

SOUL Software Innovations in University Libraries in India

GuruRaju Ch¹, Dr. Venu Bandi²

¹Department of Library and Information Science, Kakatiya University Warangal

²Aast. Professor (G), Department of Education, Kakatiya University Warangal

Abstract—Software for University Libraries (SOUL), developed by the Information and Library Network Centre (INFLIBNET), represents a landmark indigenous contribution to library automation in India. Since its initial release in 2000, SOUL has undergone significant technological evolution, with SOUL 2.0 and the contemporary SOUL 3.0 offering comprehensive, web-based, and RFID-integrated library management capabilities. This paper critically examines the key innovations incorporated across successive versions of SOUL, evaluates its adoption and impact in Indian university libraries, and assesses its role in promoting standardisation, resource sharing, and operational efficiency. The study is based on a mixed-methods approach combining a review of published literature, INFLIBNET reports, and survey data gathered from librarians at 42 SOUL-adopting universities across India. The findings reveal that SOUL has been instrumental in automating core library functions, integrating digital services, and enabling participation in national library networks. Challenges including inadequate IT infrastructure, user resistance to change, and the need for enhanced technical support are identified. The paper recommends directions for future development of SOUL to address emerging user expectations and technological trends.

Index Terms—SOUL Software, INFLIBNET, Library Automation, University Libraries, India, RFID Integration, Library Management System, OPAC, Digital Library, ILS

I. INTRODUCTION

Library automation in India witnessed a decisive turning point with the establishment of the Information and Library Network Centre (INFLIBNET) under the University Grants Commission (UGC) in 1991. Recognising the need for an affordable, standards-compliant, and India-specific library management system, INFLIBNET embarked on the development of

SOUL — Software for University Libraries — which was officially released in 2000. SOUL was designed to automate the core functional modules of a university library, including acquisition, cataloguing, circulation, serials management, and the Online Public Access Catalogue (OPAC) (INFLIBNET, 2001).

The significance of SOUL extends beyond its technical capabilities. As a freely distributed software package available to all UGC-funded universities and colleges, SOUL has democratised access to library automation technology, enabling institutions that could not afford commercial systems like Libsys, Koha (hosted), or Ex Libris to implement systematic library management. The launch of SOUL 2.0 in 2009 marked a substantial upgrade from the earlier DOS-based architecture to a full-fledged web-enabled, client-server application compliant with international standards including MARC 21, Z39.50, AACR2, and Unicode (Sahu & Arora, 2012).

The most recent iteration, SOUL 3.0, has introduced cloud-readiness, RFID integration, mobile OPACs, and enhanced interoperability features, positioning it as a competitive alternative to international library management systems. Given its widespread adoption across more than 700 university and college libraries in India, a systematic analysis of SOUL's innovations and their impact is both timely and significant.

II. OBJECTIVES OF THE STUDY

1. To trace the evolutionary history and technological innovations of SOUL across its versions.
2. To analyse the functional modules and technical architecture of SOUL 3.0.
3. To evaluate the extent and pattern of SOUL adoption in Indian university libraries.
4. To assess the impact of SOUL implementation on library operations and user services.

5. To identify challenges in SOUL implementation and recommend solutions.

III. EVOLUTION OF SOUL: FROM 1.0 TO 3.0

3.1. SOUL 1.0 (2000): The Foundation

SOUL 1.0 was developed using a DOS-based architecture and offered five core modules: Acquisition, Cataloguing, Circulation, Serials, and OPAC. It supported the CDS/ISIS database format and allowed libraries to maintain bibliographic records in a structured format. Despite its technical limitations, SOUL 1.0 represented a pioneering effort in providing an integrated library system tailored to the needs and constraints of Indian academic libraries. Over 200 university libraries adopted SOUL 1.0 within the first three years of its release (Kaul, 2005).

3.2. SOUL 2.0 (2009): Web Enablement and Standards Compliance

SOUL 2.0 represented a quantum leap in technological sophistication. Developed using Java technology and a three-tier client-server architecture, it offered a web-based interface accessible through standard browsers. The adoption of MARC 21 for bibliographic records, AACR2 for descriptive cataloguing, and Unicode for multilingual support addressed the critical need for international standards compliance. The Z39.50 protocol enabled copy cataloguing from global library databases, significantly reducing the time and effort required for original cataloguing (Sahu & Arora, 2012).

Key innovations of SOUL 2.0 included a web-based OPAC with advanced search capabilities, a patron self-service portal, automated notification services for due dates and reservations, and a statistical reporting module. The system's compatibility with barcode technology facilitated the automation of circulation operations, enabling libraries to implement efficient self-checkout and check-in workflows (Vijayakumar & Vijayakumar, 2014).

3.3. SOUL 3.0 (2019–Present): Cloud-Ready and RFID-Integrated

SOUL 3.0 is the most technologically advanced iteration of the software, incorporating a range of innovations aligned with contemporary library technology trends. Built on a robust Java EE framework with MySQL and PostgreSQL database

support, SOUL 3.0 offers full cloud deployment capability, allowing libraries to leverage cloud infrastructure for enhanced scalability and disaster recovery. The system features seamless RFID integration, supporting automated inventory management, self-service kiosks, and anti-theft systems (INFLIBNET, 2020).

A mobile-responsive OPAC with a REST API enables access from smartphones and tablets, catering to the growing preference for mobile information access among students and faculty. SOUL 3.0 also incorporates a discovery layer with faceted search, enabling users to filter search results by format, subject, language, date, and location. Integration with e-resource management systems and linking with institutional repositories through OAI-PMH protocol provides a unified discovery interface for print and digital resources (Pattnaik & Mishra, 2021).

IV. FUNCTIONAL MODULES OF SOUL 3.0

SOUL 3.0 comprises the following functional modules, each designed to automate a specific aspect of library management:

Acquisition Module:

Supports fund management, vendor management, purchase order generation, invoice processing, and budget utilisation reporting with multi-currency support.

Cataloguing Module:

Provides MARC 21 compliant cataloguing with support for copy cataloguing via Z39.50, authority control, and import/export of bibliographic records in multiple formats.

Circulation Module:

Enables automated check-in/check-out with barcode and RFID support, fine calculation, patron management, reservation, and renewals through multiple channels.

Serials Management Module:

Facilitates subscription management, issues prediction, claim generation for missing issues, and routing and binding management.

OPAC Module:

Offers a user-friendly, mobile-responsive interface with simple and advanced search, faceted filtering, personalised accounts, reading history, and inter-library loan requests.

Reports and Statistics Module:

Generates comprehensive statistical reports on circulation, acquisition, cataloguing activity, and collection usage for decision-making.

Administration Module: Provides tools for system configuration, user management, access control, and system health monitoring.

V. ADOPTION OF SOUL IN INDIAN UNIVERSITY LIBRARIES

A survey conducted by INFLIBNET in 2022 revealed that SOUL software has been distributed to more than 850 university and college libraries across India. States with the highest adoption rates include Telangana, Andhra Pradesh, Karnataka, Maharashtra, Rajasthan, and Gujarat. The majority of adopting institutions are state universities and affiliated colleges, for whom the free distribution model makes SOUL the most accessible and cost-effective option for library automation (INFLIBNET, 2022).

Survey data gathered for this study from 42 SOUL-adopting university libraries revealed that 78% of respondents had migrated to SOUL 3.0, while 22% continued to use SOUL 2.0. The primary reasons cited for SOUL adoption were its zero-licensing cost (94%), INFLIBNET support and training (87%), standards compliance (76%), and compatibility with existing IT infrastructure (68%). Libraries reported significant improvements in catalogue access, circulation efficiency, and user satisfaction following SOUL implementation.

VI. IMPACT ON LIBRARY SERVICES

The implementation of SOUL has had a measurable positive impact on library operations and services in Indian universities. Cataloguing productivity has improved markedly due to copy cataloguing capabilities, with libraries reporting a 60–70% reduction in original cataloguing time. Circulation management has been transformed from manual record-keeping to fully automated workflows,

reducing human error and improving accountability. The web-based OPAC has expanded access to library catalogues beyond the physical library space, enabling faculty and students to search holdings from hostels, laboratories, and remote locations (Bavakutty & Salih, 2020).

VII. CHALLENGES IN SOUL IMPLEMENTATION

Despite its successes, SOUL implementation in Indian university libraries is not without challenges. Inadequate IT infrastructure, including unreliable internet connectivity and insufficient hardware, hampers the smooth functioning of web-based modules. Staff resistance to change and insufficient training remain significant barriers to effective utilisation. Many libraries lack dedicated IT staff to manage system administration, updates, and troubleshooting tasks (Kumar & Moorthy, 2022).

The absence of a live technical support helpline and the reliance on email-based support from INFLIBNET has been cited as a challenge by librarians at institutions located in remote areas. Interoperability with institutional ERP systems and the integration of payment gateways for fine collection represent technical gaps that limit the full potential of SOUL's administrative modules. Customisation limitations compared to open-source alternatives like Koha are also noted by advanced users (Siddique & Siddique, 2021).

VIII. RECOMMENDATIONS FOR FUTURE DEVELOPMENT

1. INFLIBNET should establish regional SOUL support centres to provide timely technical assistance to libraries.
2. AI-powered recommendation and discovery features should be integrated into SOUL's OPAC to enhance user experience.
3. A dedicated mobile application for SOUL should be developed to support patrons self-services.
4. Enhanced integration with institutional repositories, e-resource platforms, and learning management systems is essential.
5. SOUL should be made compatible with BIBFRAME and Linked Data standards to future-proof its cataloguing capabilities.

6.Regular version updates and a transparent development roadmap should be communicated to the user community.

IX. CONCLUSION

SOUL software stands as one of India's most impactful contributions to library automation, providing hundreds of universities and colleges with an accessible, standards-compliant, and continuously evolving library management system. The innovations embedded in SOUL 3.0 — cloud readiness, RFID integration, mobile OPAC, and enhanced interoperability — demonstrate INFLIBNET's commitment to keeping pace with global library technology trends while serving the specific needs of Indian academic libraries.

The continued relevance of SOUL depends on its capacity to incorporate emerging technologies such as AI-driven discovery, linked data, and seamless e-resource integration while addressing the practical challenges faced by libraries in diverse institutional contexts. Sustained investment by UGC and INFLIBNET, combined with robust user community engagement, will be critical to ensuring that SOUL remains the software of choice for Indian university libraries in the decades ahead.

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