Exploration and Application of All-Media Collection-Editing-Distribution Platform Integration with Third-Party Tools: Postprint

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Abstract

Media convergence constitutes a major and profound transformation in the media sector. The integrated development of traditional and emerging media is inseparable from the guidance and impetus provided by advanced technologies and advanced technology platforms. Guided by the principles of media convergence development, the author' s institution has constructed an all-media collection, editing, and distribution platform tailored for news agency operations. This platform offers online tools such as image processing and rapid audio/video editing, which can satisfy the requirements of most editorial personnel. However, for professional image, audio, and video editors, integration with third-party professional production tools is required to further leverage and enhance the converged media processing capabilities of our own platform.

Full Text

Exploration and Application of Integrating Third-Party Tools into an All-Media Collection-Editing-Distribution Platform

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Abstract: Media convergence represents a major and profound transformation in the communications field. The integration of traditional and emerging media cannot succeed without the guidance and driving force of advanced technology and platforms. Guided by the principles of media convergence, our organization has built an all-media collection-editing-distribution platform tailored to news agency operations. While the platform provides online tools such as image processing and quick audio/video editing that meet the needs of most editors

and journalists, professional image and audio/video editors require integration with specialized third-party production tools to further enhance the platform' s converged media processing capabilities.

Keywords: collection-editing-distribution platform; third-party tools; media convergence; platform design; multimedia processing tools

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Media convergence represents a major and profound transformation in the communications field. The relationship between traditional and emerging media has generally evolved through three stages: first, traditional media building emerging media; second, interactive development between traditional and emerging media; and third, the integration of traditional and emerging media—the stage we are currently entering. The "Opinions on Accelerating In-Depth Media Convergence Development" issued by the General Office of the Communist Party of China Central Committee and the General Office of the State Council emphasizes using advanced technology to lead and drive convergence development, leveraging achievements from the information technology revolution such as 5G, big data, cloud computing, IoT, blockchain, and artificial intelligence, strengthening forward-looking research and application of new technologies in news communication, and promoting independent innovation in key core technologies. These guidelines clarify a series of major issues in advancing in-depth convergence development and provide strong guidance with practical applicability for our future work in media convergence.

The integration of traditional and emerging media cannot succeed without the guidance and driving force of advanced technology and platforms. Guided by these principles, our organization has built an all-media collection-editing-distribution platform tailored to news agency operations. This platform represents a new-generation, all-media, full-process, digital, and intelligent content management system—a news business support platform built on internet technology with news information production process reengineering at its core. The platform implements functions including topic planning, real-time reporting resource scheduling, multi-media material collection, N-times editing and processing of manuscripts, one-click distribution across multiple channels, manuscript publication statistics and impact assessment, and all-media resource integration and sharing. It provides various simple and practical multimedia processing tools such as text editing, image processing, quick audio/video editing, GIF creation, video-to-GIF conversion, and multi-media mixed layout. Since its launch,

the platform has provided strong support and laid a solid foundation for promoting media convergence development and editorial business reform.

While the all-media collection-editing-distribution platform is functionally complete and powerful with an advanced and mature technical architecture, it is impossible to develop all necessary tools independently in today' s rapidly evolving internet environment with emerging technologies and applications. We cannot pursue convergence behind closed doors; instead, we must fully utilize mature technologies and products from others to achieve better and faster development. Although the platform' s existing online tools for image processing and quick audio/video editing meet the needs of most editors and journalists, professional image and audio/video editors require integration with specialized production tools like Photoshop and Dayang non-linear editing software to further enhance the platform' s converged media processing capabilities.

1.1 Design Principles

Loose Coupling. The all-media collection-editing-distribution platform and third-party tools should not depend on each other; both can work independently, interacting only through interfaces or file sharing.

Scalability. The platform should support integration with multiple third-party tools.

High Reliability. Ensure closed-loop business processes with accurate and appropriate exit conditions after third-party tools are invoked. After a manuscript is unlocked by the current operator, no operations performed in third-party editing software should alter the manuscript content. Ensure smooth business processes where the front-end can automatically refresh to display modified content without manual intervention after third-party software modifications.

Standardization and Normalization. To ensure successful integration between the platform and third-party tools, thorough standardization and normalization are prerequisites, particularly in service interfaces and service architecture.

1.2 Overall Design

Based on these principles, this paper designs an integration approach between the all-media collection-editing-distribution platform and third-party tools, enabling integration with professional image and video editing software. The integration starting point can be either the all-media collection-editing-distribution platform or the third-party tools.

1.3 Data Exchange Implementation

Data exchange between the platform and third-party tools primarily occurs through two methods: first, using standard interfaces provided by third-party

tools; second, using custom URL Protocol methods [1], which are compatible with various browsers. Both methods are extensible, enabling integration between the platform and third-party tools through configuration or simple development.

2.1 Integration with Image Editing Tools

Integration between the platform and image editing tools primarily utilizes offline editing plugins. The image/chart offline editing plugin invokes third-party editing software on the user' s local machine, such as Photoshop and Adobe Illustrator, with automatic upload back to the server after editing and refreshed display in the front-end editing window.

The process works as follows: First, download the files to be edited for a specified manuscript to the local machine. Second, use the offline editing plugin to open the downloaded local files, allowing free customization of the offline editing software used. Third, after the file is successfully downloaded, the program automatically launches the third-party tool and passes parameters such as file storage path and filename to it. Fourth, the third-party tool opens the file for editing based on the passed parameters. Fifth, the monitoring program monitors the update status of files in the shared directory, transmitting files back to the platform when changes are detected, or the third-party tool actively submits files to the platform. Sixth, upon receiving the updated file, the platform completes file storage and executes subsequent distribution processes.

The implementation includes: (1) downloading files to be edited to a shared directory; (2) automatically launching third-party tools after successful download; (3) real-time monitoring of local file modification records to initiate upload, using file MD5 verification to ensure upload only occurs when files are actually modified; (4) front-end page refresh after the server receives the latest modified file; (5) progress bar display to provide intuitive upload progress feedback and prevent users from closing manuscripts prematurely under poor network conditions; and (6) implementing chunked download and upload for remote usage scenarios with high network latency to improve user experience.

2.2 Integration with Professional Video Editing Tools

Integration between the platform and video editing tools is primarily achieved through standard interfaces provided by professional video editing tools. After completing video editing and processing in professional video editing tools, users can send videos to the all-media collection-editing-distribution platform with one click using interconnection interfaces and FTP services, with manuscripts automatically generated.

The process includes: (1) Video file storage: After completing production in professional video editing tools (using Dayang non-linear editing software as an example), the platform receives storage messages via the MREML [2] interconnection standard. The platform' s ImportSubmitService interface service

receives the storage message and downloads video files from the editing tool to a shared directory via FTP, generating storage task files in the storage directory. (2) Automatic manuscript generation: The platform' s DocImportService monitors the storage directory, and upon discovering new storage task files, completes file service registration and calls the new manuscript interface to generate video manuscripts. (3) Manuscript editing: Editors and journalists use the platform to edit video manuscript content and complete subsequent review and distribution processes.

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