

Modular Design of Publishing Information Management Systems (Postprint)

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

Abstract

To achieve publishing management informatization, rational resource utilization and allocation, and improved publishing efficiency, a publishing information management system software was designed. Based on modular design principles, the software implements functions including real-time monitoring, data processing, and publishing management. It features strong specificity, flexible function customization, and high cost-effectiveness, helping to resolve issues in the publishing management process such as inefficient workflows and inaccurate or untimely information transmission. Test results demonstrate that the system operates stably, can accurately, flexibly, and efficiently process and transmit data, is capable of real-time monitoring of publishing project information, and can effectively control the publishing workflow.

Full Text

Exploration of Modular Design for Publishing Information Management Systems

ChinaXiv Partner Journal

Abstract: To achieve informatization of publishing management, rationally utilize and arrange resources, and improve publishing efficiency, a publishing information management system software was designed. Based on modular design principles, this software implements functions such as real-time monitoring, data processing, and publishing management. It features strong specificity, flexible function customization, and high cost-effectiveness, helping to resolve issues such as inefficient publishing workflows and inaccurate or untimely information transmission in publishing management. Test results demonstrate that the system operates stably, can accurately, flexibly, and efficiently process and transmit data, enables real-time monitoring of publishing project information, and provides effective control over publishing workflows.

Keywords: publishing management; information system; modular design

CLC Number: G23

Document Code: A

Article Number: 1671-0134(2018)03-102-03

DOI: 10.19483/j.cnki.11-4653/n.2018.03.043

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1. Current Situation

Coordination during project implementation is particularly crucial. Although publishing information management software has gradually assumed an important role in China's publishing groups, publishers of varying sizes simultaneously manage hundreds or even thousands of book publishing projects within the same timeframe. The information generated from each production stage of every book accumulates, leading to a sharp expansion of data flow and management information that poses significant challenges to management and statistical work. In recent years, an increasing number of publishers have recognized that traditional publishing management methods can no longer meet the diversified demands of today's rapidly developing publishing industry. Information-based and networked management approaches are needed to complete project publishing processes more efficiently and to quickly adapt to changes in market and customer needs [1].

China's publishing industry started relatively late with informatization management. Currently, most software systems in use are adapted from general-purpose software systems [2]. The large-scale software systems and complex functional designs result in high costs, while numerous redundant functions not only waste resources but also reduce practical efficiency. Furthermore, because designers of general-purpose software often lack thorough understanding of publishing workflows and business operations, it is difficult to design practical, efficient publishing management system software that meets all functional requirements.

Therefore, how to scientifically and rationally design a publishing information management platform that effectively organizes the entire publishing process and improves publishing management efficiency has become the key problem to be solved in publishing informatization.

3. Core Publishing Information Management Platform

Based on years of experience in publishing business process control and management, a set of publishing information management system software was designed using modular design principles. By adopting process-based control methods, an integrated and open information platform was constructed. This platform not only meets the application requirements of China's publishing industry but also solves practical problems in publishing management such as inefficient workflows and inaccurate or untimely information transmission.

The core publishing information management platform consists of a monitoring management module, data processing module, user management module, and communication module, as shown in Figure 1 [Figure 1: see original paper].

3.1 Monitoring Management Module

The entire publishing process involves numerous complex workflows, different departments, and a large number of relevant staff. The monitoring management module was designed to achieve real-time information sharing and standardization, providing decision-makers with real-time book project data. It enables tracking of status workflows and control over each process link, allowing for more accurate publishing planning and development strategies and more rational and effective management.

The monitoring function tracks and records in real time various data and related information for individual book projects from topic planning, evaluation, and project initiation to final publication and distribution. This includes applications, review and approval processes and results, and the overall status of the publishing workflow.

The control function provides management capabilities for book projects, including:

- **Topic Management:** Planning editors fill out preliminary topic proposal forms in the system based on market research and overall marketing promotion plans. The editorial department, distribution department, responsible leaders, and relevant departments provide feedback through the system. The chief editor's office compiles topics applied for by various departments and holds regular topic evaluation meetings, initiating approved topics in the system.
- **Contract Management:** Paper contracts are uploaded to the system as electronic files for electronic contract management.
- **Editing and Design Management:** Three-review personnel directly fill out processing records in the system. Responsible designers upload designed covers and layouts to the system according to requirements specified by responsible editors in cover design and task notification forms, which are then approved by responsible editors through the system.
- **ISBN and CIP Management:** Responsible editors fill out ISBN application forms online, and the chief editor's office exports relevant book project information from the system to handle real-name ISBN applications and CIP application procedures.
- **Manuscript Dispatch Management:** Based on project progress, book manuscript dispatch forms, and processing records in the system, the chief editor's office uploads book barcodes and handles manuscript dispatch.
- **Printing, Warehousing, and Sample Book Submission Management:** The design and publishing department fills out printing forms in the system to arrange specific printing and binding work. After printing begins, actual progress is monitored through printing and warehousing information filled out by logistics personnel. Logistics personnel submit sample books to relevant management departments based on sample book application forms filled out by the chief editor's office.
- **Quality Inspection Management:** Designated personnel conduct quality inspections of new books and fill out book quality

inspection forms in the system for real-time quality reporting.

3.2 Data Processing Module

During book publishing, individual book projects typically undergo full lifecycle management. Each project involves large volumes of different types of data related to finance, distribution, editorial affairs, and printing. Publishers need not only real-time access to data information for each project but also analysis of historical and industry data as a basis for decision-making. Therefore, a data processing module was designed. The system establishes a publishing information management database to store various types of information and performs data analysis and management.

The publishing information management database is designed using relational data tables [3-4], including topic planning tables, topic initiation tables, project information tables, progress control tables, manuscript dispatch record tables, three-review operation tables, binding design tables, sample and gift book application tables, information maintenance record tables, and downloadable data tables such as topic reporting tables, ISBN reporting tables, and CIP reporting tables. By analyzing data relationships and inter-table relationships, a data flow diagram was designed as shown in Figure 2 [Figure 2: see original paper].

To fully utilize system memory, prevent data overflow, and improve data processing accuracy and stability, dynamic link libraries are designed for database calls.

3.3 User Management Module

Traditional publishing models suffer from relatively independent departmental work, overlapping organizational structures, and duplicated business processes, leading to excessively long publishing cycles and wasted operational costs. To optimize employee work patterns, reduce mechanical and repetitive labor, lower error rates, and clarify job responsibilities of relevant personnel, a user management module was designed. The user management module can set current user permissions based on user name and level to manage users, including topic participation permissions and project participation permissions, while also designing user login, logout, and password modification functions.

3.4 Communication Module

To achieve comprehensive information-based management and enable each management link in the publishing workflow to operate beyond specific office environments through network platforms anytime and anywhere, a communication module was designed. The communication module mainly includes database access and network configuration functions.

The system enables interaction between applications and databases through database access technology, using ADO.NET to provide database access, con-

nect to data sources, and retrieve, process, and update contained data sources. This involves importing ADO library definition files, initializing the library, creating Connection objects and connecting to the database, and directly executing SQL commands through the Execute method of connection objects and commands to complete corresponding database operations.

By designing a human-computer interaction interface for network settings, intelligent management methods are provided for system maintenance and management personnel, enabling various users such as administrative staff, editorial staff, editors, designers, printers, and distributors to conveniently and efficiently process relevant information in different network environments.

4. System Functions and Implementation

4.1 ISBN and CIP Application and Book Information Reporting

The publishing information management system can import and export required information and data according to the requirements of the State Administration's real-name ISBN information application system, publisher book source management system, and book topic reporting system. This facilitates topic reporting, ISBN application, CIP data application, and finished book information uploading, while also enabling ISBN queries and barcode and CIP information downloads. By simply setting different download and upload options according to different needs, the system can interface with various systems of the State Administration for data sharing, enabling more efficient business transactions with higher-level management departments during book publishing.

4.2 Publishing Process Management and Control

The system simultaneously feeds back the progress of each book project and completion status at various time nodes through dynamic flowcharts and data tables, providing a transparent work platform for administrative, editorial, editing, printing, distribution, finance, and logistics personnel. Every stage of each book's lifecycle—from topic initiation to manuscript organization, contract signing, editing and processing, proofreading, design and production, ISBN and CIP application, manuscript dispatch, printing and binding, warehousing, sample book submission, quality inspection, archiving, royalty payment processing, distribution, and information feedback—can be queried through the system. This enables better resource allocation and improved book quality and production efficiency.

4.3 Book Project Information Query, Statistics, and Analysis

Through the data import and save functions designed in the software, relevant information for each book project is stored in the database, and data query and statistical functions are used to manage the stored data. Users can set multiple conditions such as project name, time, ISBN, responsible editor, project

department, and Chinese Library Classification to perform fast and convenient retrieval using multi-path fuzzy condition composite search methods. Query and statistics content includes topic information, project information, inventory products, and various documents. Results can be displayed through bar charts, data tables, curves, and other methods, with automatic report output. By analyzing these results, timely and effective adjustments can be made to project progress, improving work efficiency.

The publishing information management platform is a targeted management software designed according to actual publishing house needs. The software abandons the traditional model of wholesale transplantation of generic systems. Instead, it is built upon years of accumulated experience and research on various publishing process links using modular design principles. The software demonstrates outstanding advantages in compatibility and cost-effectiveness. Test results show that the system operates stably, can accurately, flexibly, and efficiently process and transmit data, enables real-time monitoring of publishing project information and status workflows, and provides relevant information for publishing staff in different positions to control corresponding links in the book publishing process.

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

Source: ChinaXiv — Machine translation. Verify with original.