Postprint: A Brief Discussion on Radio and Television Technology System and New Media Development

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Abstract

With the advent of the information age, digital technology, network technology, and intelligent technology have developed rapidly, granting broadcasting and television media unprecedented development space. New media, as a product of the new era, integrates network technology and computer technology, with its convenience and real-time nature becoming its defining characteristics, thereby garnering widespread popularity among users. Overall, the emergence of new media has presented both opportunities and challenges to the broadcasting and television sector. This paper will examine the current state of the broadcasting and television technology system in conjunction with the emergence and development of new media, and analyze the development direction and strategic approaches for new media under the present new circumstances.

Full Text

A Brief Discussion on Broadcast Television Technology Systems and New Media Development

Abstract: The advent of the information age has witnessed rapid development in digital, network, and intelligent technologies, granting unprecedented growth opportunities to broadcast television media. As a product of the new era, new media—integrating network and computer technologies—has become synonymous with convenience and real-time capability, earning widespread acclaim from users. Overall, the emergence of new media presents both opportunities and challenges for broadcast departments. This paper examines the current state of broadcast television technology systems alongside the emergence and development of new media, analyzing the developmental direction and strategic thinking for new media under today' s new circumstances.

Keywords: broadcast television engineering; broadcast supervision technology; cable digital television engineering; Internet TV; new media

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Broadcast television systems can be classified by function into five categories: broadcast television centers, cable transmission systems, transmission systems, monitoring systems, and satellite transmission systems. Alternatively, they can be categorized by technical architecture into three systems: monitoring and regulation technology systems, transmission technology systems, and production and broadcasting technology systems. In recent years, the information age has fueled rapid advancement in digital, network, and intelligent technologies, providing unprecedented development space for broadcast television media and enabling corresponding improvements and refinements to broadcast television technology systems. As an emerging product of our time, how the broadcast industry responds to the opportunities and challenges brought by new media directly impacts the subsequent development and improvement of the entire broadcast television technology system, as well as the future direction and prospects of new media itself.

1.1 Broadcast Television Center Technology

With the continuous evolution of broadcast television technology, most broadcast stations currently employ station-wide network intelligent platform systems for production and broadcasting. These systems enable real-time monitoring and detection of network management, equipment management, and business process management across the entire station network, effectively resolving technical difficulties while enhancing overall stability and security. The architecture comprises numerous subsystems that can operate independently, completing data storage and transmission functions through digital data exchange to achieve sharing and interoperability among subsystems, thereby realizing integrated information management and program production/broadcasting across the entire station. By establishing a unified station-wide intelligent platform, management personnel can maintain real-time control over business networks, power systems, and historical records, achieving intelligent management and fully visualized monitoring of broadcast television center technology.

1.2 Broadcast Television Transmission Technology

Broadcast television transmission technology refers to the application of information dissemination through media channels. Following decades of technological development and scientific revolution, China's broadcast television transmission technologies now include optical fiber communication, cable digital transmission, wireless transmission, and microwave transmission. Currently, urban users access broadcast content through cable digital television, wireless broadcasting, and mobile multimedia devices, while rural users primarily rely on cable digital

television, satellite direct broadcast television, and wireless broadcasting. Overall, China has achieved extensive broadcast television coverage, with wireless coverage projects and cable digital television engineering effectively expanding information dissemination and eliminating reception disparities between urban and rural residents. Advances in Internet and information technology have enabled significant improvements in broadcast television, facilitating more efficient and healthier information transmission.

1.3 Broadcast Television Monitoring and Regulation Technology

The rapid development of broadcast television transmission technology has prompted the state to establish relevant legal regulations concerning information dissemination quality and content, while audiences have raised diverse demands for healthy, entertaining, humorous, and factual information quality in television programs. The State Administration of Radio and Film should strengthen information dissemination supervision to ensure healthy and high-quality content. Currently, China has established a broadcast television regulatory system with the State Administration as the main body and local supervision as supplementary support, covering cable digital television, FM radio, satellite direct broadcast television, and Internet audio/video programs. Broadcast television monitoring and regulation technology is developing toward greater comprehensiveness and broader coverage to enable collection of program data and broadcast information.

2.1 Cable Digital Television Engineering

Cable digital television represents a fully digitized television system encompassing the entire process from program production, editing and storage, transmission and broadcasting, signal reception, signal processing, to signal display. Cable digital television enables two-way communication, features strong anti-interference capabilities, delivers high-definition quality images, and offers powerful functionality. The cable digital television industry chain is shown in [Figure 1: see original paper].

Currently, cable television remains the primary viewing method for Chinese households. As of the first half of 2018, cable television held a 52.35% market share, though overall subscriber numbers showed negative growth with a 2.15% quarter-on-quarter decline. However, the cable television digitization process continues to grow annually, accelerating domestic digital television industry transformation with integration and reform becoming the main theme of industrial development and expanding market demand. On one hand, the advancement of triple network convergence services and implementation of the Broadband China strategy; on the other hand, the growth of video service demands and cross-boundary development of Internet technology have presented cable digital television with new opportunities and challenges.

2.2 Wireless Coverage Engineering

China has established a wireless coverage system for central radio and television broadcasting, ensuring that people nationwide can watch television and listen to radio free of charge. While guaranteeing wireless coverage quality, new technological means are gradually expanding broadcast television wireless coverage across China' s regions. As China' s television industry leader, CCTV has achieved notable success in broadcast television wireless coverage. Consequently, local governments should actively respond to policy calls, promoting the development and implementation of broadcast television wireless coverage projects and advancing local wireless coverage network construction. Since the implementation of the central radio and television program wireless coverage project in 2015, local television stations have steadily promoted surveying, equipment debugging, and station construction, providing strong support for central radio and television program wireless coverage. Numerous counties and townships have gradually achieved wireless coverage of central radio and television programs, ensuring equal and non-differentiated information access for urban and rural residents.

3. Development of New Media

3.1 IPTV IPTV features flexible interactivity, enabling functions such as program reservation, real-time fast-forwarding and rewinding, as well as Internet-based online gaming and email services. In contrast, cable digital television offers only real-time broadcasting without capabilities for real-time fast-forwarding/rewinding or online gaming and email services.

IPTV, or Interactive Network Television, combines Internet technology with television technology to provide diverse digital media services based on Internet protocols through broadband cable television networks. The IPTV system structure diagram is shown in [Figure 2: see original paper]. Users can obtain high-quality media services, access a wider selection of video programs, and achieve substantive interaction between media providers and consumers. IPTV differs from digital television in its technical architecture: IPTV stores and transmits streaming media files encoded with MPEG-4 as the core, while cable digital television stores and transmits MP-2 TS streams.

3.2 Internet Television Internet television, also known as network television or NTV (Network Television), is a new technology that utilizes broadband cable television networks to provide various interactive services to households against the backdrop of continuous development in digital and Internet technologies. Network television retains television' s intuitive visual characteristics while incorporating interactive features. By mid-2010, China' s online video users had reached 265 million, demonstrating strong appeal among young users. Currently, numerous domestic network television platforms and playback devices—including televisions, computers, mobile phones, various video APP platforms, and web browsers—have facilitated the dissemination and development

of Internet television among users.

4. Reflections on New Media Development

As a product of its time, new media has emerged in response to technological development, yet the absence of technical standards and industrial models often constrains its growth. Therefore, new media development should establish appropriate standards and industrial models based on China' s laws and regulations alongside broadcast television technology systems.

With the development of information and network technologies, new media has gained unprecedented popularity and development space among the masses. First and foremost, standards for new media must be formulated within the constraints of national laws and regulations. The broadcast industry should adopt an open and cooperative attitude in industrial development, focusing on market prospects rather than short-term profit sharing to ensure rapid and long-term development of new media.

Additionally, new media technology development requires greater talent reserves and cultivation, including technical, operational, and management personnel who adapt to the times. Only with a cohort of high-quality, high-tech, and high-skill professionals can the new media industry forge ahead and reach new heights in the new era.

New media development has opened new avenues for broadcast television dissemination, created new economic growth points, and expanded service domains and functions, offering unique capabilities to meet the diverse needs of growing user groups with greater convenience and speed. As a product of the new era, new media possesses distinctive characteristics and numerous users, demonstrating tremendous advantages and features in broadcast television dissemination applications. We should continuously optimize new media and formulate relevant policies and laws to further highlight these advantages, guide scientific and sustainable healthy development of new media, and enable the people to receive broadcast information more conveniently, rapidly, and effectively.

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