Technological Innovation Drives High-Quality Content Production —People' s Daily AI Editorial Department 3.0 Empowers Two Sessions Reporting Postprint

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Abstract

People' s Daily has consistently positioned innovative applications exemplified by AI and 5G as a critical driver for its media convergence transformation. Through deep exploration of frontline editorial and reporting needs, the organization empowers its operations with intelligence, enhances efficiency via smart technologies, and pursues mobile innovation, all aimed at constructing a new ecosystem for all-media news production. In 2022, it launched AI Editor 3.0, which augments video production with four key attributes: intelligence, cloud-based architecture, mobility, and lightweight deployment. By leveraging 5G to connect frontline and backend operations and deploying AI directly to interview scenarios, this system has reengineered the news production and dissemination workflow, driving high-quality content creation across all media platforms and significantly improving the quality and efficiency of the newspaper' s comprehensive coverage of the Two Sessions.

Full Text

Technological Innovation Driving High-Quality Content Production: People' s Daily AI Editorial Office 3.0 Empowering Two Sessions Coverage

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Abstract: People' s Daily has consistently leveraged innovative applications such as AI and 5G as critical drivers for its convergence transformation. By deeply exploring frontline editorial needs, empowering operations through intelligence, and pursuing mobile-driven innovation, the newspaper aims to build a

new ecosystem for all-media news production. In 2022, it launched AI Editorial Office 3.0, which strengthens four key characteristics: intelligentization, cloudification, mobilization, and lightweighting. With 5G connecting frontline and headquarters and AI reaching directly into reporting scenarios, the system has reshaped news production and dissemination workflows, driving high-quality all-media content creation and enhancing the efficiency and quality of the newspaper' s Two Sessions coverage.

Keywords: All-Media; Two Sessions; People' s Daily; Intelligentization; Media Convergence

1. Background

At the 12th collective study session of the Political Bureau of the CPC Central Committee, General Secretary Xi Jinping emphasized that mainstream media such as party newspapers, journals, television stations, and websites must keep pace with the times, boldly adopt new technologies, mechanisms, and models, and accelerate the pace of integrated development to maximize and optimize propaganda effectiveness [1]. In 2020, the General Office of the CPC Central Committee and the General Office of the State Council issued the "Opinions on Accelerating the In-Depth Development of Media Convergence," which stated that "we must deepen the reform of the system and mechanisms of mainstream media, establish an integrated organizational structure adapted to all-media production and dissemination, build a new-type collection and editing process, and form an intensive and efficient content production system and dissemination chain" [2].

Resolutely implementing the decisions and deployments of the Party Central Committee and starting from the actual conditions of its all-media news reporting, People' s Daily has actively explored new scenarios and applications where technology can assist all-media news production. The newspaper has continuously regarded innovative applications represented by AI and 5G as important driving forces for its convergence transformation, with the goal of building a new ecosystem for all-media news production and focusing on the application of intelligent production assistance in media content creation through deep cooperation with internet companies.

For the 2020 Two Sessions, People' s Daily partnered with Alibaba Cloud to release the AI Editorial Office, which integrated AI capabilities in "seeing," "listening," "comprehending," "reviewing," and "checking" to empower all-media news collection and production from multiple angles and in all directions. In 2021, the newspaper launched AI Editorial Office 2.0 for the Two Sessions, adding five new AI capabilities and combining them with 5G+edge computing technology to strengthen the system' s application scenarios and depth and breadth in the newspaper' s all-media production [3].

2. Technology Promoting Integration: Top-Level Design for the Newspaper' s Technological Development

To achieve the goal of "technology promoting integration" and further enhance technology' s leading, driving, and coordinating effects, People' s Daily has built a "1+2+3+4+X+N" all-media technical support system to boost the in-depth development of media convergence from perspectives including institutional mechanisms, business mainlines, support platforms, business objects, basic capabilities, and media matrices.

In this framework, "1" represents the "People' s Daily Media Technology Joint Meeting"institutional mechanism, which coordinates the newspaper's technology development planning, major projects, network security, and technical resources. "2" refers to the two business mainlines of "traditional media" and "emerging media," promoting the in-depth development of media convergence by balancing both aspects, integrating news media resources, and truly achieving "integration as one, unity as one." "3" denotes the three technical support platforms under construction: the "data center computer room," "same-city disaster recovery computer room," and "off-site disaster recovery computer room," which serve as the foundation for the newspaper' s medium- and long-term key technology planning and development. "4" stands for all-media collection and editing, classified internal reference, internal network office, and network security, representing the newspaper' s technical support and service objects. "X" represents the construction of public technology basic capabilities such as AI middle platform, data middle platform, 5G middle platform, and video middle platform to support high-quality development of the newspaper, leveraging middle platforms to empower all-media content creation with a focus on lightweighting, intelligentization, mobilization, high efficiency, and high momentum to promote "multi-convergence" in collection and editing, office work, management, and technology, thereby improving the efficiency of news production and operation management across the newspaper. "N" represents the continuous technical support and guarantee for the integration and linkage of the newspaper' s all-media business matrix including newspapers, periodicals, websites, apps, microblogs, and screens, focusing on key links such as "planning, collection, editing, verification, review, evaluation, broadcasting, printing, and distribution" to effectively assist data control and content production, jointly promoting high-quality media convergence development.

3. Continuously Strengthening Innovation-Driven Development: AI Editorial Office 3.0 Iterative Innovation

As one of the newspaper' s public technical support capabilities, the AI Editorial Office has undergone continuous iteration and upgrading over the years. For the 2022 Two Sessions, focusing on enhancing all-media news productivity and adapting to trends such as video-based, intelligent, cloud-based, mobile, lightweight, and secure major reporting, the newspaper newly launched AI Ed-

itorial Office 3.0. This version adds capabilities including a mobile terminal for the AI Editorial Office, 5G all-media production, fact-checking assistance, video encryption invisible watermarking, intelligent meeting minutes, one-click video generation, and Cloud ME. With 5G connecting frontline and headquarters and AI reaching directly into reporting scenarios, it strengthens four key characteristics of video production—intelligentization, cloudification, mobilization, and lightweighting—providing editors and reporters with mobile video collection, editing, and publishing capabilities. The system creates an "cloud-terminal integrated" intelligent media production and transmission chain, builds an accurate and comprehensive intelligent fact-checking platform, comprehensively optimizes the production and design workflow for new media works, drives high-quality all-media content production, and helps improve the quality and efficiency of the newspaper' s Two Sessions coverage.

3.1 AI Editorial Office Mobile Terminal

The AI Editorial Office mobile terminal provides functions such as collection and transmission, live recording, work management, intelligent editing, and content review. It adapts to multiple mobile terminal models and achieves integration of users, content, data, and functions with the web terminal, facilitating frontline journalists to collect and edit news materials anytime and anywhere, while also enabling editors at headquarters to quickly create templates and review content, realizing the immediate release of short video works from news scenes. From discovering clues and obtaining materials to filming and production, review and issuance, as well as initiating live broadcasts and interview connections, all actions and functions can be completed with a single mobile phone.

[Figure 1: see original paper] Mobile Terminal for Video Content Production

3.2 5G All-Media Production

With the popularization of 5G applications and deep integration of cloud, network, and terminals, ultra-high-definition content has opened a direct channel to the cloud. Video news production has shifted from traditional remote production and broadcasting scenarios to mobile cloud-based production and broadcasting scenarios, moving from "fixed points" to "mobile terminals" and from "heavy facilities" to "light applications" to meet the needs of all-media era news production and content dissemination.

The AI Editorial Office achieves full cloud-based media content production workflows, migrating production processes such as directing, green screen keying, virtual compositing, subtitle packaging, material storage, media asset management, post-production, and short video production to the cloud. Editors only need a display screen without a host computer, connecting to cloud computers through high-speed 5G networks to perform real-time precision editing of ultra-high-definition videos in the cloud. This enables various "heavy applications" such as non-linear editing to run on "light terminals" in the cloud, achieving

the goal of "cloud-terminal integration and full-chain cloudification."

[Figure 2: see original paper] Full-Chain Cloudification of Media Content Production Workflow

3.3 Fact-Checking Assistance

Fact-checking employs multiple artificial intelligence technologies including facial recognition, speech recognition, natural language understanding, subtitle recognition, and computer vision to achieve unified review of all media types including video, audio, images, and documents. For example, it can trace the dissemination chain source of images and videos in news manuscripts; use image vector engine technology to identify phenomena such as old images with new captions, image/video copyright infringement, or mismatched images and text; monitor key websites and analyze article dissemination paths; use intelligent algorithms to compare articles with potential duplication from multiple angles; and mark highly repetitive content or identify text fragments, images, and videos with high similarity to the content.

The fact-checking system uses official authoritative databases such as the Central Commission for Discipline Inspection of the Communist Party of China, the China Meteorological Administration, and the China Earthquake Networks Center as review benchmarks, adopts authoritative source data, and collects industry-related standards from the Ministry of Education, the State Language Commission, and news writing specifications to ensure precise and error-free article expressions. It covers multiple intelligent review capabilities including politics-related, pornography-related, terrorism-related, sensitive figures, prohibited words, news writing norms, non-standard language, common sense errors, and inaccurate pronunciation, building an intelligent and efficient content security protection system that effectively improves review efficiency and security capabilities.

3.4 Video Encryption Invisible Watermarking

Data security management and content security protection run through the entire lifecycle of news production and dissemination. However, the development of deep synthesis technologies poses new challenges to digital content security, as videos and faces generated based on deep learning models can no longer be quickly judged for authenticity through technical means.

Addressing specific content copyright and data security needs in actual business scenarios, the AI Editorial Office employs media fingerprint DNA, blockchain, digital watermarking, and tampering forensics technologies to provide content security solutions for data security management, security protection, and fake video identification. These solutions cover the complete lifecycle of video content production, processing, storage, transmission, distribution, and copyright traceability, providing trustworthy technical guarantees for video source and authenticity.

Video DNA fingerprinting + blockchain technology is used for internet big data monitoring and audio-visual content comparison to promptly detect and warn of content infringement risks. Invisible video watermarking and video anti-tampering are applied in audio-visual content production, processing, and traceability to detect tampered audio-visual content and protect digital audio-visual content copyrights, solving problems in copyright protection and media security. The invisible video watermarking provided by the AI Editorial Office maintains high robustness even against violent tampering behaviors such as screen recording, re-shooting, and rotation, providing accurate watermark extraction and comparison capabilities, and also supports digital watermark implantation and extraction for 4K/8K content.

3.5 Intelligent Meeting Minutes

Previously, when important meetings or interviews took place, manual minute-taking was required during the meeting, post-meeting content organization was time-consuming and labor-intensive, action items needed manual distribution, and long-term meeting minutes lacked unified consolidation and rapid search capabilities. The AI Editorial Office provides intelligent meeting minutes through AI self-learning capabilities, achieving full meeting recording, real-time speech-to-text transcription during meetings, and automatic generation of intelligent summaries after meetings.

3.6 One-Click Video Generation

The AI Editorial Office provides a one-click text-to-video service that converts Word documents containing images and text into videos. Based on a large accumulation of original text and image news materials, the one-click-to-video AI tool can convert text-image news into video news while also synthesizing news voice broadcasting, enabling multi-platform distribution across media matrix platforms and enhancing content distribution effectiveness.

3.7 Cloud ME

The AI Editorial Office integrates Cloud ME holographic communication technology, which can present live footage collected from two locations as holographic images in a "holographic cabin," transforming interviews from "two locations" to "same frame" and videos from "flat" to "holographic." Cloud ME features 4K resolution, 60fps frame rate, and algorithm-simulated shadow reproduction, achieving "hair-level" holographic replication. Simultaneously, it controls latency within 200ms, meaning that interview interactions between journalists and guests are virtually no different from face-to-face communication.

The core of Cloud ME' s technical implementation lies in "cloud processing + terminal rendering" technology, where the hardware terminal only performs simple collection, transmission, and playback, while all complex work is completed

in the cloud. This enables ordinary computer equipment to possess immersive interactive scene construction capabilities, achieving "zero processing."

Cloud ME was first applied at the 2022 Beijing Winter Olympics. Before the Two Sessions, People' s Daily planned to build a holographic interview cabin connecting the newspaper headquarters with the frontline Two Sessions reporting team, attempting to introduce this novel immersive intelligent holographic media technology into new media content production. However, due to the pandemic, the plan has been temporarily postponed for future implementation.

The Cloud ME solution includes the following steps. First, in the image acquisition stage, since footage captured by cameras cannot be directly holographically imaged at the playback terminal, all footage must undergo deep compression through advanced encoders and be sent to the cloud-based audio-visual communication network under the protection of real-time transmission protocols and QoS anti-packet-loss strategies, with the final uploaded format and resolution reaching 4K standards.

When the footage reaches the cloud, it leverages powerful cloud processing capabilities to complete complex processes including transcoding, rendering, scene reconstruction, and lighting processing, achieving the transformation from "flat" to "holographic."This creates a 1:1 virtualized replica, generating 3D holographic characters that reconstruct all interactive details in high definition, including micro-facial expressions and clothing textures, achieving "hair-level" holographic full-size replication that creates an immersive sense of full-realistic interaction and enables "same-frame" face-to-face interviews.

During the 2022 Two Sessions, AI Editorial Office 3.0 was widely used by departments and units including the newspaper' s new media center and digital communication company. The AI Editorial Office was used for 1,780 minutes (approximately 30 hours) of live broadcast editing covering key Two Sessions scenarios, with subscription and dissemination analysis conducted across nine communication channels.

The AI Editorial Office' s mobile terminal, 5G all-media production, fact-checking assistance, and other new features including Cloud ME have received widespread acclaim, with the mobile terminal' s comprehensive integration greatly enhancing the convenience of content production. Live broadcast clipping and various AI tools continue to demonstrate their power as all-media productivity tools.

Representative short video works produced include "These Words from the Government Work Report Warm Hearts and Boost Spirits!" which was pushed across People' s Daily' s Weibo, WeChat, and app platforms, achieving over 100,000 WeChat reads and more than 3 million Weibo video views. The Weibo topic "Huo Qigang: #HuoQigangBowsToThankPeopleAcrossChinaForHelpingHongKong#" trended on hot search, accumulating 220 million reads, over 4,000 reposts, and 740,000 app visits. The Weibo topic "Huo Qigang: #RecommendsHongKongSchoolsEmphasizeNationalAnthemAndFlagEducation#"

also trended, with over 1,800 reposts. The short video "#TwoSessionsBlack-TechEquipment# How to Operate?" reached 4.06 million Weibo reads, over 5,500 reposts, more than 4,000 likes, and 870,000 app visits. The digital communication company used the platform to produce the "Two Sessions Observation" program, which was widely disseminated through posters, video channels, and other channels.

As media convergence continues to deepen, technology and content are developing toward "dual integration" and "dual drive," with communication innovation leading technological development and technological innovation stimulating content creation, jointly supporting and leading the transformation and upgrading of the all-media communication system. Intelligent media production represented by 5G and AI is evolving into the "new infrastructure" of the content production industry, transforming into a new era of media productivity that is fully cloud-based, intelligent, mobile, lightweight, and batch-processed. The continuous innovation of the AI Editorial Office drives high-quality content production, supporting smooth and orderly, rich-media, multi-frequency news reporting throughout the entire process, while also providing innovative space for visual intelligent news products and scenario applications such as mobile live broadcasting, holographic imaging, robot production, and "cloud connection."

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