

Implementation of the CultIS Platform at the Sofia University Library “St. Kliment Ohridski”: Challenges, Results, and Perspectives

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Abstract. The Sofia University Library is the largest academic library in Bulgaria and one of the leading libraries in the country. The paper presents a case study on the implementation of CultIS – a web-based software platform for intelligent digital management and presentation of large datasets and knowledge in the fields of culture, humanities, and social sciences, carefully preserved by the library for many years. The process from both technological and library perspectives will be presented, examining the challenges the team overcame, and the decisions made at each stage. Like any modern library, the Sofia University Library actively provides opportunities for secondary publishing, which are made possible by implementing the platform and integrating it with the Bulgarian Portal for Open Science. The results after one year of using the platform will be presented.

Keywords: Digital Library, Platform Migration, CultIS, Sofia University Library, Open Science, Metadata Management, Digital Preservation.

1 Introduction

The active digitization and implementation of technological solutions in libraries is a strategic necessity that fulfills both their mission to preserve heritage and the demands of the modern world. This process is the most reliable way to preserve unique but fragile historical documents, creating a “digital sanctuary” for future generations (Owens & Padilla, 2021). Furthermore, it democratizes access to knowledge, removing physical barriers and making the nation’s cultural heritage freely available to students, researchers, and scholars around the world. In the long term, digitized collections become the foundation for future innovations – from artificial intelligence research to the creation of new educational resources. In this way, digitization transforms today’s libraries from

passive paper archives into active and vibrant centers of knowledge that not only preserve the past but also actively participate in building an informed and digitally connected society.

The Sofia University Library “St. Kliment Ohridski” holds a paramount position as Bulgaria's largest academic library. Its journey into digitization began in 2012, albeit later than many European counterparts, following the acquisition of necessary hardware and software. Initial efforts utilized DigiTool and later DSpace systems. However, significant drawbacks – including poor user interfaces, cumbersome publishing processes, and software obsolescence – necessitated multiple file conversions and redundant processing. This highlighted a critical need for a sustainable, standardized, and user-friendly digital collections management system, particularly as the library bears responsibility for configuring and maintaining access to them (Greenstein, 2000).

Following an evaluation of available solutions, Sofia University Library selected the CultIS platform (Goynov et al., 2024), available at <https://cultis.math.bas.bg/>, developed by the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences (IMI-BAS). The decision was driven by three key factors: the platform's modern technological architecture, its capacity to maintain standardized metadata and protocols, and its ability to interoperate with the university's integrated library system. At the project's outset, Sofia University Library managed 19 digital collections comprising 16,223 titles, predominantly full-text books, journals, and articles, alongside a smaller number of photographic images.

This paper aims to present the key challenges, results, and perspectives related to the implementation of the CultIS Platform for the needs of the Sofia University Library “St. Kliment Ohridski”. CultIS is an innovative web-based platform for intelligent cultural content management providing descriptive cataloging, subject indexing, intelligent data retrieval, curation and collection development aimed at meeting the functional needs associated with the growing expectations of users of cultural institutions such as libraries, museums and other providers of cultural and historical heritage. The CultIS platform is open-source and was developed in collaboration with the national e-infrastructure CLaDA-BG, the Bulgarian National Interdisciplinary Research e-Infrastructure for Resources and Technologies in favour of the Bulgarian Language and Cultural Heritage, part of the EU infrastructures CLARIN and DARIAH (2018-2027) (CLaDA-BG, 2018–2027). Numerous implementations have been realized for the needs of cultural, educational, and scientific institutions (Goynov et al., 2024; Paneva-Marinova et al., 2024; Goynov et al., 2025). Section 2 of this paper presents some challenges during the CultIS platform implementation and data migration procedures. Section 3 discusses the optimized post-migration workflow and productivity improvements. Section 4 presents the platform integration with the Bulgarian Portal for Open Science making the Sofia University the largest content provider there. Section 5 gives insights from the CultIS statistical module, analysing the number of visitors and the users' feedback.

2 Platform Implementation and Data Migration

The primary goals of the CultIS platform implementation and data migration were to establish a robust new system while ensuring the complete integrity and accessibility of all existing digital assets. The implementation of the CultIS platform includes not only a setup of software but also migration of the existing digital collections and all digital objects without losing any metadata and files. Preparation began with creating a virtual server at the Heritage BG data center and creating a dump of all metadata and objects currently available in the existing digital collections management system for analysis. The analysis included classification of more than 300,000 metadata attributes (from MARC 21 records) and more than 600,000 file entities, structuring them into high-level reports in order to provide the necessary information about the further migration decisions.

2.1 Structural and Configural Requirements

A primary requirement was preserving the library's established hierarchical structure of collections and subcollections, a functionality natively supported by CultIS. The platform also met essential institutional needs, including a bilingual (Bulgarian/English) interface and sophisticated user access management (Table 1. Matrix of user roles). The latter was crucial for complying with copyright law, particularly for a special collection serving users with “disabilities that prevent them from reading printed materials” (per Article 26a of the Copyright Act), which requires rigorously controlled access.

Table 1. Matrix of user roles.

User role	On-site access (University network)	Remote access
Visually impaired users	Full read access (incl. the special collection), manually granted by library administration	
Sofia University members (students & teachers)	Full read access (except special collection)	Full read access (except special collection) after identification via institutional email
Guests	Full read access (except special collection)	Read access to open-access objects only
Editors	Manage objects and metadata	
Administrators	Manage user access to the platform. Perform maintenance tasks	
Model editors	Manage models and data structures	

2.2 Metadata Migration and Mapping

One of the main challenges was determining which metadata elements should be migrated and visible in the new platform. Decisions were made based on the practices of leading libraries with large digital collections of digitized literary heritage. The

streamlined. Furthermore, all objects were assigned standardized Rights Statements licenses, making Sofia University Library the first Bulgarian library to implement this best practice nationally.

2.3 File Format Standardization and OCR

The legacy system housed files in non-OCR PDF and JPEG formats, limiting searchability and long-term preservation. A major advancement during migration was the automated batch conversion of files to standardized, searchable PDF format, including Optical Character Recognition (OCR) for previously unreadable texts. This saved years of manual labor. Additionally, journal files were intelligently split into individual issues based on existing structural metadata, increasing the total migrated records by approximately 5,300 and greatly enhancing accessibility and usability.

2.4 User Interface and Search Functionality

The platform's interface was customized to feature representative imagery for each collection. It offers intuitive navigation and displays title counts for each collection. A powerful dual-search system was implemented: a basic full-text keyword search and an advanced search across indexed metadata fields (author, year, publisher, etc.). This advanced search also served as a quality control tool, allowing librarians to identify and correct legacy data errors.

3 Post-Migration Workflow and Productivity Gains

The technical migration phase was completed acceptably rapidly and smoothly, paving the way for meticulous verification. The CultIS team configured the platform and migrated all data from the old system in approximately three weeks, including verification. The process was smooth, with no technical issues. While some pre-existing metadata errors were revealed by the new system's indexes, all 21,000 items were successfully transferred.

Librarians then verified each collection against the old platform, confirming the migration's success and allowing work to resume in the new environment.

Additionally, a working group created bilingual (Bulgarian/English) texts for the platform's Privacy Policy, Terms and Conditions, Help section, and user guidance for registration and protected content access.

Migrating to a new digital collection management software is always challenging, both because of the software itself and because of the need to change the workflows. CultIS implementation significantly improved the workflow quality and the working pace, because the software is intuitive and does not involve unnecessary processes that slow down the work. Like any modern platform, it uses a web-based interface that does not require another graphical user interface. The workflow consists of the following steps excluding the processes of digitization, image processing, optical character recognition and structural metadata creation:

- Selecting the type of the resource to be published;
- Selecting a collection and subcollection;
- Loading metadata from the integrated library and information system by bibliographic system number – in rare cases, librarians create descriptive metadata for non-traditional library resources;
- Editing metadata (if necessary) – this is required when publishing multi-part resources, including serials;
- Adding the necessary attributes – Reproduction note (publishing organization and date of digitization), Access note (for personal use, special access (SENO), accessible at the university network, no restrictions), Rights statement;
- Uploading the file.

Features like auto-fill buttons for repetitive data, a direct "edit" button on preview screens, and a comprehensive audit log for tracking and reverting changes have significantly increased operational efficiency. This is reflected in output: from a baseline of 21,527 migrated objects, Sofia University Library more than doubled its holdings to over 43,000 titles within the first nine months of CultIS going live.

4 Integration with the Bulgarian Portal for Open Science

The implementation of CultIS coincided with national mandates for secondary publishing under open science regulations. The platform's interoperability abilities, which is one of the most important characteristics (Xie & Matusiak, 2015), allowed Sofia University Library to index selected research-oriented collections directly into the Bulgarian Portal for Open Science (using the implemented Open Archives Initiative Protocol for Metadata Harvesting standard, OAI-PMH). The indexed collections include:

- Scientific publications of Sofia University researchers
- Annual of Sofia University St. Kliment Ohridski
- Dissertations, defended at Sofia University St. Kliment Ohridski
- Dissertation abstracts
- Scientific heritage
- Serials – partially indexed in the Bulgarian Portal for Open Science, because some of the titles are popular or popular science journals that are part of cultural heritage collections of the Sofia University Library.

This integration replaced a previously disorganized and sparse deposit process. By mid-2025, Sofia University had become the largest metadata provider in the national portal, with over 28,000 titles indexed. This success has fundamentally altered the library's role, increasing its strategic value and fostering greater reliance from the university faculty.

5 Usage and User Satisfaction

While technical performance is crucial, the most meaningful indicator of a digital platform's success is ultimately its usability – how effectively and efficiently end-users can

achieve their goals. Statistical data, gathered from platform analytics, provides objective insights into user satisfaction and behavior. This evidence-based information then serves as a critical foundation for making specific, targeted decisions regarding the collection development policy.

Moreover, a social media promotion and advertising strategy was developed to introduce CultIS as a new platform for managing the digital collections of the Sofia University Library. The campaign began shortly before the platform was launched and continued intensively for about two months afterward. In addition to social media, a poster was designed and displayed in the Sofia University buildings, including branch libraries.

The module for usage statistics of the platform provides complete information on usability, both by collection and by title. It is updated monthly. Unlike other usage statistics modules, this one allows to filter data by user type and by collection. For an in-depth analysis of usage statistics, filtering by user agent is also provided. Several other criteria can be used to extract the necessary statistics.

From March to December, approximately 619,000 resources (Figure 2: Usage of digital collections in 2025) were used from the digital collections. Nearly 136,000 of these were used by registered users, while the rest were used by unregistered users.

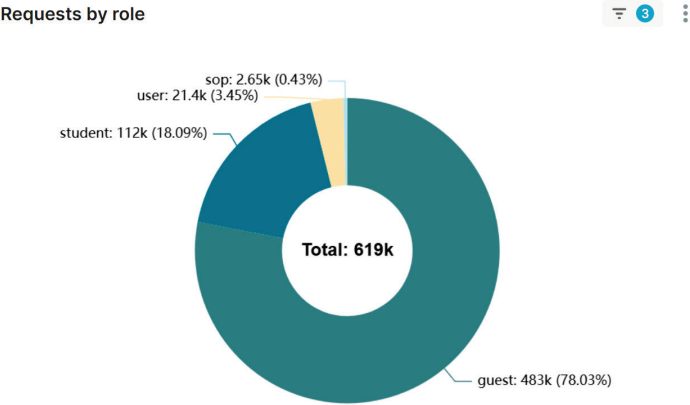


Fig. 2. Usage of digital collections in 2025.

One of the greatest advantages of the platform is its ability to provide remote access to the restricted resources. Ninety-one percent of the resources (Figure 3: Remote access to the platform) were used outside the Sofia University network.

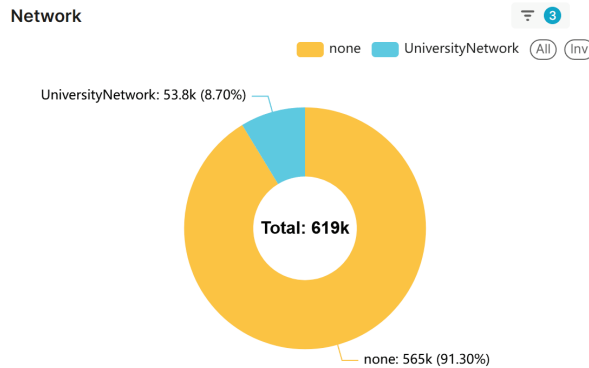


Fig. 3. Remote access to the platform.

The most frequently used collection is Course Readings, which is foreseeable since students are the most numerous users of the library. Books are used most often (about 45% of all uses), followed by articles (32% of all uses) and serials (15% of all uses). The analysis indicates that textbooks are the most frequently used resources, accounting for 2,000 uses for the top titles. Two fiction works are among the top ten titles, but it is difficult to determine whether they are used for educational purposes or for pleasure by users outside the University. It should be noted that the increased number of published digitized educational literature is due to an exception in the Copyright and the Related Rights Act that the University Library is using to digitize out-of-commerce works. This allows digitization of books and serials that were last published more than 25 years ago.

Google Search Console statistics are also indicative of the platform's performance. The constant growth of the visits coming from the Google search engine can be observed on Figure 4. For the first 10 months since the platform migration the visits have increased by 200% from 1500 to around 4500 per month. The average position of 10.6 in the search results is a very good indication for the quality of the platform's content.

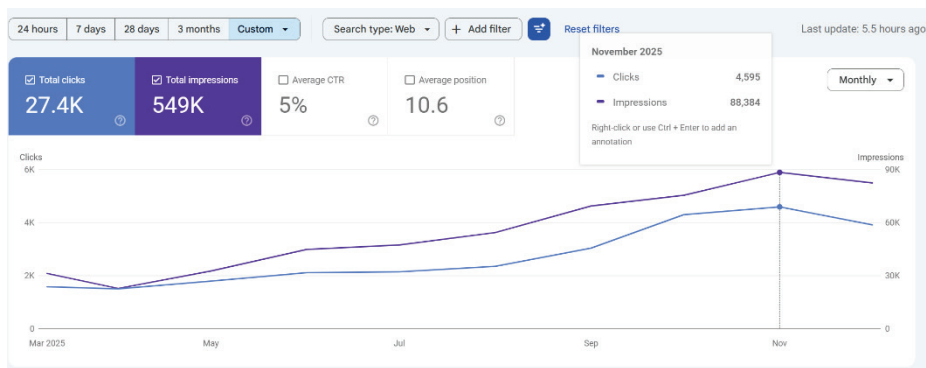


Fig. 4. Google Search Console performance statistics.

A quantitative assessment of usability clearly shows user interest. However qualitative analysis and ratings also provide trustworthy information. Since the launch of the platform, the Sofia University Library has continuously received expressions of gratitude for the opportunities it provides, and faculty have recommended the digital collections to their students. The rising number of requests for digitization and secondary publishing is another sign of the quality of the platform and the services it provides.

6 Conclusion

The implementation of the CultIS as a platform for management of the digital collections of the Sofia University Library St. Kliment Ohridski, combining the digitization of cultural heritage and the open science support at Sofia University, has transformed the library and its visibility on the Internet. The digital content created by the library has become more visible, perceived and reusable. The platform has accelerated the library transformation, enabling it to adequately respond to users' increasing demand for digital content. The integration with the Bulgarian Portal for Open Science has completely changed the position of the library within the university and increased faculty reliance on it. The successful collaboration between the Sofia University Library St. Kliment Ohridski and the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences proves that professionalism and collegiality lead to great results.

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