Design and Application of Converged Media Comprehensive Studios for Television Stations: Postprint

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Abstract

China has now fully entered the Internet era, and the media industry, capitalizing on the highly favorable trend of "leveraging strong winds to soar into the clouds,"continuously deepens its integration with emerging media. On this basis, integrated converged media studio spaces that extensively adopt models such as multi-zone, multi-level, and interactive control technology have been further improved to fully meet the demands of media convergence development. As the integrated converged media studio enriches the expressive forms of traditional panoramic studios and enables flexible, random switching of program scenes, audiences can obtain a more intuitive viewing experience. This paper aims to explore the design and application of integrated converged media studios for television stations.

Full Text

Preamble

Title: Design and Application of Integrated Converged Media Studios for Television Stations

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Abstract: China has fully entered the Internet era, and the media industry is undergoing deep integration with emerging media, riding the wave of this favorable trend. To meet the demands of media convergence development, integrated studio spaces employing multi-zone, multi-level, and interactive control technologies have been further refined. Converged media integrated studios not only enrich the expressive forms of traditional panoramic studios but also enable

flexible random switching of program scenes, providing audiences with more intuitive viewing experiences. This paper explores the design and application of integrated converged media studios for television stations.

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With the widespread adoption of new media communication methods in recent years, China' s radio and television departments have continuously integrated Internet applications into technical platform construction, merging new media with traditional media to build more interactive converged media integrated studios. New media' s high interactivity not only enhances the influence of television media dissemination but also significantly improves its novelty. From a long-term development perspective, the construction of converged media integrated studios marks the increasing maturity of new media.

1. Traditional Studio Program Production Process

Specifically, traditional studio technical systems can be divided into camera systems, master control switching systems, and audio systems, along with essential hardware equipment such as speakers, lighting consoles, and cameras. Each system' s equipment operates independently in traditional studios, with every role properly managed and effectively controlled to provide reliable and high-quality technical support for program production. However, all materials must be pre-edited by responsible personnel. In this scenario, when breaking news occurs, the ability to adapt packaging flexibly is compromised, and interactive capabilities between programs and audiences are significantly weakened.

2. Features of Modern Converged Media Integrated Studios

Modern television media technology has developed rapidly. Previously, single-function studios could only employ simple broadcasting methods that no longer meet current audience needs or align with intelligent development trends. This has led to the emergence of integrated converged media studios.

2.1 Environmental Protection, Energy Saving, Safety, and Practicality

From a functional analysis perspective, converged media integrated studios employ holistic planning between zones rather than simple partitioning. The design adheres to principles of environmental protection, energy efficiency, safety, and practicality, enabling seamless transitions throughout the space. Functionally, the design is stylish, elegant, concise, and meticulous, with each broadcasting area clearly delineated by distinct colors, allowing hosts to choose between standing or sitting presentation styles.

2.2 Close Integration and Interactive Communication

In converged media integrated studios, camera lenses can follow hosts as they move between standing and sitting positions, maintaining perfect composition throughout and presenting it to the audience. Additionally, various zones within the studio can employ real-scene presentation, intelligent virtual scenes, and large-screen displays, enabling audiences to participate in commentary and interaction at any time. This maintains close connections and effective integration between zones, facilitating more frequent information exchange and allowing the entire system to better meet the filming and production needs of different programs. Furthermore, audiences gain greater participation and novel experiences during viewing, gradually strengthening program innovation and providing continuous momentum for the long-term development of television media [1].

2.3 Combination of Virtual and Real, Interactive Shuttling

When designing studio zones, multiple technologies are fully integrated to achieve the combination of virtual and real elements based on future all-media program production needs. Through program scheduling, news information can achieve flexible transitions between multiple moving shots accompanied by hosts in different postures, with natural and efficient transition effects. This also simplifies the entire program production workflow, fully demonstrating the personality and characteristics of each program and significantly improving overall production efficiency.

2.4 Panoramic Design and Rational Spatial Layout

The lighting design and stage art effects of converged media integrated studios are planned holistically, employing practical solutions similar to the studio' s stage art style and combining them with real dimensions. Following panoramic and multi-camera shooting requirements, this approach ensures more natural and unified colors and meticulous, rational spatial layout, allowing audiences to experience a bright and concise contemporary feel that meets the production needs of various programs.

3. Design Scheme for Interactive Platform of Converged Media Integrated Studios

3.1 Design Objectives

3.1.1 Breaking Traditional Spatial Limitations Previously, program recording could only proceed within the limited physical space of the studio during operation. Because studio space has a specific area, it cannot accommodate too many staff members and recording equipment, significantly constraining program innovation [2]. However, using converged media interactive platforms and technologies can completely break through these spatial limitations, seamlessly linking audiences and spaces outside the studio with the actual studio to form an interactive whole from inside to outside. This greatly expands the operational space of the studio, providing better conditions for media program innovation and enabling flexible production according to creative ideas, while audiences also obtain fresher viewing experiences.

3.1.2 Strengthening Data Resources Traditional media studios have relatively single channels for obtaining data resources because each system operates independently, requiring pre-prepared data resources for program broadcasting. This approach only allows for the utilization of very limited data resources. The well-designed interactive platform of converged media integrated studios can completely open up resource acquisition channels, providing richer usable resources. By flexibly utilizing the Internet and advanced technical means, the interactive platform effectively connects studio systems with the Internet, collecting richer materials according to operational needs and transmitting them to the studio system via the Internet. The interactive platform' s data processing system can then analyze and flexibly transform these materials, providing converged media integrated studios with more abundant resources and broadening development channels for program production innovation.

3.1.3 Gradually Enhancing Audience-Studio Stickiness During previous program broadcasts, traditional media studios were completely isolated from audiences, who could only watch programs on television screens, maintaining considerable distance from the content. However, building converged media integrated studios creates a solid bridge for good interaction between audiences and programs. This allows audiences to gain better participation experiences during viewing, strengthening their stickiness to the studio [3]. As audiences grow increasingly fond of programs and become loyal long-term viewers, programs achieve sustainable development strategies.

3.2 Adopting Multi-dimensional Space Design

When designing converged media integrated studio platforms, network information interaction technology should be fully utilized to expand program space and transform it toward a multi-dimensional spatial model. This design approach

ensures that program participants can fully engage in television program recording even if they are not physically present in the studio, solving the traditional problem that all participants must be in the studio. Additionally, during program recording, the number of participants and participation methods are no longer restricted. Furthermore, converged media integrated studios can flexibly switch between multiple interfaces, allowing television program participants to be in different spaces while appearing simultaneously in one program through switching assistance, flexibly achieving multi-dimensional space conversion.

3.3 Interactive Integrated Information Data Design

The interactive data information integration system structure should be incorporated into the converged media studio information system to ensure good interaction between audiences and television programs. Through this design pattern, hosts in the studio can interact with field reporters and other external personnel at any time during program broadcasting, laying a solid foundation for studio-audience interaction. Moreover, various channels can be used to collect and organize audience interaction information through data integration systems, transmitting this information to the studio. Hosts can then fully understand audience thoughts in real-time, answer questions on the spot, and engage in closer, more effective interaction with audiences [4]. After television programs are broadcast, the system can also be used to analyze interaction information between programs and audiences in detail, gaining profound understanding of audience thoughts and feelings to optimize television program content.

3.4 Ensuring Audience Participation to a Greater Extent

During the design of interactive technology platforms for converged media integrated studios, audiences should be provided with more authentic participation experiences to continuously enhance their sense of involvement and direct experience. The interactive technology platform can integrate and collect all audience comments during live television broadcasting, carefully analyzing audience suggestions to continuously optimize and improve program content. In this scenario, audiences will increasingly recognize the program, considering the production team very thoughtful, thereby continuously improving audience participation and promoting long-term appreciation for the program.

3.5 Promoting Greater Diversification of Television Programs

Converged media integrated studio interactive technology encompasses multiple advanced technologies that television programs can utilize to become more diversified and enriched. Additionally, relevant television media programs can select appropriate technologies according to actual needs, constructing diverse program formats and rich content to enable more possibilities for interactive modes. Audiences can also obtain richer viewing experiences through diversified program content. When designing and producing programs, producers need to comprehensively analyze audience interaction information, fully understand

audience suggestions and expectations, and optimize television programs with greater specificity. Furthermore, relevant television program designers need to continuously learn and master current popular elements and fresh resources, appropriately incorporating them into television programs to improve ratings.

4. Construction Strategy for Interactive Technology Platform of Converged Media Integrated Studios

4.1 Acquisition System

The data acquisition system can comprehensively collect required studio data information through external data links. This information mainly includes audience messages during viewing, which can be gathered through channels such as Weibo, Tieba, WeChat, bullet comments, or official accounts. The information may be rich images, detailed text summaries, or vivid videos. Although audiences have multiple messaging methods, the system ensures complete collection.

4.2 Organization System

The system that uniformly analyzes, organizes, and archives collected backend data is called the data organization system, which can effectively output specific data analysis results. Due to its high degree of enclosure, this system can largely ensure information security and integrity while preventing data leakage.

4.3 Broadcast Control System

The acquired data information content requires careful review, a process that utilizes the data broadcast control system. This system enables data interoperability and gradually enriches interactive content and forms.

4.4 Interactive System

Interactive systems have various forms: First, the voting module. During television program broadcasting, hosts can interact with audiences through common real-time online voting methods. Through this approach, backend managers can maintain voting content via mobile terminals or website terminals, adjusting voting options and modifying questions to meet user needs [5]. During setup and maintenance, administrators must guard against potential malicious voting and prevent technical repetition to ensure fairness and justice. Administrators must also carefully count real-time votes, publishing results through Weibo or official accounts. Second, the comment module. Audiences can evaluate program content through Weibo official accounts or Tieba according to their needs, and administrators will process these comments or reply promptly. Third, the survey module. When investigating program popularity, administrators can flexibly distribute questionnaires to audiences online, setting time-saving multiple-choice or short-answer questions. After the deadline, the backend collects and statistically analyzes these questionnaires, outputting final result reports through

the survey module. Fourth, prize quizzes. Program teams can set up diverse quiz questions for audiences, who can answer them during viewing. After a period, the program team publishes correct answers and final statistics. Fifth, the management module, specifically the QR code management module, mainly provided for smartphone users widely using WeChat. During program broadcasting, audiences can open WeChat' s scan function to enter the interactive page and maintain high program participation. This QR code requires specialized staff setup.

4.5 Management System

Television program management involves numerous aspects, including management of on-site emergencies, guest and contestant positioning, and statistics for elimination and advancement segments [6]. Through the management system, detailed statistics on personal information and interaction data of on-site guests and contestants can be processed in real-time, effectively controlling program rhythm and atmosphere.

4.6 Interactive Management

All interactive broadcasting segments during program transmission can be effectively managed through the overall interactive system, which requires processing by backend terminal administrators. This approach effectively integrates all management modules to achieve organic unity, classifies and archives specific information for effective storage, and enables future review when auditing issues [7]. Converged media interactive management represents an important innovation, fully embodying the close integration of new media and television media. On the technical level, it can fully mobilize all systems and screens of converged media integrated studios while accessing multiple signals and resources, enabling 联动 between screens. Program content can also achieve seamless linking through new media methods, enabling three-dimensional broadcasting both inside and outside the venue, with audiences participating through mobile clients or WeChat. Operationally, it can prioritize capturing more audience markets, effectively supplementing television program operation models, and achieving final value-added effects while gradually improving service levels.

In summary, the construction of converged media integrated studios is both an era development requirement and a specific need for integrated media communication in the new age. Taking traditional studios as the core, a complete set of large-scale interactive information systems has been gradually expanded, enriching television program broadcasting formats, enhancing program content with novelty, and comprehensively demonstrating the main characteristics of flexibly obtaining massive resources, achieving multi-screen 联动, and widely conducting network broadcasting. This allows audiences to experience the immediacy of new media from multiple perspectives. In the future, it is believed that all domestic television station studios will comprehensively develop toward informatization, networking, and interactivity, requiring necessary overall reforms

in television programs to promote close integration between network technology and business levels. On this basis, technical personnel need to continuously devote more effort to the technical system transformation of television stations to ensure continuous innovation and sustainable, steady development of television program technology.

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