularly in today's information-rich and diversified environment. Complete, robust network platforms can better centralize broadcast resource management and improve network bandwidth efficiency [14]. In practical operations, technical personnel must adjust internal and external networks according to security level requirements and business needs to ensure safe interconnection and information sharing.

3.3 Establishing OB Van Systems

Timely and fresh content represents new media's main characteristics. As video and image quality requirements continuously improve, various media must establish OB (outside broadcasting) vans to further enhance information quality. However, traditional OB vans struggle to achieve ideal material editing and information transmission effects. Therefore, technical personnel must optimize existing OB van systems based on information technology development trends and new media's actual demands. Optimization should address both hardware and software aspects to ensure good compatibility between them.

3.4 Further Optimization of Management Systems

To truly enable broadcasting technology to meet new media requirements, relevant organizations must establish comprehensive management systems. First, they should implement a system for regular optimization, requiring technical personnel to research current new media development trends, clarify future development directions, and periodically optimize and adjust systems. System optimization must address functionality, component integration, and technology to meet audience needs, enabling smooth transitions between functions for both information recipients and publishers while ensuring stable operation of various functions through technology. Additionally, relevant personnel must deeply analyze audience preferences to optimize systems.

Second, organizations should establish a comprehensive talent recruitment system to build an excellent workforce, creating favorable conditions for improving program quality and technical levels. Cultivating outstanding technical and content editing talent is crucial for ensuring program quality, further improving program clarity, and guaranteeing transmission and playback quality. Moreover, excellent talent teams can also plan vibrant and sustainable content. Media organizations should establish sound talent incentive systems to enhance staff interest and motivation for optimizing work patterns and improving program quality through rewards.

Third, organizations must establish robust program content production systems to ensure high-quality content that meets public aesthetic and entertainment needs. Additionally, they should consider various impacts of program content on public opinion, actively creating healthy, positive, and uplifting quality new media programs. Specifically, they need to plan topics carefully, avoiding excessive fusion of disparate elements within the same program. Programs can also regularly invite renowned experts from various fields for science popularization, attracting audience attention while dispelling rumors and establishing a favorable public opinion atmosphere. Content planning must also align with the Central Party Committee's guiding ideology for propaganda work, creating patriotic and people-loving healthy program content.

Fourth, organizations should emphasize communication and exchange to provide new ideas for new media technology application and development, identifying

their own advantages and optimization points through comparison. Relevant organizations can actively conduct thematic forums and other activities with industry peers to achieve information, technology, and theory exchange. They can also dispatch advanced employees to other organizations for research, understanding industry development trends and obtaining quality media resources. Additionally, they can introduce and experiment with new technologies, equipment, and systems popular in the industry, providing new ideas for work and injecting fresh momentum into programs and productions.

Conclusion

Currently, broadcasting technology faces issues of information transmission instability, relatively low network penetration rates, and insufficient information volume. To address these problems, relevant organizations and technical personnel must thoroughly research digital broadcasting technology, computer network technology, and FPGA technology applications. By further optimizing and improving control systems, ensuring network platform integrity, establishing OB van systems, and refining management systems, the industry can advance. Simultaneously, as media and broadcasting professionals, we must actively study relevant technologies, continuously enhance our professional capabilities, lay a solid foundation for technology application, and thereby promote industry development.

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