Postprint: Application of 5G Technology in Media Convergence Development

Authors: Luan Qincheng

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

Abstract

With the development of computers and the Internet, 5G technology has been widely applied across various industry sectors, exerting significant influence on the innovative development of media convergence. Within media convergence development, aspects such as media signal transmission and sharing have demonstrated favorable development momentum. The application and innovation of 5G technology provide robust technical support for media convergence in modern communication and development environments. This paper analyzes 5G technology and its characteristics, examines the application value of 5G technology in media convergence development, and investigates the specific applications of 5G technology in media convergence, providing a reference for related research.

Full Text

Application of 5G Technology in Media Convergence Development

Luan Qincheng
Shandong Qixia City Media Convergence Center, Qixia, Shandong 265300

Abstract

With the development of computers and the Internet, 5G technology has been widely applied across various industries, exerting significant influence on the innovative development of media convergence. In media convergence development, particularly in media signal transmission and sharing, a favorable development momentum has emerged. The application and innovation of 5G technology provide robust technical support for media convergence in the modern communication and development environment. This paper analyzes 5G technology

and its characteristics, examines its application value in media convergence development, and investigates the specific applications of 5G technology in media convergence for reference.

Keywords: 5G technology; 5G characteristics; resource sharing; remote interaction; acquisition-broadcasting system
Classification: G206
Document code: A
Article ID: 1671-0134(2022)01-048-03
DOI: 10.19483/j.cnki.11-4653/n.2022.01.012

Citation format: Luan Qincheng. Application of 5G Technology in Media Convergence Development [J]. China Media Technology, 2022(01):48-50.

5G technology is a crucial core technology driving innovative development across various industries in China. By leveraging its functional advantages such as higher bandwidth, ultra-connectivity, and ultra-low latency, 5G can create more opportunities for innovation in various sectors, thereby promoting comprehensive improvements in China' s socio-economic development and scientific and technological advancement [1]. In media convergence development, the effective introduction and application of 5G technology not only provide more favorable technical guidance and support for media convergence and innovation, but also promote further realization of media convergence and innovation in the modern communication environment, playing a very positive role and significance. The following sections analyze 5G technology and its characteristics, examine its application value in media convergence development, and investigate the specific applications of 5G technology in media convergence for reference.

1. Analysis of 5G Technology and Its Characteristics

As a new communication technology, 5G is realized through continuous research, innovation, and improvement based on traditional technologies. The application of 5G technology in media convergence development not only positively influences breakthroughs in information technology within the media communication field, but also effectively accelerates the pace of media convergence innovation, enabling effective distribution and dissemination of information content in the shortest possible time to meet the demands of information content in the new era of media communication and convergence innovation [2]. Research on the application of 5G technology in media convergence development continuously expands its influence, thereby promoting the increasing importance and timeliness of information dissemination in the context of media convergence and accelerating the enhancement of media convergence development status and influence. The main characteristics of 5G technology can be briefly analyzed from the following aspects.

1.1 High Spectrum Utilization

One of the most prominent features of 5G technology is its high spectrum utilization. In media convergence development, although research and improvement of high-frequency radio wave penetration capability represents an important direction and trend, the overall spectrum utilization rate continues to show an upward trend. The application of technical forms such as wireless and wired broadband technology convergence and radio-over-fiber networking in media convergence development has not been limited by the penetration capability of high-frequency radio waves, and their overall application effects remain very significant [3]. Therefore, it can be seen that 5G technology and its application in media convergence development feature prominently high spectrum utilization efficiency.

1.2 Effective Reduction of Energy Consumption and Operational Costs

The innovation of 5G technology centers on wireless networks and software configuration. The effective application of 5G technology in media convergence development enables dynamic management of business traffic and allows for rational adjustment of network resources according to changes in business traffic, thereby promoting effective utilization and improving resource utilization efficiency in media convergence development supported by 5G technology while reducing resource consumption and cost occupation. Thus, reducing operational costs and resource consumption represents one of the outstanding characteristics and advantages of 5G technology application in media convergence development.

1.3 Significant Improvement of Communication System Performance

In media convergence development, communication system support constitutes an important foundation for media convergence and communication development. Media convergence focuses on expanding the influence scope of information dissemination, applying information technologies such as information coding/decoding and point-to-point physical layer technologies to promote the quality and efficiency of information dissemination and gradually expand its influence. It should be noted that traditional communication systems applied in media convergence and information dissemination inevitably suffer from various influencing factors, requiring further research to improve their system performance and functional roles. The application of 5G technology in media convergence development can effectively solve these existing problems and limitations, overcome adverse effects on media convergence innovation development, and aim for collaborative networking construction among multiple points, multiple antennas, and multiple users. By continuously improving network structure and enhancing communication system spectrum efficiency, 5G technology promotes the expansion of communication system capacity and effective development and utilization of new spectrum resources, creating more favorable conditions for media convergence development under 5G technology [4].

2. Application Value Analysis of 5G Technology in Media Convergence Development

2.1 Media Convergence and Its Development Trends

Driven by the rapid development of the Internet and mobile Internet, media convergence has promoted transformative changes in the media communication landscape. Meanwhile, as modern advanced technologies such as artificial intelligence and big data impact traditional information production and communication methods, coupled with the emergence of increasingly diverse media expression methods and new media communication development, media convergence has gradually evolved to meet audience demands for large-capacity, open, mobile, and interactive information dissemination in the new media environment. This has become an inevitable trend and important direction for media communication and development in China [5]. The gradual maturation and widespread application of 5G technology have also created certain opportunities and challenges for media convergence development.

Media convergence development can be analyzed through three distinct stages: (1) **New Media Construction Stage**: This stage focuses on new media construction, which gradually drives media communication toward a more three-dimensional communication pattern. (2) **Media Convergence Stage**: The core of this stage is unified planning for all media and multi-channel integrated production. Through resource integration and optimization, business process reengineering and innovation are achieved. In this stage, traditional media combines new media technology with traditional media communication advantages to establish integrated media communication platforms, providing strong support for media convergence development [6]. Examples include the "Media Cube" established by Zhejiang Daily Press Group and various "media cloud platforms" built by broadcasting systems, such as Hubei Radio and Television' s "Changjiang Cloud" and Jiangsu Broadcasting Corporation' s "Lychee Cloud," all representing multimedia convergence development of traditional newspapers and radio/television media. (3) **Deep Media Convergence Development Stage**: This stage focuses on solving the transformation and development problems of traditional media. Through comprehensive media convergence platform construction and deepening media operations, this stage achieves value reshaping of traditional media communication development while providing strong environmental support for their transformation. Notably, during deep media convergence development, traditional media gradually shifts the focus of convergence platform construction and media operation innovation from integrated production and distribution to integrated operation services. Based on deep media convergence development, media coverage continuously expands, and user connection reconstruction is achieved through product operations, thereby providing strong momentum for traditional media innovation development in the media convergence environment under the dual drive of content production and operation service innovation, and promoting continuous deepening of media convergence.

2.2 Application Value of 5G Technology in Media Convergence Development

The application of 5G technology promotes the full display and utilization of its advantages through continuous communication technology transformation. 5G technology features prominently higher bandwidth, ultra-reliable low latency, and massive connectivity, effectively satisfying not only personal communication needs but also supporting communication demands across various industries [7]. As a new technology innovated based on 4G technology, 5G not only retains and expands the advantages of 4G but also creates more intelligent functions, demonstrating more prominent advantages in practical applications. The application value of 5G technology in media convergence development can be analyzed from the following aspects:

(1) It promotes significant improvement and enhancement of network service capabilities for media communication, innovates and changes traditional communication development models, and drives the evolution from singular technical means toward diversified technical systems in media communication. Furthermore, media convergence development supported by 5G technology, employing advanced wireless communication transmission technology as the main technical means, plays a very positive role in substantially improving network resource utilization efficiency in media convergence development.

(2) It fully considers the prospects of media convergence development. In media convergence development, improving and enhancing resource utilization efficiency for media convergence communication and development —including visible light, high-frequency bands, and millimeter-wave content—promotes the gradual expansion of wireless mobile communication resources, thereby fully leveraging the advantages of 5G technology and its positive role in media convergence development.

(3) The application of 5G technology in media convergence development also promotes the re-optimization, adjustment, and improvement of the media convergence development system structure, shifting focus from superficial or partial work to in-depth exploration of media convergence characteristics and capabilities through 5G technology application. This promotes the maximization of capabilities under media convergence development and ultimately achieves comprehensive construction of intelligent integrated media systems, providing strong support for deeper and more complete media convergence development.

3. Research on Specific Applications of 5G Technology in Media Convergence Development

3.1 Application in Information Dissemination

Taking radio and television news communication as an example of media convergence development, the application of 5G technology in media information dissemination involves comprehensive consideration of factors such as media information collection and publishing speed, providing effective support for specific work operations through 5G technology application. With 5G technology support, information data collection, organization, analysis, effective classification, transmission, sharing, and storage in media communication and development can all be professionally detected and analyzed through 5G technology and related systems, with accurate grasp of data information transmission efficiency during detection and analysis to provide strong support for media convergence development and its innovation realization [8]. For instance, in reporting a breaking news event, the selection and application of network technology significantly impact audience access to news information through various channels and the timeliness of information dissemination. 5G technology, with its prominent advantages of high bandwidth and low latency, demonstrates particularly effective results in news information dissemination applications. As shown in Figure 1 [Figure 1: see original paper], the artificial intelligence ecosystem built on 5G technology for the main station plays a significant and effective role in information dissemination within media convergence development.

3.2 Application in Resource Sharing

In the big data environment, the application of 5G technology in media convergence development not only significantly improves the speed and efficiency of information collection, transmission, and analysis in media communication, but also provides strong support for data sharing realization in information dissemination [9]. In media convergence development, the application of 5G technology in media communication information data resource sharing mainly manifests in resource management and sharing capacity building. Taking radio and television communication development as an example, as broadcasting departments increasingly emphasize 5G technology application in information dissemination, various media platforms actively build sharing and exchange collaboration platforms. The application of these platforms not only provides certain innovative support for transforming traditional operation and development models of media communication, but also demonstrates significant effects in meeting information data sharing needs across media communication.

3.3 Application in Remote Interaction Systems

In media convergence development, the application of 5G technology in remote interaction system construction mainly considers static scenarios and application conditions. By selecting ultra-high-definition video acquisition and trans-

mission methods and building upon wired communication transmission for data collection and transmission, 5G technology significantly improves overall speed and efficiency. When innovating remote interaction systems for media convergence communication and development, 5G technology can also transform wired transmission into microwave transmission and utilize satellite technology to effectively solve problems such as bandwidth congestion and slow signal transmission in remote live broadcasting, meeting the stable transmission and broadcasting needs of high-definition video information data [10]. Additionally, 5G technology application in media convergence development can provide active support for various work operations in media convergence communication and development through effective support for remote interaction system construction and corresponding system establishment.

3.4 Application in Temporal and Spatial Dimensions of Information Dissemination

In media convergence development, 5G technology application is not constrained by time and space factors, playing a very positive role and demonstrating significant effects in improving the timeliness of media communication information data. In media communication development, information dissemination timeliness has crucial impacts on media survival and development. In supporting timeliness for media communication information, 5G technology can effectively innovate information data dissemination and development pathways. Based on functional expansion of 5G technology and through collaborative cooperation among various network platforms, continuous research on innovative development pathways can be achieved, providing better foundations and support for media convergence development in the new media era and promoting diversified development of media communication content and program formats [11].

3.5 Application in Acquisition-Broadcasting Systems

In media convergence development, 5G technology-supported media acquisition-broadcasting system construction benefits from 5G technology' s inherent characteristics of ultra-large bandwidth and low latency, combined with integrated development advantages with cloud service capabilities, providing more reliable technical support. Using 5G network communication technology for information transmission support enables high-bandwidth, high-reliability transmission and low-latency live broadcasting of ultra-high-definition video information, thereby significantly improving acquisition-broadcasting work efficiency under media convergence [12]. Furthermore, in information data editing and processing within media convergence development, 5G technology enables collection of larger quantities of media materials and provides timely feedback on collected data and information. Throughout this process, energy consumption is significantly reduced while speed and efficiency are substantially improved. In reviewing news processing content for media communication, 5G technology also demonstrates significant advantages by transforming traditional media commu-

nication content review methods. Based on strengthened professional training and improvement of relevant staff in 5G technology application, 5G technology can be utilized for more precise review of news information and materials, thereby promoting more complete content marking and improving the work efficiency and technical level of news content review in media communication.

Conclusion

In summary, as an important core technology for innovation development across various industries in the new era, 5G technology features high spectrum utilization efficiency, significant communication system performance, and relatively low operational costs and energy consumption, playing a very positive role and exerting considerable influence on media convergence development and its innovation realization. Research on the application of 5G technology in media convergence development facilitates deeper understanding of 5G technology' s characteristic advantages, thereby promoting its effective application in media convergence innovation and driving innovative development of media convergence—making it worthy of research and attention.

References

[1] Zhou Wentao, Sun Zhinan. Analysis of the Possibility of Mainstream Media Convergence Transformation Under 5G Background [J]. News Front, 2019(3): 66-68.
[2] Song Jianwu. Comprehensive Videoization: A New Path for Cover News Media Convergence Transformation in the 5G Era [J]. Media, 2019(8): 11-12.
[3] Cao Jing, Liu Yuxi. Media Convergence Development in the 5G Era: Exploration and Reflection on Immersive Experience News by China Youth Daily [J]. News and Writing, 2020(3).
[4] Zhang Guanghui. Accelerating Media Convergence and High-Quality Development with Focus on Digital Economy and 5G Technology [J]. Chinese Journalist, 2019(1): 33-36.
[5] Liu Changfa. Building a New Media Platform for the 5G Era: The Convergence Development Practice of Upstream News [J]. News and Writing, 2019(3): 89-93.
[6] Xiong Ying, Yang Jianmin. Research on Mainstream Media Communication Methods from the Perspective of Media Convergence in the 5G Era [J]. China Media Technology, 2021(1): 39-40, 64.
[7] Cao Sanxing, Hu Qianqian. Analysis of Short Video Development Trends Under 5G and Media Convergence Background [J]. Media, 2020(11): 19-22.
[8] Leng Song. Prospect of 5G Technology Application in County-Level Media Convergence Centers [J]. Satellite TV & IP Multimedia, 2021(2): 75-76.
[9] Bai Yunxiang, Xiu Mei. Analysis of 5G Technology Application in News Reporting: Taking the 2020 Two Sessions Coverage as an Example [J]. Media Forum, 2020(21).
[10] He Qiang. Exploration of Media Application Scenarios Enabled by 5G

Technology: Taking Xinhua News Agency' s 5G Holographic Remote Interview as an Example [J]. Youth Journalist, 2020(21).
[11] Huang Bei. Examination of Elements and Scene Expression in Video Communication Discipline Under 5G Technology [J]. Video Engineering, 2020(1): 64-66.
[12] Yang Tianzi. Opportunities and Challenges Brought by 5G Technology Application to Traditional Media [J]. Public Communication of Science & Technology, 2019(18): 100-101.

Author biography: Luan Qincheng (1983-), male, from Laizhou, Shandong, Engineer. Research direction: News communication.

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