# Preliminary Exploration of Broadcasting Program Production Technology Applications in Digital Environments (Postprint)

**Authors:** Fu Linsen

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

## Abstract

With the continuous advancement of national scientific and technological capabilities, the broadcasting and television sector has achieved substantial development. In today' s digital environment, modern technologies such as computer technology, multimedia technology, and network information technology have been developing rapidly, which not only enhances the convenience and efficiency of people' s lives and work, but also creates favorable conditions for the further advancement of the broadcasting and television industry. Currently, the application of various modern technologies in broadcasting and television program production has effectively improved both the quality and efficiency of production while simultaneously reducing associated costs. This paper presents a relevant elaboration and analysis concerning the application of broadcasting and television program production technologies within the digital environment.

## Full Text

### A Preliminary Exploration of Broadcasting Television Program Production Technology Applications in the Digital Environment

**Abstract:** With the continuous advancement of China' s scientific and technological capabilities, the broadcasting and television sector has achieved substantial development. In today' s digital environment, modern technologies such as computer technology, multimedia technology, and network information technology have been developing rapidly, not only making people' s lives and work more convenient and efficient but also creating favorable conditions for the further development of the broadcasting and television field. Currently, the application of various modern technologies in broadcasting television program

production has effectively improved both the quality and efficiency of production while significantly reducing production costs. This paper elaborates on the application of broadcasting television program production technologies in the digital environment.

**Keywords:** digital environment; broadcasting television programs; production technology; application

**CLC Number:** TN948.1
**Document Code:** A
**Article ID:** 1671-0134(2018)12-059-02
**DOI:** 10.19483/j.cnki.11-4653/n.2018.12.023

**By Fu Linsen**

In today' s digital environment, various modern technologies are widely applied in the broadcasting and television field, effectively promoting innovative development in this sector and driving the digitalization and specialization of broadcasting television program production technology. This trend represents the primary future development direction in China's broadcasting television program production field. Through the application of these modern technologies, the production media for broadcasting television programs have been substantially enriched, and the overall production level has been effectively enhanced. Currently, in broadcasting television program production, the efficiency of information collection, processing, and dissemination has improved dramatically compared to the past. Therefore, media professionals must place greater emphasis on the integrated application of modern technologies—including computer technology, multimedia technology, and network information technology—to continuously elevate the digital level of broadcasting television programs and produce high-quality, sophisticated programs for audiences.

## 1. Development Overview of China' s Broadcasting Television Program Production

Broadcasting television program production refers to the process by which radio or television stations effectively integrate and process broadcast content. In producing broadcasting television programs, it is necessary to divide the broadcast content according to corresponding time slots while simultaneously employing non-linear transmission methods. Only in this way can the dissemination efficiency of broadcasting television programs be effectively improved and the production objectives achieved.

To date, China's broadcasting television program production field has undergone more than seventy years of development, experiencing three distinct stages. The first stage can be called the initial phase. During this period, China' s broadcasting television program production level was relatively backward, lacking both advanced production experience and independent innovation capabilities. Moreover, program formats were relatively monotonous, consisting primarily of

documentaries and propaganda programs. The second stage can be termed the comprehensive development phase, occurring in the mid-to-late 1990s. During this period, China' s broadcasting television program production level improved substantially, gaining technological innovation capabilities with more diversified program formats and content. The third stage can be called the digital development phase. In this stage, various modern technologies have been widely applied in broadcasting television program production, driving the digitalization and specialization of production technology—representing the primary future development trend in China' s broadcasting television program production field.

## 2. Significance of Applying Digital Technology in Broadcasting Television Program Production

First, applying digital technology in broadcasting television program production can effectively enhance production efficiency. By leveraging digital technology, on the one hand, materials for broadcasting television programs can be rapidly collected and processed, thereby improving production quality and efficiency; on the other hand, information can be efficiently disseminated through the internet, enhancing the timeliness of broadcasting television programs.

Second, applying digital technology in broadcasting television program production effectively optimizes the production model and streamlines the production workflow. In this process, technical professionals from different fields can exchange and share technologies and experiences via the internet, thereby improving production efficiency and reducing production costs.

## 3. Application of Key Digital Technologies

### 3.1 Digital Editing Technology

In today' s digital environment, digital editing technology has been increasingly widely applied in broadcasting television program production. Digital editing technology refers to the use of computer technology, communication technology, and network technology to conduct topic planning, manuscript organization, editing and processing, proofreading and review, and operational maintenance and publishing of text, images, audio, and other information. The application of digital editing technology not only creates favorable conditions for editorial innovation in broadcasting television programs but also promotes the networking and digitalization of broadcasting television program production, thereby enhancing production efficiency and quality. Additionally, through video servers, high-speed transmission of broadcasting television program content can be achieved.

Currently, China' s broadcasting television stations—from CCTV to provincial and municipal satellite TV stations, down to district and county-level stations—have adopted non-linear editing systems. These systems, based on digital non-linear editing technology, encompass nearly all functions of traditional post-

production equipment, providing powerful support for broadcasting television program production. First, non-linear editing systems ensure signal acquisition quality in broadcasting television program production. In the past, when using videotapes for editing, numerous "dubbing" iterations were often required to achieve better program effects, resulting in signal quality degradation. To ensure signal quality, media producers had to abandon many worthwhile artistic concepts. However, with non-linear editing systems, no amount of editing or processing affects signal quality, substantially improving production standards. Second, traditional editing methods required extensive mechanical repetitive labor. With non-linear editing systems, since materials are stored on computer hard drives, they can be conveniently accessed and edited, and frame-by-frame searching becomes much faster, making the entire editing process highly convenient and flexible. Moreover, diverse special effects enrich broadcasting television programs. Finally, non-linear editing systems effectively reduce production costs due to their high integration characteristics, which minimize the equipment needed for post-production.

### 3.2 Digital Multimedia Technology

In today' s digital environment, digital multimedia technology has gradually become a crucial technology in broadcasting television program production. Digital multimedia technology refers to the comprehensive processing and management of text, data, graphics, images, animation, sound, and other media information using computers. First, applying digital multimedia technology in broadcasting television program production creates favorable conditions for the recording phase. During program recording, digital multimedia technology enables convenient setting and capture of in/out points for individual shots on computers, substantially improving recording efficiency. Additionally, it allows convenient modification and adjustment of any shot during production. Second, digital multimedia technology effectively enhances special effects rendering in broadcasting television programs. For example, it can be applied to improve special effects rendering for program intros, outros, and titles. Finally, digital multimedia technology promotes the integrated application of graphic television technology, multi-channel transmission technology, and digital information transmission technology, enriching broadcasting television program content.

### 3.3 Virtual Reality Technology

Currently, virtual reality technologies such as blue screen, green screen, 3D high-definition virtual, and VR have been widely applied in major broadcasting television stations during program production. Virtual reality technology is a computer simulation system that can create simulated realistic virtual environments using computer equipment. In such virtual environments, users can interact with the virtual environment through multiple sensory channels including auditory, visual, and tactile feedback, obtaining a completely new experience. Virtual studio technology, frequently used in broadcasting television program

production, is based on virtual reality technology and represents an effective combination of VR and chroma key technology. Virtual studio technology can effectively merge real footage captured by cameras with three-dimensional virtual scenes generated by computer equipment, making it highly suitable for pre-production phases of broadcasting television programs. For instance, in sports program production, virtual studio technology can provide audiences with multi-angle dynamic three-dimensional visuals, presenting the competition from multiple perspectives and giving viewers a multi-angle visual experience. Additionally, virtual reality technology can be applied in documentary production to enhance production quality. In traditional documentary production, creative concepts and methods were often relatively monotonous, resulting in documentaries that were overly dull, lacking in intuitiveness and realism. In today' s digital environment, virtual reality technology not only drives innovative development in documentary creation methods but also effectively enhances the appeal of documentaries, making their broadcast effects more intuitive and realistic.

In summary, in today' s digital environment, various modern technologies have been widely applied in broadcasting television program production, effectively improving both production efficiency and quality. Therefore, in the future development of broadcasting television program production, media professionals must emphasize the integrated application of digital technology to promote sustainable development in the field and produce more sophisticated programs for audiences.

## References

[1] Shao Jueyi. A Brief Analysis of the Development Trend of Broadcasting Television Program Production Technology in the Digital Environment [J]. Art Science and Technology, 2014(6): 81.

[2] Huang Huan. Research on Television Creation Theory—Based on the Thinking Dimensions of Television "Technology" and "Creativity" [D]. Wuhan: Huazhong University of Science and Technology, 2011.

[3] Yin Weiping. Discussion on the Application of Broadcasting Television Program Production Technology in the Digital Environment [J]. New Media Research, 2015(14): 28-29.

[4] Sun Fei. Development Trends of Broadcasting Television Program Production Technology in the Digital Environment [J]. News Research Guide, 2015(17): 35-36.

[5] Yang Zhijun. Production and Characteristics of Digital Educational Television Programs [J]. Journal of Chongqing University of Posts and Telecommunications (Social Science Edition), 2006(6): 956-957.

[6] Yang Xiaohong. On the Optimal Design of Fully Digital Television Program Production Environment [J]. e-Education Research, 2013(10): 66-69.

**(Author's Affiliation: Chongqing Bishan District Radio and Television Station)**

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