Advantages and Development of Mobile Network Digital Broadcasting Technology: Post-Print

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Abstract

In recent years, with China's continuously improving scientific and technological capabilities, coupled with advancements in mobile communication and Internet technologies, the nation has progressed from the initial 2G era to the current 4G era. The widespread availability of networks has enhanced people's living standards, while simultaneously raising expectations for television programming, particularly in large and medium-sized cities. The broadcasting of television programs necessitates new carriers, and technological progress has facilitated the entry of mobile network digital radio and television into ordinary households, thereby establishing a crucial carrier for television program dissemination. This paper examines the current development status and advantages of mobile network digital radio and television technology, identifies relevant issues, and proposes corresponding solutions.

Full Text

Advantages and Development of Mobile Network Digital Broadcasting Television Technology

Abstract: In recent years, as China's scientific and technological capabilities have continuously improved, advances in mobile communication and internet technologies—from the initial 2G to today's 4G—have enhanced people's living standards and raised expectations for television programming. This is particularly true in large and medium-sized cities, where television broadcasting requires new carriers. Technological progress has enabled mobile network digital broadcasting television to enter ordinary households, providing a crucial new medium for television program transmission. This paper discusses the current development status and advantages of mobile network digital broadcasting television technology, identifies relevant issues, and seeks corresponding solutions.

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1.2 Development Process

The popularization of networks has driven rapid development in digital television technology. Even thousands of miles away, as long as there is network access, people can learn about events happening anywhere at any time. The rise of these emerging network-based media has brought unprecedented challenges to traditional radio and television broadcasting. However, technological innovation and development have also created new opportunities for traditional media, bringing mobile network digital broadcasting television technology into the public eye. This paper analyzes the current state of mobile network digital broadcasting television technology in China to promote technological advancement.

1.1 Development Status

With the standardization of network signal transmission protocols, most signal transmissions now use digital signals. Digital signal transmission offers strong anti-interference capabilities without noise accumulation. In contrast, analog signals frequently suffer from noise accumulation and zero-point drift caused by temperature variations. These interferences propagate between analog circuits and are amplified, easily causing accidents. Digital signals, however, can effectively handle these interferences while providing higher transmission efficiency, better signal quality, and more stable transmission. Additionally, mobile network digital broadcasting television signals are relatively convenient to edit. On the internet, any signal can be edited by simply downloading it at the network transmission terminal, using online editing software to modify the downloaded information, and then transmitting it back to the terminal—making the entire process more efficient and convenient.

2.2 Promoting Resource Sharing and Improving Efficiency

Mobile network digital broadcasting television technology can maximize resource utilization and improve efficiency by enabling more effective resource allocation and use. Specifically, compared with traditional methods, the resource production process has been streamlined, allowing more resources to be produced in shorter timeframes and significantly improving work efficiency. Meanwhile, since the signal carrier for mobile network digital broadcasting television is the internet, it enables high-level resource sharing, similar to browsing web pages or videos online. Multiple users can access resources simultaneously

without interfering with each other, effectively achieving resource sharing. Signal transmission and distribution under a unified protocol become faster and more convenient.

2.3 High Television Picture Quality

Mobile network digital broadcasting television technology represents a high-tech product of the network digitalization process. Digital signal transmission provides strong anti-interference capabilities without noise accumulation, ensuring better signal quality. Digital signal transmission and noise processing are relatively easy to filter—simply maintaining stable electrical signals within fixed time periods. Simultaneously, digital conversion enables better anti-interference capabilities, reducing erroneous information transmission and ensuring higher signal transmission quality for an improved television viewing experience.

3. Development Prospects of Mobile Network Digital Broadcasting Television Technology

With technological advances in internet technology, mobile communication, and smart terminals, mobile network digital broadcasting television integrated with mobile internet technology has bright development prospects. It provides audiences with more convenient access to news and entertainment, enriching people's cultural lives. The technology offers greater flexibility compared to traditional fixed-schedule television programming. With network-connected television, people can freely arrange their viewing time, independently selecting and watching programs during their leisure time, and participating in interactive program elements through innovative mobile terminal applications. This better satisfies people's aspirations for a better life. Furthermore, mobile network digital broadcasting television is not constrained by time or location, providing broadcasting services anytime and anywhere while offering great convenience for program production and broadcasting. In the information age, mobile network digital broadcasting television has vast development prospects and can effectively expand the broadcasting market to meet people's growing cultural needs. The industry should seize this opportunity to actively demonstrate its advantages to the public and rapidly capture the market by leveraging information technology development.

4.1 Network Issues

As the signal transmission channel for mobile network digital broadcasting television, inadequate network infrastructure would negate the technology's inherent advantages. Therefore, during technological innovation, we should embrace cutting-edge technologies such as the emerging 5G technology, applying it fully to mobile network digital broadcasting television to achieve better transmission speeds and network carriers. We must actively seek solutions to the main problems existing in mobile network digital broadcasting television technology.

4.2 Signal Source Issues

With technological progress and the arrival of the mobile internet era, traditional media have gradually converged under the influence of mobile internet. Information technology updates have enriched signal sources for mobile network digital broadcasting television—televisions can receive corresponding signals as long as they are transmitted to the internet. However, this also creates problems: numerous and complex signal sources can compromise signal quality, raising concerns about signal source transmission security. Relevant authorities must pay attention to this issue and strengthen industry supervision and management.

4.3 Smart Terminal Applications

Smartphone and tablet application stores have become convenient channels for people to access services through mobile internet. Mobile network digital broadcasting television ultimately reaches users through smart terminal applications (Apps), fulfilling people's desire to watch desired programs anytime and anywhere. These applications transform every smartphone into an upgraded network set-top box, enabling not only radio and television program reception but also audience participation through rich interactive features such as "shake-to-control-TV," prize quizzes, and remote connections, enhancing engagement and entertainment value. However, mobile network digital broadcasting television requires Apps designed for different brands and system versions of smart terminals. Application problems can cause signal transmission issues and compromise service quality. Therefore, we must innovate technology to ensure the development and operational quality of smart terminal applications. Resolving these issues will significantly improve mobile network digital broadcasting television services, so we should fully utilize technological innovation to address corresponding problems.

5. Conclusion

In summary, mobile network digital broadcasting television technology has been well applied, particularly in most developed regions. However, given China's large population, there remains a vast market potential. With inherent advantages such as freedom from temporal and spatial constraints and high video quality, mobile network digital broadcasting television has a bright future. Related issues—including signal source problems, network issues, and application development and maintenance challenges—will be resolved through continuous technological innovation.

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