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Sean Carte & Anushie Moonasar

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Design/methodology/approach: The research utilises a case study approach, examining DUT Library's newly acquired library services platform, EBSCO FOLIO, its advantages and limitations, as well as the functionality that is delivered as part of the continuous upgrade process.

Findings: The findings highlight the improvements in library efficiency, user satisfaction, and the system flexibility that have resulted from adopting EBSCO FOLIO. It also outlines the challenges that have arisen, particularly as a result of the upgrades.

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Evolving With FOLIO: Enhancing Durban University of Technology Library's Services Through Continuous Upgrades

Sean Carte and Anushie Moonasar

Durban University of Technology, South Africa

ABSTRACT

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Keywords: FOLIO, EBSCO, Library services platform, Integrated library system, Library management system, Academic Library

INTRODUCTION

Moonasar (2022) documents DUT Library's decision to migrate to the FOLIO library services platform (LSP), the migration process, and the limitations that were subsequently encountered as the library began using the new system. This paper reflects on DUT Library's experience in the two years following the migration. Specifically, it will explore how ongoing FOLIO updates,

feature additions, and enhancements have improved the cataloguing workflow and metadata management, and provided better efficiency, user satisfaction, and staff collaboration.

LIBRARY SERVICES PLATFORM

FOLIO is an open-source library services platform (LSP). Chaubhan *et al.* (2023) explain the difference between an LSP and a traditional Integrated Library System (ILS), describing it as "a fully loaded platform for the various needs of the library, powered by a loosely coupled app architecture that gives it modern library system capabilities". The authors further highlight key features of LSPs, including their capacity to manage both physical and digital resources, the replacement of multiple incumbent products, advanced metadata management, exposed APIs that enable interoperability and extensibility, and support for polyglot programming, allowing the use of multiple coding languages (Chaubhan *et al.* 2023).

EBSCO FOLIO

Like other open-source software projects, FOLIO is a community-led and owned project (FOLIO n.d. -a; Index Data 2017). The funding and development of FOLIO involve two commercial companies, Index Data and EBSCO. Both of these companies offer hosting of FOLIO as a Software as a Service (SaaS) solution. EBSCO FOLIO integrates features such as the EBSCO Discovery Service (EDS) and Panorama for analytics (EBSCO, n.d.). This particular implementation of FOLIO is currently utilised by DUT Library.

FLOWER RELEASES

The FOLIO documentation provides a roadmap for the new features and bug fixes that will be released in upcoming versions as well as release notes for previous versions. The versions are known as releases and are named after flowers, in alphabetical sequence. DUT Library migrated to the 'Iris' release in mid-2021. Several upgrades followed, from 'Juniper', 'Kiwi', 'Lotus', 'Morning Glory', 'Nolana', 'Orchid', and 'Poppy', to the current 'Quesnelia' release. At each release, new features, or apps, were added, and issues that had been identified as bugs were dealt with by the community who are involved in development. Each release introduces new features, improved functionality, and expanded support for the library workflows, ensuring the platform's scalability and adaptability for the diverse institutional requirements. In between the flower releases, critical service patches are provided to deal with any problems that have arisen. EBSCO FOLIO is a SaaS offering so the patches and version release upgrades are provided as part of the hosting. However, the responsibility remains within DUT Library to evaluate new releases and notify EBSCO of any issues encountered. To facilitate this, EBSCO provides a 'dry-run' instance of the production server ahead of the scheduled upgrade. As the roadmap indicates, there are two or three flower releases every year, and each flower release could introduce new apps. Consequently, there is a fair amount of testing that the library needs to undertake.

LIMITATIONS

At the time of migration, the DUT Library was well aware of certain limitations of FOLIO. There were no dedicated apps available for generating transactional reports. Instead, EBSCO offered Panorama, an analytics reporting platform built on Tableau. While Panorama serves as a robust tool for advanced analytics and reporting, it lacks the functionality required for straightforward transactional reporting, such as generating reports on overdue items or items in transit. Another limitation was the inability of the system to delete instance records directly through the user interface. Additionally, unlike the legacy system being migrated from, FOLIO lacked the integrated functionality for inventory control or stocktaking. While it was acknowledged that the migration involved transitioning to a system with incomplete features, there was confidence that the missing functionality would be addressed in future developments.

ARCHITECTURE

What sets FOLIO apart from traditional library management systems is that it uses a micro-services architecture, built on a central application programming interface (API) gateway, known as 'Okapi', which provides 'a single entry point into the system' (Okapi-FOLIO community 2023). Chauhan *et. al.* explain that a "micro-service architecture" separates the application into smaller independent services that communicate with one another using simple protocols' (2023: 153), and having the Okapi gateway as a core facilitates the integration of these 'loosely coupled apps' or 'micro-services' (2023: 154). APIs are sets of rules and protocols that allow different software applications to communicate and interact with each other. They serve as intermediaries, enabling seamless data exchange and integration across systems (Dobson 2021; FOLIO project. 2016-2024).

INTEGRATION

FOLIO provides RESTful APIs that enable the system to communicate and share data with other applications (Dobson 2021: 30). This is especially useful for institutions that need to connect their library system with other systems in their university. The APIs allow FOLIO to connect with DUT Library's discovery tool, EBSCO Discovery Service (EDS), and they allow for a smooth, seamless integration of workflows across various library systems. FOLIO can integrate with student information systems and learning management systems. This helps automate library tasks like user data updates which are based on student enrolment status and can sync information on other library resources used in the library. APIs also allow for interoperability with the institution's financial systems, which can be important if the university requires library expenses to flow through the institution's financial systems. FOLIO supports integration with financial software, allowing for streamlined budget management, vendor payments, and acquisition tracking (FOLIO 2024).

FOLIO APIS

Dobson (2021) documents how he used FOLIO's APIs to migrate his library's bibliographic and patron data from their legacy system into FOLIO, modify catalogue records, and extend the expiration dates of user records. Although DUT Library's migration was managed by the service provider, access to FOLIO's comprehensive API proved highly beneficial. This capability allowed DUT Library access to the APIs that facilitated the creation of simple web applications for such tasks as checking users' status and deleting instance records, as well as for batch processes such as modifying catalogue records.

In addition, it enabled integration with the university's ERP system so that staff and student records could be imported as patron records and updated periodically. Reports could also be generated using the FOLIO API to provide budget information for the acquisitions or inventory information for stocktaking exercises.

NEW APPS

As DUT Library had anticipated, the development of FOLIO has been impressive with no fewer than 16 new apps being introduced in the course of the eight flower releases since the migration (FOLIO n.d. -b). Instead of offering utilities designed for direct interaction by end users, the majority of these new apps deliver back-end functionality that supports and enables the operation of user-facing applications. Among these new apps are the Lists module and its related FOLIO query machine (FQM) module, which introduced the much anticipated transactional reporting functionality. Another newly introduced app is the MARC Authority app, which assists with assigning and validating the authority records within the collections that require meticulous metadata curation. The metadata librarians consider this one of the most significant improvements in the post-migration period as it enabled a more seamless integration with improved authority control systems, enhancing the accuracy and consistency of catalogue records.

INVENTORY CONTROL

In adherence to the university's financial control requirements, DUT Library is required to conduct inventory control on an annual basis. Inventory control is also known as stocktaking and involves verifying the existence of every catalogued item in the library. It is a time-consuming, labour-intensive process, so to alleviate the burden DUT Library implemented Radio Frequency Identification (RFID) technology, which involved tagging every item in the collection to enable efficient and accurate tracking of library materials. Duncan (2021) describes how the implementation of RFID technology in Caribbean libraries enhanced security, streamlined resource circulation, improved inventory management, and facilitated user self-service options. RFID scanners facilitate efficient and accurate inventory checks by enabling the rapid identification and real-time tracking of library materials. Each item is tagged with an RFID transponder, allowing for seamless scanning that significantly reduces the time and labour associated with manual inventory tasks. Consequently, implementing RFID allowed DUT Library to maintain compliance with the university's financial control requirements while optimising inventory management processes.

However, unlike the library's legacy system, FOLIO does not provide an inventory control mechanism, so workarounds have been established. These workarounds involve extracting inventory lists from FOLIO, which are compared to the lists generated by the RFID scanners. The scanners generate their lists through shelf-reading. Thereafter, lists of missing items are compiled, which are used to update records on FOLIO. The use of FOLIO's APIs makes this feasible.

SELF-SERVICE FACILITIES

Another benefit of RFID is the possibility of providing self-service facilities for users. Self-checkout kiosks use the Standard Interchange Protocol (SIP2) to communicate with the library system to provide services such as checkouts and renewals. Unfortunately, complete SIP2 functionality was not provided until the Poppy release of FOLIO (FOLIO n.d. -b). This has led to delays in delivering self-service facilities.

DISCOVERY LAYER

Together with the enhancements to the cataloguing functionality, FOLIO's integration with EBSCO Discovery Service (EDS) has meant that end-users should have improved access to library resources. The system's ability to better manage and display metadata ensures that users can discover the resources they need more efficiently. This improvement is particularly significant in a rapidly evolving academic landscape where timely access to information is crucial. While FOLIO and EDS are designed to work together, it was not a smooth integration for the DUT Library. There are ongoing issues with indexing and search result relevance. Issues with data synchronisation often arise as maintaining synchronisation between FOLIO's catalogue and the EDS discovery layer sometimes results in delays or inconsistencies, especially for new or updated records. The variations in metadata standards caused discrepancies in search results with the institutional research outputs and e-resources at DUT. The EDS relevance ranking algorithm does not always prioritise DUT Library resources over other external content and this can lead to user and staff frustration. Both FOLIO and EDS provide separate analytical tools and the integration between them may not yield seamless comprehensive reports which means that there are gaps within the data reports.

CHALLENGES

As welcome as the new functionality and continuous improvements are, they do introduce challenges of their own. Keeping up with FOLIO's frequent updates requires ongoing staff training to ensure cataloguers and acquisitions librarians are proficient with the new features. The pace of technological advancements means that ongoing professional development is essential for leveraging the system's full potential. Every new release necessitates testing to ensure that the system functions optimally. As the system evolves, managing staff expectations remains critical. Library staff who have become accustomed to previous workflows and interfaces may take some time to adjust to new ways of accomplishing tasks.

The serials management functionality within FOLIO, which is accessed through its Inventory, Orders and Receiving apps has many limitations compared to traditional integrated library systems. Unlike traditional ILS systems, which often provide predictive check-in features for recurring serial issues, such as journals and magazines, FOLIO requires significant manual input for setting up and maintaining publication patterns. The absence of automatic issue generation and renewal reminders for standing orders has increased the workload for the serial library staff at DUT Library. Updating holdings for serial titles with multi-locations requires significant manual effort. DUT Library staff find it challenging to generate comprehensive reports on serials usage, holdings, or expenditures directly from FOLIO, as its reporting tools are less developed compared to traditional systems.

Ongoing development efforts are underway to improve the serials functionality, with anticipated improvements including predictive check-in features and better management of serial relationships and title changes in future software releases.

EBSCO FOLIO is provided as a SaaS environment. While this does mean that traditional systems administration is no longer required, it also means that direct access to the database and log files is not possible.

No database access means that it is not possible to make bulk changes to the system, such as updates of records, apart from through the user interface tools provided or the API. Compared to issuing an SQL command on a database, this can be a very slow process. Also, if, as is the case with EBSCO FOLIO, projects such as MetaDB are not supported by the service provider, the library cannot make use of them.

Access to the logs can help with troubleshooting problems. Unfortunately, only circulation logs are provided by EBSCO FOLIO, and these do not always provide sufficient information, such as when a self-check machine refuses to renew an item. For problems such as these, it is necessary to request support from EBSCO. Fortunately, EBSCO's support staff are competent and efficient, however, this dependency does necessarily remove some degree of agency from the library.

STAFF FEEDBACK

Overall, staff feedback regarding FOLIO's post-migration enhancements has been positive, with cataloguers and acquisitions librarians expressing appreciation for the more streamlined workflows and improved metadata tools.

COLLABORATION

The collaborative nature of FOLIO's development has been instrumental in fostering closer relationships with other academic libraries also using FOLIO. DUT Library has benefited from shared knowledge and best practices across the global FOLIO community. However, for some library staff, transitioning to an open-source system, which includes active participation in the FOLIO community, represented a significant cultural shift and an unexpected adjustment. Encouraging staff to embrace real-time community engagement has proven to be challenging.

CONCLUSION

Since FOLIO operates as a community-driven platform, the development of modules and resolution of technical issues are dependent on the community's priorities and available resources. This can cause delays in accessing features that DUT Library staff consider essential. However, since migrating to FOLIO, DUT Library has benefited from several significant system upgrades that have improved cataloguing efficiency, metadata management, and user satisfaction. While challenges remain, particularly in terms of ongoing training and adaptation, the benefits of FOLIO's continuous evolution far outweigh the difficulties. As FOLIO continues to develop and evolve, DUT Library looks forward to further enhancements that will support its mission to provide high-quality library services in an increasingly digital academic environment.

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About the authors

Sean Carte is the Digital Services Librarian at Durban University of Technology, South Africa.

Anushie Moonasar is the Metadata Librarian at Durban University of Technology, South Africa.