

Reflections and Practice on the Internet-based Functional Extension of Xinhua News Agency's Audio News Gathering, Editing, and Production System: A Postprint

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Abstract

In the all-media era, Xinhua News Agency's audio news operations face unprecedented transformation, requiring upgrades to the technical systems supporting audio news gathering and production. This paper examines technologies and solutions for multi-dimensional content acquisition, intelligent speech recognition, and third-party platform distribution via mobile internet within audio news gathering and production systems. It presents considerations for system adjustments and functional enhancements, elaborated through practical business applications, to better meet the evolving demands of all-media news formats.

Full Text

Reflections and Practices on the Internet-based Functional Extension of Xinhua News Agency's Audio News Production System

Abstract: In the era of all-media convergence, Xinhua News Agency's audio news operations face comprehensive transformation, necessitating upgrades to the technical systems that support audio news production. This paper examines system adjustments and functional enhancements for audio news production systems, focusing on multi-dimensional manuscript acquisition, intelligent speech recognition, and mobile internet third-party platform distribution. We elaborate on these technical solutions in conjunction with practical business applications, aiming to better accommodate the evolving demands of all-media news production.

Keywords: audio; all-media; internet; speech recognition; mobile internet; push; intelligent

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Under the guidance of strategic transformation in traditional news media and all-media convergence development, Xinhua News Agency's audio news operations—as a representative of traditional news formats—face comprehensive innovation. Audio news production is shifting from the traditional model of journalists and editors simply broadcasting manuscripts and editing field recordings toward a model that integrates video, new media, and other multimedia carriers. This new approach collects audio sources through multiple channels and origins, incorporates manuscript input from social media platforms such as WeChat, and enables all-media production and distribution in post-production, thereby adapting to the future multi-format, all-media reporting paradigm.

1.1 Multi-Dimensional All-Media Manuscript Acquisition Models

Traditional audio manuscript acquisition relied primarily on telephone connections and editor broadcasts, with minimal use of synchronous sound and field audio. This outdated approach can no longer satisfy audiences' growing demand for immersive news products. By incorporating video, new media, and other news products as sources for audio manuscripts, and by integrating social media audio submissions on top of traditional telephone auto-recording and broadcast manuscripts, multi-format and multi-platform audio materials can be channeled through various routes into the audio production system's workflow. This significantly enriches audio news sources, maximizes the utilization of front-line reporting resources at news scenes, achieves true “one manuscript, multiple uses,” and enables rapid audio reprocessing of previously video-exclusive submissions to deliver tailored news products across multiple platforms for diverse audiences.

1.2 Multimedia Integration of Audio Manuscripts

The multimedia integration of audio, particularly audio visualization, represents the development direction for audio operations. The original audio production system's relatively limited functionality cannot meet the demands of media convergence strategies that require integrated audio, image, and video products. Traditional audio manuscripts must now be supplemented with graphics, text, and dynamic video, presented as multimedia files on internet-based distribution platforms.

1.3 Direct Distribution to Mobile Internet Terminal Platforms

Expanding distribution channels for audio news products requires breaking the limitations of traditional self-owned platforms and partnering with internet audio product terminals to directly reach broader internet-based audiences beyond conventional radio listeners.

2. All-Media Audio Production System Design

Based on the business requirements for all-media development of audio news manuscripts, the all-media audio production system has undergone functional upgrades and process optimization compared to traditional audio news production systems, with particular emphasis on design and planning across three dimensions: multi-channel acquisition, intelligent data statistics, and all-media manuscript production.

2.1 Business Process Design

The all-media audio production system supports multiple audio manuscript formats. Building upon traditional editor-created manuscripts and telephone auto-recording acquisition, it integrates mobile social media submission functions, enabling automatic collection and archiving of voice messages from WeChat official accounts. Upon 入库 of telephone recordings and WeChat voice messages, the system incorporates automatic speech recognition and cataloging functionality to classify and index manuscripts, displaying abbreviated text content in the system manuscript list to save preview time.

While retaining the traditional capability to interface with professional audio editing software for advanced audio file processing, the all-media manuscript production process employs video-to-audio conversion technology for rapid extraction of synchronous and field sound. The broadcast segment achieves multimedia integration of audio manuscripts and enables direct publication to internet audio platforms such as Ximalaya, reducing intermediate steps and improving distribution efficiency.

Following audio manuscript completion, the system tracks manuscript issuance for production statistics, with the capability to adjust statistical items according to business requirements.

2.2.1 Intelligent Aggregation of Multiple Audio Sources

The audio production system can integrate and receive various forms of audio manuscript sources, including traditional programmable telephone lines, VoIP call recording systems for manuscript acquisition, and automatic archiving of WeChat-based audio sources.

The telephone recording system supports no fewer than 32 simultaneous recording channels and can be customized with multi-level directory classification and

multi-party call functionality according to business needs, facilitating frontline reporters in transmitting audio news manuscripts from news scenes in real time.

The newly added WeChat audio manuscript automatic processing function integrates audio materials from mobile social media sources into both traditional and emerging interaction modes, simplifying the audio manuscript acquisition process while storing participating audience data—valuable assets for Xinhua’s audio material repository.

In the WeChat audio manuscript processing module added to meet frontline reporters’ convenience needs, the WechatGrabber module captures information from WeChat subscription and service accounts, extracting text, images, and WeChat audio into the UniMessage database while collecting speaker information.

The UniMessage database provides unified display and processing capabilities. The listener database includes account information collected from all platforms, such as WeChat IDs, and the system offers functionality to bind accounts across different platforms.

The UniMessage Viewer module displays information collected through various methods, with text, images, and WeChat audio all visible in a unified list. Editors using the all-media audio production system can conveniently play WeChat audio from the list and, based on business needs, utilize the embedded single-track audio editing module for processing.

The WeChat message list collected within the system refreshes automatically in real time and can display information from various sources either uniformly or in paginated format, allowing editors to select according to their work preferences.

UniMessage features robust user database collection, management, and analysis capabilities, enabling user level settings and black/gray/white list configurations for convenient backend management and ensuring the security of Xinhua’s official media WeChat accounts.

UniMessage also provides statistical analysis functions, capable of tracking message volumes across different time periods on the WeChat official account platform and analyzing message proportions from different users.

2.2.2 Automatic Speech Recognition and Cataloging for Audio Manuscripts

Moving beyond the original audio system’s limitation of simple filename recording based on submission time, the integrated speech recognition function enables basic cataloging of telephone recording manuscripts and WeChat-collected manuscripts upon archiving.

When journalists call into the telephone recording system, they can input manuscript titles and branch names following hierarchical directory prompts. The system automatically catalogs based on speech recognition, generating

XML files containing relevant recognized text information simultaneously with audio file recording.

WeChat public accounts utilize the UniMessage Viewer module for speech recognition and cataloging processing of audio files.

2.2.3 Multimedia Processing Functionality for Audio Manuscripts

To accommodate Xinhua's multimedia business development direction, the audio production system must evolve from traditional single audio file distribution to visualized multimedia manuscripts incorporating images, text, and audio. Building upon existing audio manuscript and text distribution capabilities, the system provides packaged distribution functionality for multiple file formats, enabling editors to upload combined packages of images, short videos, and other multimedia files with audio files for display on shared platforms, thereby meeting the adoption needs of diverse users including television stations, radio stations, and websites.

2.2.4 Statistical Functionality for Audio Production and Distribution

Addressing the current inability of audio production systems to automatically generate statistics, the upgraded system enhances the backend database, enabling editors to conduct data analysis based on multiple key items such as reporting journalists, branch agencies, and headquarters editors during daily operations, and to generate specialized statistical tables according to user requirements.

2.2.5 Automatic Audio File Quality Optimization

To address quality issues with some programmable telephone recording submissions due to line conditions, the upgraded audio production system incorporates automatic audio source quality identification and automatic gain control functionality.

After audio files are collected into the system, analysis software monitors audio quality while automatically optimizing substandard sources, providing convenience for audio editors in subsequent processing and maximizing the utilization rate of journalist submissions.

2.2.6 Video-to-Audio Conversion Functionality

Breaking the current single-source limitation of audio manuscript acquisition where editors could only use audio manuscripts within the audio production system, the upgraded platform integrates video and audio production systems within the same framework. The integrated audio-video acquisition and sharing platform enables collection and resource sharing of multiple audio and video file formats, allowing audio editors to extract audio tracks separately from video material resources for audio manuscript editing.

2.2.7 Mobile Terminal Distribution Functionality

Extending the current PC-only audio distribution website to mobile clients enables users to access the audio-video distribution website on mobile terminals for searching, browsing, and playback.

2.2.8 Automatic Internet Platform Push Functionality

According to business requirements, the system can push finished audio manuscripts to internet audio platforms or conduct live audio streaming.

3. Practical Implementation of Internet-based Functions in Audio News Production Systems

During the 2018 National Two Sessions, Xinhua's audio production system distributed 259 audio dispatches totaling approximately 616 minutes. In partnership with Ximalaya FM, the "Xinhua FM" account launched the "Xinhua Takes You to Hear the Two Sessions Live" column, broadcasting 137 audio manuscripts totaling 308 minutes with cumulative listenership reaching 8.93 million. Xinhua also collaborated with Ximalaya for the first time to conduct two live internet audio broadcasts of the "Minister's Corridor" and "Foreign Minister's Press Conference," totaling approximately 180 minutes with cumulative listenership of 2.81 million. The total listenership for "Xinhua FM" during the Two Sessions reached 11.74 million. Multi-dimensional and multi-format audio news manuscripts comprehensively expanded the breadth and depth of Xinhua's audio operations, significantly enhancing Xinhua's audio influence and strengthening the dissemination of mainstream media voices on internet platforms.

In future audio business development, technical systems will be further optimized and extended according to business requirements to improve functionality for multi-format, multi-source, multi-platform, and multi-audience material collection and manuscript distribution.

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

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