Exploration of the Implementation Plan for All-Media Reporting Platform Construction (Post-Print)

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Abstract

The all-media reporting command platform of Xinhua News Agency Henan Branch is established to adapt to the convergent development requirements of traditional and emerging media, to profoundly comprehend the laws of news communication and the developmental patterns of emerging media, and to capitalize on the opportunities presented by rapid internet development while reinforcing top-level design and holistic planning. To meet the heightened demands of the all-media era on Xinhua News Agency and to strengthen internet-oriented thinking, the platform seeks to deeply integrate the local content advantages, platform terminals, and talent resources of Henan Branch, thereby constructing an integrated convergent reporting support platform for resource integration, convergent processing, product innovation, multi-channel distribution, refined management, and iterative development within the internet ecosystem. It endeavors to enhance capabilities in news content innovation, scientific management, and reporting dissemination in the internet environment; to achieve deep integration between convergent reporting operations and resources, planning, processing, channels, terminals, and audiences; to realize editorial specialization, intelligent management, and data visualization; and to enable unified control and management across all stages including news information gathering, editing, publishing, contribution, management, and feedback, as well as news public opinion, dissemination channels, and influence. Additionally, it provides intensive and intelligent services for the organizational command, planning, operational monitoring, and assessment system of convergent reporting at Henan Branch, thereby establishing an "Internet Plus" driven model for new media organizations.

Full Text

Abstract

The All-Media Reporting Command Platform of Xinhua News Agency' s Henan Branch is designed to meet the demands of integrated development between traditional and emerging media. By deeply understanding the laws of news communication and emerging media development, and seizing the opportunities presented by rapid internet growth, the platform strengthens top-level design and overall planning. To adapt to the higher requirements of the all-media era for Xinhua News Agency, it reinforces internet thinking and deeply integrates local content advantages, platform terminals, and talent resources in Henan Branch. This creates an integrated support platform for converged reporting under internet environments, enabling resource integration, converged processing, product innovation, multi-channel distribution, refined management, and iterative development. The platform aims to enhance news content innovation capabilities, scientific management capacity, and reporting dissemination power in internet environments. It achieves deep integration between converged reporting operations and resources, planning, processing, channels, terminals, and audiences, realizing specialized editing, intelligent management, and visualized data. The platform enables unified control over news information collection, editing, release, contribution, management, and feedback, as well as unified management of public opinion, communication channels, and influence. It provides intensive and intelligent services for the organization, command, planning, operation monitoring, and performance evaluation system of converged reporting in Henan Branch, constructing a new "Internet Plus" driving model for modern media.

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Since the 18th National Congress of the Communist Party of China, General Secretary Xi Jinping has attached great importance to media convergence, personally planning and scientifically mapping out the strategy for media integrated development. General Secretary Xi Jinping pointed out that promoting media convergence aims to strengthen mainstream public opinion and consolidate the common ideological foundation for the whole Party and people of all ethnic groups to unite and strive. This provides powerful spiritual strength and public opinion support for achieving the "Two Centenary Goals" and realizing the Chinese Dream of the great rejuvenation of the Chinese nation. The Zhihui Media Brain demonstrates the achievements of Henan Branch' s media convergence

work through modern multimedia means, showcasing the new era' s editorial and management team spirit.

1. Necessity of Project Construction

1.1 Project Background

In 2019, to elevate the branch' s reporting to a new level, Henan Branch aligned its goals with full-media news collection and intelligent technical equipment. Building upon the reserved space in the branch's existing infrastructure projects, the All-Media Reporting Command Platform of Henan Branch was constructed. Through technical construction and hardware investment, the command center aims to achieve reporting command, system control, interactive manuscript revision, and modern office systems. Through the construction of the branch' s all-media reporting command platform, the capacity of the branch' s editorial office to coordinate and dispatch collection, editing, and public opinion monitoring will be significantly enhanced, gradually achieving deep integration of the entire content production process.

Currently, domestic radio and television, newspaper, and news agency industries are embarking on a new round of all-media production exploration. This process requires in-depth analysis of convergence trends and their new impacts, advancing the construction of an "All-Media Reporting Command Platform" that integrates resources, content, tools, and channels.

1.2 Project Necessity

The All-Media Reporting Command Platform of Henan Branch is designed to meet the requirements of integrated development between traditional and emerging media. By deeply grasping the laws of news communication and emerging media development, and seizing the opportunities of rapid internet growth, the platform strengthens top-level design and overall planning. To adapt to higher requirements of the all-media era for Xinhua News Agency and reinforce internet thinking, it integrates local content and human resources as well as platform terminals in Henan Branch. This creates an integrated support platform for converged reporting in the new situation, enabling resource integration, converged production, product innovation, multi-channel distribution, and refined management. Simultaneously, it strengthens innovation capabilities and reporting influence of news information products in internet environments, achieving specialization of editorial teams, intelligence of information collection, unified control over hot social issues and information dissemination channels, and constructing a new "Internet Plus" driving model for modern media.

The construction of Henan Branch' s All-Media Reporting Command Center Platform aims to build an efficient and flexible all-media reporting command system that enables command and dispatch of daily editorial business, technical services, and logistical support, while improving emergency response capabilities

and processing efficiency. The System Control Center of Henan Branch' s All-Media Reporting Command Platform integrates technical resources to achieve unified configuration, scheduling, and monitoring of technical equipment. By connecting with the headquarters' technical resources, it dynamically and centrally presents data from the headquarters' all-media collection, editing, and distribution systems on high-definition LED display equipment, providing intuitive, concise, and accurate decision-making references for efficient and scientific business command. Additionally, the Unified Display Platform of Henan Branch' s All-Media Reporting Command Platform builds a vivid technical achievement display system that integrates Xinhua News Agency' s virtual anchors and other technologies.

1.3 Project Feasibility

1.3.1 Adapting to Technology Trends The global media landscape is undergoing significant changes, with the media industry facing major transformation. Competition between traditional and emerging media is intensifying, requiring deep integration, while emerging media develops rapidly. New ideas and technologies profoundly impact traditional media production and distribution methods. Global media organizations, especially world-class media groups, are looking to the future, innovating breakthroughs, accelerating transformation, and expanding strength. Since the strategic transformation of our agency, we have vigorously promoted innovation in work concepts, operational systems, and cultural formats, fully utilizing modern information dissemination technology to reform news information collection, content production, dissemination models, and marketing methods. We have established a global collection network, owned distribution terminals covering various media types and audiences, and built a professional talent team covering all aspects of news information dissemination, laying a solid foundation for integrated news information services.

While achieving phased results in our agency' s strategic transformation, some problems remain. The reporting command management system still lags and needs strengthening; news information product production lacks deep connection with the market and effective interaction with audiences, with insufficiently diverse operation modes and relatively singular profit models; and new technology research and development application capabilities are not strong enough.

1.3.2 Technical Feasibility From a technical perspective, this project needs to combine the latest IT technologies and equipment to build a technical platform system with business scalability that conforms to SOA, cloud services, and open platform concepts. Currently, most key technologies for platform applications are mature technologies. The platform integrates these core technologies with the branch' s actual situation for integrated innovation, making it technically feasible.

1.3.3 Economic Feasibility Starting from the actual situation of the all-media reporting command platform, the project seeks to create a fully equipped, technologically advanced, safe, and comfortable working environment under economically reasonable premises, emphasizing "people-oriented" humanized design.

1.4 Project Risks and Uncertainties

The Henan Branch All-Media Reporting Command Platform project is based on a deep understanding of the branch' s existing workflows, focusing on improving work efficiency and achieving resource sharing. Product deployment and integration are developed by selecting professional companies or institutions with years of product research and development experience in the all-media convergence field and deep understanding of operators' core systems and markets, so the project implementation risk is minimal.

Since all-media convergence involved in the project entails certain exploration and system optimization design, the implementation process will involve corresponding repeated testing, creating uncertainties in time control. Project deployment and integration are completed with multiple partners, requiring unified coordination and 磨合. The partner conditions, docking technologies, and management mechanisms involved in project products require extensive coordination work and technical implementation breakthroughs. Additionally, equipment procurement processes, delivery cycles, phased project deployment, and other unforeseen factors make absolute time control somewhat difficult.

2.1 Functional Requirements for Different Application Scenarios

The Henan Branch All-Media Reporting Platform is designed to form a structure of "one platform, two centers." One platform refers to the Henan Branch Reporting Command Platform, and the two centers refer to the Reporting Command Center and System Control Center.

The Reporting Command Center includes the command center large screen system, duty room for issuers, creative planning room, all-media reporter workstations, all-media editor workstations, independent studios, and other components. It primarily completes all-media product editing and production, video display, audio amplification, intelligent control, interactive manuscript revision, 5G live broadcasting, external media monitoring, daily editorial duty, major reporting support, command, demonstration, and innovative technology application, release, and experience functions.

The Reporting System Control Center mainly has functions such as monitoring other large screens in the branch, controlling all command center equipment, core machine room equipment, history exhibition room large screens, and conference room management and control.

2.2 Reporting Command Business Functional Requirements

2.2.1 Unified Command

The platform aggregates multiple business functions such as reporting command, monitoring, and image display in the reporting command center, enabling real-time interaction of audio-visual business, dispatch command, and creative planning to meet the branch editorial office' s needs for flat, visualized, and rapid command dispatch. In multi-level dispatch applications, the reporting command center enables more intuitive and reliable two-way or multi-way command dispatch, achieving multi-level networked converged dispatch between headquarters and branch, branch and video alliance member units.

2.2.2 Unified Monitoring

Various technical systems (basic network system/editorial system/reporting command system) and business management functions (statistical monitoring/influence/copyright detection/user behavior/business management/news contribution/hot ranking, hot issues concerned by external news units, emergencies, visualized presentation, and centralized dispatch) are integrated into the platform.

2.2.3 Unified Display

The All-Media Reporting Command Platform will feature real-time news information display, real-time visualized display of system monitoring screens, converged distribution achievement display, all-media product display, and innovative technology experience display functions.

3. Technical Design Solutions

3.1 Basic Principles of Project Design

As the core area of the all-media reporting command platform, the completed platform will be a modern office space with reasonable layout, contemporary feel, complete functions, comfortable use, safety and reliability, advanced facilities, environmental protection, and reasonable investment. Construction should comprehensively consider architecture and decoration, materials, acoustics, optics, aesthetics, ergonomics, air conditioning, fire protection, power supply, computer communications, electronic engineering, and other specialties to fully demonstrate the characteristics and spatial features of the all-media reporting command platform, creating a practical, beautiful, and modern quality project. Therefore, the project construction should adhere to the following principles.

3.1.1 Overall Planning with Phased Implementation Designed in conjunction with the construction of Xinhua News Agency' s modern branch plat-

form, the system construction should cover business development for the next 3-5 years, with complete functional definitions. While providing the implementation plan for this project, it should leave docking interfaces for subsequent project construction.

3.1.2 High Security The security of the all-media reporting platform should be comprehensively considered from multiple aspects including system design, equipment selection, software development, and emergency plans to ensure "absolutely safe" operations. It should follow national security specifications and consider security for internal and external network connections during system architecture design, planning, and implementation. A relatively complete security prevention system should be established using advanced and applicable multiple technical means to ensure system security.

3.1.3 Advanced Technology Advanced technologies such as virtualization and cloud computing should be fully applied in combination with specific business characteristics to ensure the all-media reporting platform remains advanced and applicable in the industry for 3-5 years after completion. Selected equipment and third-party vendors must also be advanced in their respective fields.

3.1.4 High Efficiency System construction should fully consider economic requirements and avoid redundant investment. Based on data sharing, various application modules in the system should break information silos to achieve reasonable data sharing and exchange, improving information collection and news production efficiency. Public modules and components should be established and improved for all aspects including collection, editing, distribution, contribution, management, and feedback, with particular emphasis on developing and applying modules and components for image, text, and audio-video processing.

3.1.5 Reliability and Availability System reliability includes overall reliability, data reliability, and single equipment reliability. System availability is reflected through redundancy, high-availability clusters, and loose coupling between applications and underlying equipment. Overall system reliability and stability must be fully ensured from hardware equipment redundancy, link redundancy, and application fault tolerance.

3.1.6 Maturity System construction should adopt architecture solutions and software/hardware product selections that have been tested through large-scale commercial practice to ensure solution maturity.

3.1.7 Openness The system design adopts a distributed structure with open system components and open user interfaces. Video/audio file encoding formats, editing targets, and metadata interfaces should all be based on relevant national, international, or industry standards to facilitate network maintenance, expansion, upgrade, and interconnection with headquarters and video alliance

member units or cooperative organizations. Additionally, material collection and program distribution forms should also be open to ensure good integration performance with equipment from major manufacturers and connection with other networks within the agency.

3.1.8 Scalability The overall architecture of the all-media reporting center has sufficient flexibility to adapt to future rapid business development. It has strong scalability, adopting a loosely coupled and distributed system technical architecture. While ensuring stable current operations, it reserves sufficient expansion space and interfaces to accommodate access to various new services in the future.

3.1.9 Economy System construction fully considers economic requirements, avoiding redundant investment. Starting from the actual situation of the all-media reporting command platform, it strives to create a fully equipped, technologically advanced, safe, and comfortable working environment under economically reasonable premises, emphasizing "people-oriented" humanized design.

3.2 Engineering Design Concepts

The project design features the following characteristics:

In terms of layout, it embodies a people-oriented concept, combining modern office characteristics, focusing on planning various functional area modules. Auxiliary rooms of the command center such as conference rooms, display areas, and staff rest areas are arranged around the perimeter to organize reasonable traffic flow.

In terms of functionality, it provides a highly centralized information and communication command environment that meets ergonomic requirements, improving work efficiency and reducing work errors. Network design fully embodies the "people-oriented" design concept, addressing key processes and links such as content collection, editing, and distribution, as well as resource integration, around the branch' s overall development goals and actual business needs. The system design should feature reasonable processes, complete functions, simple operation, and convenient maintenance and management.

In terms of materials, high-quality domestic products are selected according to the functional requirements of the all-media reporting command platform and auxiliary rooms to ensure corresponding functions. Selected decoration materials are durable and stable. In terms of advancement, the design standards of the all-media reporting command platform should reach international and domestic advanced levels, establishing an operating environment that meets 24-hour applicable requirements for various equipment, using advanced technology to establish convenient human-machine interfaces and equipment stability.

3.3 Design of Henan Branch All-Media Reporting Command Platform

The Henan Branch All-Media Reporting Command Platform is designed according to the concept of "one platform, two centers, and three unifications." One platform refers to the Henan Branch All-Media Reporting Command Platform, two centers refer to the Reporting Command Center and System Control Center, and three unifications refer to unified command, unified monitoring, and unified display, as shown in [Figure 1: see original paper].

3.3.1 Unified Command

3.3.1.1 Office Telephone System Access Solution This system enables external line telephone access (dialing and answering mobile phones and external landlines), group calls, telephone conferences, and docking of various audio sources in conference rooms. Command modes are shown in .

The system graphically defines existing voice communication terminals on the converged dispatch console, with each extension corresponding to an icon displaying information such as personnel name/extension number. It accepts one-click calls from the dispatch console. When command personnel need to communicate with an extension, they can directly click the corresponding icon on the dispatch console to initiate a call to the designated extension. To convene a conference, command personnel can simply drag multiple extensions into a temporary group, click the conference button to initiate a multi-party conference, or click the broadcast button to initiate multi-party broadcasting. Existing extensions can directly dial the numbers of newly deployed extensions to achieve communication. The dispatch console and public network telephone can achieve point-to-point communication by defining staff mobile phones and landlines on the dispatch console. When needing to communicate with a mobile phone/landline, command personnel can directly click the person' s icon on the dispatch console to initiate a call. When a mobile phone/landline needs to communicate with the dispatch console, it can directly call the trunk number and then dial the dispatch console' s extension number. DID can also be configured to directly point a trunk line to the dispatch console extension, enabling direct calls to the dispatch console without secondary dialing. The dispatch console can initiate multi-party telephone conferences by setting multiple mobile/landline numbers to a temporary conference group, selecting the designated group, and clicking the 'conference' function key to quickly initiate the conference. For multi-party broadcast calls, the dispatch console sets multiple mobile/landline numbers to a temporary broadcast group, selects the designated group, and clicks the 'broadcast' function key to quickly initiate multi-party broadcasting. For mobile/landline participation in public conferences, the dispatch console sets up public conference rooms and communicates the conference number and password to participants, who can then join the conference by dialing the number and entering the password. For mobile-initiated conferences, the dispatch console sets up multiple 'trigger conference groups' with assigned numbers,

places multiple mobiles into corresponding groups, and group members can initiate conference calls to other mobiles in the group by directly dialing the trunk number and secondary dialing the group number. For external telephone intercom with walkie-talkie terminals, mobile/landline phones can directly dial the trunk line number and secondary dial the corresponding walkie-talkie group extension number to communicate with the designated walkie-talkie group.

3.3.1.2 Public Network (Mobile, Unicom, Telecom) Telephone System Access Public network telephone terminals such as direct lines and personal mobile phones are typically already deployed and frequently used for internal office communications. This system access serves two purposes: first, it provides wired and wireless relay connectivity for interoperability among various communication terminals within the converged dispatch command system; second, it enables unified dispatch of users' personal mobile phones and landlines through the dispatch console. Wireless relay adapters are deployed to interface with GSM, CDMA, 3G/4G networks, providing wireless relay interfaces to connect with these networks. A single adapter supports 4 wireless relay channels and allows mixed insertion of different wireless relay modules. Command modes are shown in .

3.3.1.3 Video Camera Monitoring System Access Solution Dedicated video access adapters are deployed to integrate the agency' s monitoring systems into the converged dispatch command platform. The multimedia dispatch console enables dispatch of on-site monitoring images and can forward/distribute the dispatched images to other video receiving units (such as remote dispatch consoles, video conferences, mobile individual soldiers, large screens, etc.), while achieving linkage with other voice systems for coordinated voice and video dispatch, reducing dispatch processes. The system supports real-time media on-demand and historical video retrieval and playback for accessed videos, enabling status query and information query of video resource devices connected to the system. Through the multimedia dispatch console, on-site monitoring images can be dispatched and simultaneously forwarded/distributed to other video receiving units (such as mobile phones), while achieving linkage with other voice systems for coordinated dispatch.

3.3.1.4 Video Conference System Access Solution Most existing video conferences in our agency serve as regular meetings in fixed venues, with poor capability for temporary meetings and no interoperability with other communication systems. Corresponding docking methods can be adopted according to existing video conference types to achieve interoperability between video conferences and the converged dispatch command system. During video conferences, the multimedia dispatch console can push various on-site video images to the video conference and enable access of other communication terminals within the dispatch system to the conference. The system access purposes include: terminals under the dispatch system can join video conferences through audio;

terminals under the dispatch system can join video conferences through audio-video; the dispatch console can push monitoring images to video conferences for display; the dispatch console can push mobile individual soldier images and other video systems to video conferences for display. Video conference business command modes are shown in .

3.3.2 Unified Monitoring

3.3.2.1 Large Screen Display Module The large screen display module is the display window of the reporting command system, divided into main monitoring command screens and auxiliary monitoring command screens. The design scheme should fully consider factors such as on-site space size, display unit size, power consumption, lighting, sound effects, supporting decoration, and overall visual effects. With the maturity of display hardware technologies such as DLP, LPD, LCD, and PDP, large screens have greatly improved in color, resolution, and reliability. The rapid development of information technology, multimedia technology, and sensor technology has made management monitoring center content more diversified and functions more comprehensive, particularly placing higher demands on display content and methods: ultra-high resolution, three-dimensional data visualization, interaction between people and display content, and linkage between equipment and display content. Business types of Henan Branch' s all-media reporting command system include statistical monitoring, influence, copyright detection, user behavior, business management, news contribution, hot ranking, contribution statistics, emergencies, etc. Such data is mainly displayed on the large screen in the core command area.

3.3.2.2 Video Splicing Processing Module The multi-screen splicing processor can display multiple dynamic images on multiple screens, such as multi-image display of the reporting command center' s large screen, multi-image display of the issuer' s duty room, and multi-image display functions of the system control center, thereby achieving multi-window splicing. It displays dynamic and static content in high definition, can retrieve data information in real time, and perform real-time operations.

3.3.2.3 Visualized Playback Control Module The visualized playback control module achieves highly integrated video centralized display and interconnectivity capabilities. This module provides video acquisition functions for remote visualized command, multi-party video telephone conferences, and video live monitoring, and provides splicing processing functions for the large screen display module, meeting functions such as image windowing, roaming, overlay, scaling, EDID management, and accompanying audio switching. The core components of the video centralized processing module can adopt a hybrid modular video matrix, compatible with mixed input and output of DP, HDMI, DVI, VGA, SDI, and network signals, achieving centralized processing of multiple signals and transmission to the large screen display platform. It requires small

signal switching intervals and fast image windowing and scene retrieval response speeds. It also supports mode editing, including monitoring mode, remote consultation mode, and local conference mode, with centralized dispatching through the central control system, supporting PC clients, mobile terminals, and other control methods. Generally, supported video resolution is not lower than 1080P, with no fewer than 8 input and output channels and maximum expansion channels of no fewer than 64.

3.3.3 Unified Display The All-Media Reporting Command Platform is a control center that monitors, organizes, analyzes, and conducts command and emergency dispatch after comprehensive evaluation of various line information from different sources in the system. The large screen module occupies an extremely important position in the dispatch monitoring center system.

3.3.4 Interactive Service Management Interactive service management mainly includes journalist connection services, figure interview services, thematic photography services, latest topic assignments, comments, likes, etc.

3.3.5 Interactive Manuscript Revision Function The interactive manuscript revision function enables back-end management, conference check-in, notification announcements, synchronous on-site functions, asynchronous functions, conference hosting, audio/video recording, handwriting annotations, conference voting, electronic signatures, communication prompts, and video playback.

The construction of Henan Branch' s All-Media Reporting Platform aims to achieve news reporting business process reengineering, product form innovation of converged reporting, and transformation and upgrading of reporting operation management models. With user experience as the core, it provides content production services for new channels and new products. Relying on Henan Branch' s organization, it builds a media converged reporting platform on demand, providing strong technical support for the media convergence development of Henan Branch, comprehensively enhancing the construction of converged reporting content, focusing on improving video processing capabilities and converged reporting levels, and promoting the construction of Xinhua News Agency' s communication capacity.

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