

An Analysis of the Content, Workflow, and Principles of Alma Electronic Resource Management: A Postprint on Practice and Reflection

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Abstract

[Purpose/Significance] The library services platform Alma has practically achieved unified platform management of print, electronic, and digital resources, particularly transforming electronic resource management from manual operations to platform-based administration. Investigating and researching the content, workflows, and principles of its electronic resource management is crucial for high-quality administration.

[Method/Process] This study continuously explored and analyzed, in practice and application, the work content, workflows, and principles of Alma electronic resource management, integrating the actual circumstances of Beijing Normal University Library with platform functionalities to develop relevant experiences and methodologies that support libraries in using Alma to manage the lifecycle of electronic resources.

[Results/Conclusion] Managing electronic resources via next-generation library services platforms necessitates explicit work principles, content, and workflow management. During formulation, integrating the library's actual conditions with platform functionalities is essential to optimize efficiency and effectively achieve electronic resource management.

Full Text

Alma Electronic Resource Management: Content, Process, and Principles—Practice and Reflection

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Abstract: [Purpose/Significance] Alma, as a next-generation library service platform, has practically achieved unified management of print, electronic, and

digital resources on a single platform. In particular, it has transformed electronic resource management from manual operations to platform-based management. Exploring and studying the content, process, and principles of its electronic resource management is crucial for high-quality administration. [Method/Process] Through continuous exploration and analysis in practice, this paper examines the workflow content, processes, and principles of Alma's electronic resource management, combining the actual conditions of Beijing Normal University Library with platform functionalities to develop relevant experiences and methods that support the library in managing the lifecycle of electronic resources using Alma. [Result/Conclusion] Managing electronic resources through next-generation library service platforms requires clear working principles, content, and process management. The formulation process must integrate the library's actual situation with platform functions to achieve efficient and effective electronic resource management.

Keywords: library service platform; electronic resource management; electronic resource management process; electronic resource management principles

Next-generation library service platforms integrate various systems for managing print, electronic, and digital resources, merging the functions of integrated library systems and electronic resource management systems to support all library operations for print, electronic, and digital resources, thereby achieving unified and seamless management of all library resources. As a typical representative of next-generation library service platforms, Alma is the first such platform introduced by domestic academic institutions, with an increasing user base that includes the Institute of High Energy Physics of the Chinese Academy of Sciences, Tsinghua University Library, Beijing Normal University Library, the Joint University Librarians Advisory Committee (JULAC) of Hong Kong, and the Library of the Chinese University of Hong Kong (Shenzhen), among others. Currently, Beijing Normal University Library (hereinafter referred to as "our library") has fully migrated its electronic, print, and digital resources to the Alma platform, truly achieving unified platform management of print, electronic, and digital resources in a practical sense. While print resource data was migrated from Aleph to Alma and digital resource metadata was imported from previous management platforms, only electronic resources were built from scratch, transitioning from manual operations to platform-based management.

Alma provides multi-dimensional electronic resource management modules that partially follow the DLF-ERM management standard [1]. A CNKI literature review reveals that Bao Ling et al. [2] introduced the background of next-generation library automation systems and their overseas implementation, covering development status, methods, deployment models, functionalities, and other characteristics of systems including Alma and Sierra. Chen Wu et al. [3] compared seven library service platforms in terms of architecture, functionality, and market aspects. Jia Xilan et al. [4] analyzed the essential features that next-generation library service platforms should possess and discussed construction

concepts, approaches, and issues requiring attention. Tian Xiaodi et al. [5] detailed the full-process functionalities for electronic resource management in next-generation library service platforms using Alma as an example. Liu Suqing [6], based on Marshall Breeding's 2017 global automation system survey, examined user experiences and perceptions of electronic resource functionalities among university users to analyze the electronic resource management capabilities of three major library service platforms, demonstrating that Alma has the highest recognition and shows an upward trend in electronic resource management functionality. Wu Lina et al. [7] elaborated on Tsinghua University Library's practice of revealing and maintaining electronic journals based on SFX and ALMA, while Qian Guofu [8] discussed Lancaster University Library's experience with Alma, noting significant improvements in digital resource construction, usage, and statistical efficiency. Although these scholars have introduced and analyzed next-generation library service platforms represented by Alma from perspectives of system architecture, technical elements, overall functionality, and electronic resource management, research specifically focusing on the workflow content, processes, and principles of electronic resource management on the Alma platform combined with library-specific practices remains limited. Clarifying these contents and establishing principles directly affects the quality of electronic resource management and the level of system application, making such research highly important. Through continuous exploration and analysis of Alma's electronic resource management workflow content, processes, and principles, combined with our library's actual conditions and platform functionalities, this paper was developed to provide reference and guidance for libraries interested in or currently using Alma and other next-generation library service platforms for electronic resource management.

2. Content and Process of Electronic Resource Management Based on Alma

2.1 Management Work Content

The main work content for managing electronic resources using the Alma platform includes the following aspects (see Figure 1 [Figure 1: see original paper]).

2.1.1 Electronic Resource Cataloging Alma possesses two types of electronic resource entities: electronic collection records and specific digital objects (portfolios). Electronic collection records represent the highest level of electronic resource hierarchy and can represent aggregator databases or packages (e.g., EBSCO Academic Search Complete; Elsevier ScienceDirect). Specific digital objects represent the lower level of electronic resource hierarchy, representing individual resources (e.g., a single journal within Academic Search Complete or ScienceDirect). Electronic resource cataloging work primarily includes cataloging or classification of digital objects (journals, books) and cataloging of electronic resource databases, encompassing both database-level and digital object-level cataloging. Only after cataloging can electronic resources better

support statistics, discovery, and retrieval, truly leveraging the capabilities of the next-generation library service platform.

In Alma, databases ordered directly from the Community Zone (CZ) (at the database level) have bibliographic records. Staff only need to click to confirm activation in the activation task list (for database-type electronic resources such as secondary literature databases) or activate corresponding digital objects (for electronic resources with specific digital objects, such as full-text electronic journal databases) to enable automatic renewal of long-term orders. If a relevant database does not exist in CZ, a local collection must be established, which inherently lacks bibliographic records, requiring the library to perform database-level cataloging for these electronic resources. This enables automatic renewal of long-term orders after resource activation; otherwise, the long-term order function cannot be achieved, meaning subscription period renewal cannot be automated. Therefore, the library's cataloging work primarily focuses on resources not available in CZ, resources with incomplete metadata from suppliers, or cases where the library wishes to improve existing data, such as adding Chinese Library Classification categories to facilitate statistics.

2.1.2 Database Orders and Invoices On the Alma platform, the content required in orders and invoices involves parameter settings and standardization, mainly including:

- (1) **Purchase Type.** Generally divided into eight types: Electronic package continuous subscription; Electronic package one-time purchase; Access service continuous subscription; Database service one-time payment; Other services one-time payment; Other services continuous subscription; Electronic journal continuous or one-time subscription; Electronic book continuous or one-time subscription.
- (2) **Supplier Name.** In practice, foreign electronic resource supplier names can reference standardized names from the DRAA website's resource encyclopedia section. Standardized names facilitate subsequent operations. For example: American Chemical Society; Chinese electronic resource supplier names reference their actual names, such as Social Sciences Academic Press. Foreign electronic resource supplier codes can reference database standard abbreviations from the DRAA website, such as ACS; Chinese electronic resource supplier codes use pinyin initials of the company name, such as SKWX. Foreign electronic resource supplier account descriptions use Name + Electronic, such as American Chemical Society Electronic; Chinese electronic resource supplier account descriptions use Code + Electronic, such as SKWX Electronic. Electronic resource supplier account codes use abbreviation-E, such as ACS-E for foreign suppliers and SKWX-E for Chinese suppliers. If a database has an additional agent, the account description uses the agent's name, such as IGroup China, and the code uses agent abbreviation-E, such as IGroup-E.

- (3) **Supplier Type.** Suppliers have three types: Content supplier/subscription agent: provides materials or subscription services; Access provider: provides electronic resource access services, requiring the platform name provided by the supplier to be entered in the supplier details page; Licensor: holder of electronic resource licenses. When this option is selected, the predefined supplier can be selected as the licensor for resource use on the license agreement definition page. In practice, import/export agents such as Beijing Zhongke Import & Export Co., Ltd., primarily responsible for material ordering and foreign exchange payment, also sign database subscription contracts with university libraries as Party B, such as the Chinese Science Citation Database (CSCD). Therefore, both and should be selected. Database agents such as IGroup follow the same principle and should also have both and selected. Publishers that provide access services themselves should have all three types selected; those that do not provide access services themselves only need and selected.
- (4) **Acquisition Method.** Normally purchased electronic resources select “Purchase”; gifted resources select “Gift”; electronic resources purchased before Alma implementation select “Technical” method. Technically acquired electronic resources do not require funding information, making them suitable for resources purchased outright in years prior to Alma implementation. This generates an order record without involving retrospective funding issues.
- (5) **Subscription Dates.** The order cycle provides two renewal methods: manual date updating requiring staff intervention; or pre-setting renewal dates and cycles for automatic platform updates without manual intervention during the renewal period. For long-term electronic resource orders, automatic renewal with a one-year cycle is recommended. For continuously subscribed resources, only the renewal date and subscription start date need to be filled in; the subscription end date can be left blank. If an electronic resource is no longer subscribed, the order can be closed, and the order will no longer be active or renewable.
- (6) **Invoices.** In our library’s practice, the payment method is bank transfer, the invoice reference number is the physical invoice number, and the payment identifier is the requisition number (if the library uses check payment, the check number can be entered here). The notes section includes the foreign currency price calculation formula: foreign currency price * exchange rate * (1 + handling fee). The invoice naming convention is Supplier + Year/Month/Day (two digits each).
- (7) **Acquisition Model.** Can select Demand Driven Acquisition (Patron Driven Acquisition, PDA) mode or regular subscription/one-time purchase mode.

The order and invoice creation process in Alma is shown in Figure 2 [Figure

2: see original paper]. For electronic resources with specific digital objects, the order model is shown in Figure 3 [Figure 3: see original paper].

2.1.3 License Agreement Management In Alma, clicking on an existing license agreement name or the add license agreement button enters the License Detail page. The License Detail page includes the following tab contents: Summary tab, providing the license agreement name, status, and license start and end dates; License Terms tab, providing specific content modules of the agreement such as Terms of Use, Restrictions, Perpetual Rights, etc.; Inventory, which can directly link to electronic resources related to the agreement; Amendments/Notes tab, where amendments or supplementary agreements to existing agreements can also be added to the system and linked to the original agreement. The license detail page can also set signatories, physical storage location of the license agreement, agreement effective status, agreement review status, and URI address of the electronic contract, among other information.

- (1) **Name and Code.** The name uses the actual license agreement name. The code can adopt the naming convention of Database Name + Contract Service Date to facilitate staff understanding and subsequent management of license agreements, such as PRL 2015-2017. For amendments to original agreements, they can also be attached to this agreement. The license agreement name can be the same, but the code must be unique. For example, the 2016 amendment to PRL could be coded as PRL2016r.
- (2) **License Agreement Status.** In Alma, there are five selectable statuses for license agreements: Active, indicating the license is activated and in use; Deleted, indicating the license agreement has been deleted (deleted agreements can be modified back to active status if needed); Not Enabled, indicating the agreement exists but is not in use; Expired, for agreements whose licenses have expired; and Withdrawn.
- (3) **License Agreement Location and Review Status.** The license agreement location selects staff office. The system's default license agreement review statuses include: Approved; Under Review; Pending; Not Enabled (this status means the agreement is only stored as information in the system but has not been activated).
- (4) **License Agreement Terms Function.** License agreement terms management has two approaches: manual selection and input of terms content; or direct generation of license agreement terms by uploading ONIX-PL XML documents. By uploading ONIX-PL XML, users only need to fill in brief information such as identification numbers without selecting and inputting content modules, terms, and term values one by one. Currently, only some foreign suppliers can provide ONIX-PL XML format files, so libraries generally need to use both methods simultaneously.

2.1.4 Electronic Resource Activation Electronic resource activation management is not limited to journals and books; any resource with metadata can be activated and managed on the platform. After activation, management at the digital object level and various types of statistics (such as quantity statistics and subject statistics) can be achieved. Simultaneously, digital objects can be discovered and used by readers in the next-generation front-end platform such as Primo.

- (1) **Electronic resources with specific digital objects.** Requires activation of all digital objects within the electronic resource package to enable Alma's management of digital objects, enabling retrieval and discovery via Primo on the server side. Divided into CZ resource activation and local collection activation, with specific activation processes shown in Figure 4 [Figure 4: see original paper] and Figure 5 [Figure 5: see original paper].
- (2) **Database-type electronic resources.** Requires activation of the database in the activation task list. Only after activation can the electronic resource long-term order function be achieved, i.e., automatic subscription period renewal.

2.1.5 Electronic Resource Statistics and Analysis Alma's Analytics module possesses statistical, analytical, and measurement functions, capable of generating various reports on library operational activities in different ways. Users can utilize the various report types provided by the system or customize their own, and can also share customized reports and control formats with other staff within the institution or with other institutions. Alma's electronic resource usage statistics come from two sources: COUNTER standard reports provided by database vendors, which our library imports into the Alma system; for databases supporting the SUSHI protocol, the library needs to generate a SUSHI account for each supplier—a rather labor-intensive and time-consuming task—after which automatic harvesting of COUNTER reports can be achieved. Currently, Alma only supports harvesting and uploading of COUNTER R4 reports and is testing COUNTER R5 compatibility with early testing partners, with plans to fully support COUNTER R5 report format in January 2020. Analytics data updates daily rather than in real-time. If staff need accurate and up-to-date statistics within a very short timeframe, Alma cannot fulfill this requirement.

In Alma Analytics, subject statistics themes generally include three types of objects: Fact, Measurement dimension, and Description dimension. The first layer under the subject is fact (folder icon). Measurement dimension is marked with a yellow rectangle, and description dimension with a gray rectangle. When conducting certain statistics that require crossing subjects to meet statistical needs, Alma Analytics' important feature of creating cross-subject parameter reports must be used. Creating cross-parameter reports requires meeting two conditions: Two subjects share at least one measurement dimension; Description fields must come from the same description dimension. For example,

Fulfillment and Fines and Fees sharing Loans and Loans Details allows for cross-subject parameter statistics.

2.2 Management Workflow

2.2.1 Alma's Workflow Management Features A key feature of Alma's electronic resource workflow management is that Alma's Electronic Resource Activation Task List can assist libraries in tracking resource management progress and task handoffs between staff—that is, the Electronic Resource Activation Task List has workflow management functionality for electronic resources. When an electronic resource generates an order, Alma automatically pushes the electronic resource to the Electronic Resource Activation Task List. Staff can also manually push resources, displaying the next required work step for electronic resources and tracking their entire lifecycle. In the task list, system operators can design statuses (such as “Awaiting License”). For new resources, expected activation dates can also be revealed. Resources not activated by the expected date will be pushed by the platform to the Claim Task List for staff tracking. The Electronic Resource Activation Task List can be customized by the institution. Generally, an electronic resource management workflow for a small academic library may differ significantly from that of a large academic library. Status settings do not necessarily need to follow a streamlined model and can be set according to the library's actual situation. Resources in the task list can be assigned or reassigned to operators, with due dates set. If tasks are not completed by the due date, Alma sends operators an email reminding them that resources remain pending in the task list with statuses to be verified. Additionally, tasks assigned to operators will appear in the operator's task list in Alma's main menu when they need to be processed.

However, the Electronic Resource Activation Task List also has a limitation: it does not provide operators with a checklist to verify which steps in the electronic resource management process have been completed and which remain pending. For example, when an operator designates a work status, the task list does not trace previously designated statuses. Operators must use a status verification checklist outside the Alma platform (such as adding URLs to the proxy server list, obtaining MARC data, reviewing license agreements, publishing resource access notifications, placing resources in the database A-Z list for discovery, and various other statuses) to verify one by one that all process steps have been completed.

2.2.2 Electronic Resource Management Process Based on Alma Before the application of next-generation platforms, although electronic resource management workflows varied among libraries, communication and advancement between work stages generally relied on email as written records. However, email forms cannot provide all relevant staff with clear tracking of work progress status. Next-generation library service platforms provide conditions for refining, advancing, and supervising electronic resource management workflows. Based

on Alma's functional settings and our library's practice, the electronic resource management process can be preliminarily designed as: Awaiting Trial → Awaiting Evaluation → Awaiting License Agreement (Already Ordered) → Awaiting Access Activation → Awaiting Alma Resource Activation → Awaiting Database A-Z Organization and Discovery → Awaiting Notification to Electronic Resource Procurement Group → Awaiting Primo Central Activation → Awaiting Cataloging → Confirming All Work Completed → Workflow End. This workflow covers both electronic resource management-related work and makes the status of all work clear and explicitly assigned on the platform. See Figure 6 [Figure 6: see original paper] for details.

3. Principles of Electronic Resource Management in Our Library Based on Alma

3.1 Principles for Electronic Resources Entering Alma Order Management

Mainly includes: Resources explicitly stated as ordered or gifted in license agreements; Gifted resources only require orders, not invoices, with acquisition method selected as "Gift"; Resources ordered with departmental funding only require orders, not invoices, with acquisition method selected as "Technical" (technical method does not require funding information, thus avoiding system settings for funds unrelated to the library); Electronic resources purchased outright before 2017 select the "Technical" method.

3.2 Principles for Electronic Resource Activation and Discovery in Alma

Mainly includes: Electronic resource databases with metadata that import well and show good effects when combined with Primo sandbox environment are activated and managed in Alma. Those that cannot be activated and managed in Alma are only discovered in Primo; Prioritize resources from CZ. If corresponding resource databases are not available in CZ, establish local collections in the Institution Zone (IZ); If purchased resources correspond to multiple resource databases in CZ, establish a single local collection in IZ.

3.3 Principles for Using the License Agreement Module

Mainly includes: The terms function is temporarily not used; Electronic scanned copies are temporarily not placed in the Alma system; Enable the overview function of the license agreement module, including license agreement name, code, status, licensor, signing date, effective date, end date, storage location, and approval status. After completing the license agreement information, select the corresponding license agreement in the order to establish a linking relationship, making the license agreement visible in the order and order information visible in the license agreement.

3.4 Principles for Metadata Description of Electronic Resource Databases

By setting up import profiles, electronic resource database metadata information (MARC21 format) is imported into Alma. The description fields are shown in Figure 7 [Figure 7: see original paper]. After electronic resource databases have descriptive records in Alma, readers can see the database A-Z list in the discovery system Primo, facilitating their use and query of database-related information (the A-Z list is pending official release). Additionally, since the records contain field descriptions for various database information, they effectively support various statistics for database ordering and usage.

4. Suggestions for Developing Workflow and Principles for Electronic Resource Management Based on Alma

4.1 Clarifying Work Content is Fundamental

Using Alma to manage electronic resources requires first clarifying the management functions and content provided by the Alma platform, while understanding what preparatory work is needed to use these functions and enable the management content they provide. This is the foundation for using the Alma platform to effectively manage electronic resources. For example, the order and invoice functions require developing relevant parameters and having clear records of the library's subscription status; the activation function requires the library to have sufficient understanding of resources available in the platform's CZ community, the library's resource types and full-text availability, and adequate reserves of resource metadata. Only by combining the platform's activation functions and processes can resources be clearly and accurately provided for reader discovery and use, demonstrating the advantages of platform-based electronic resource management.

4.2 Workflow Consistent with Library Reality Provides Support

Although electronic resource management processes share commonalities, each library's management processes and habits still differ due to various factors such as departmental settings and administrative management. As previously mentioned, Alma's workflow management function can be customized according to institutional needs and adjusted based on the library's electronic resource management habits and processes. Only by aligning with actual library needs while fully utilizing and supporting platform workflow functions can the automation and systematization of the library's electronic resource management be fully supported.

4.3 Clear, Targeted Work Principles as Guidance

After clarifying work content and workflow settings, libraries face an important question: what to do, how to do it, and what to prioritize. Therefore, after fully

mastering platform functions and the library's situation, developing clear and actionable work principles as guiding directives is essential. With clear work principles formulated based on work content and library needs, libraries can systematically initiate platform-based electronic resource management work, either advancing in stages or prioritizing key functions first, until fully 挖掘 and leveraging the platform's electronic resource management effectiveness to achieve multi-dimensional, optimized management of electronic resources. Simultaneously, the platform's statistical and analytical functions can be utilized, combined with the library's data situation, to explore benefit analysis and statistical analysis of electronic resources, ultimately achieving high-quality, multi-dimensional, and granular management of electronic resources.

The importance of electronic resources in library collection development is increasing, and electronic resource management is indeed a complex process. Next-generation library service platforms provide possibilities and foundations for in-depth electronic resource management work. Libraries must integrate clear work content, principles, and processes based on platform functions and actual needs, conducting 统筹 analysis. Only when these three elements cooperate, are compatible, and support each other can Alma's functions for managing electronic resources be fully utilized and leveraged, achieving refined management of procurement, activation, cataloging, organization and discovery, license agreements, and terms, thereby providing convenience and support for the library's electronic resource management.

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Author Contributions:

Tian Xiaodi: Responsible for topic selection, conceptualization, writing, and revision;

Li Guangli: Responsible for activation process testing;

Bai Xue: Responsible for activation process and electronic resource database metadata description testing.

English Abstract:

Work Content and Principles on Electronic Resources Management in Alma: Practice and Consideration

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Abstract: [Purpose/significance] Alma, the next-generation library service platform, has truly realized the unified platform management of printing, electronic, and digital resources in a practical sense. In particular, electronic resources have been managed by platform instead of manual operation. Exploring and studying the content, process, and principles of electronic resource management in Alma are crucial for high-quality management. [Method/process] The work content, process, and principles of Alma's electronic resource management were continuously explored and analyzed in usual work, and the actual situation of the library and platform functions were also combined, and finally the experience and methods were formed, which can be used to guide and support the library to use Alma to manage the lifecycle of electronic resources. [Result/conclusion] The management of electronic resources by using the next-generation library service platform requires clear working principles, contents, and process management, and the combination of the actual situation of the library and the functions of the platform in the formulation process can achieve twice the result with half the effort and better management of electronic resources.

Keywords: next-generation library service platform; electronic resource management; electronic resource management process; electronic resource management principles

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

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