Migrating from integrated library systems to library services platforms: *An exploratory qualitative study for the implications on academic libraries' workflows*

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Abstract: The present paper is based on a master thesis work that was carried out in the Linnaeus University (Sweden) and is an exploratory qualitative study in academic libraries regarding the transition from the integrated library systems to the next generation integrated library systems or library services platforms and the potential implications in their internal workflows. In our study we explored the phenomenon in the globe studying the international literature and by conducting two methods of the qualitative approach that of semi-structured interviews and observation we identified that not only there are important implications on libraries' workflows but also that new ones have been created.
The results of our study are presented in the paper along with a comparison between the Greek situation and the international one.
Keywords: Library Information Systems, Next Generation Integrated Library Systems, Library Services Platforms, Academic Libraries, Qualitative Study, Workflows, Greece

1. Introduction

Nowadays, libraries all over the world face pressures and challenges in a double spectrum : increased user needs and inadequate funding resulting in a gradually rising demand for the quality of their services and the support for their patrons (Fu & Fitzgerald, 2013; Breeding, 2016). As a result technology is a critical success factor and they have to implement the most appropriate technology platforms both for resources management and discovery search (Pace, 2009; Breeding, 2015; Breeding, 2016; Omeluzor & Oyovwe-Tinuoye, 2016). University, research special and national libraries experience difficulties in managing complex, diverse and large scale collections covering a heterogeneous material in multiple formats with a number of different communication protocols following them (Pace, 2009; Breeding, 2016). Moreover, they need systems for lending e-books and digital material in general in addition to their print one (Breeding, 2016).

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Furthermore, as mentioned above, the increased users' needs for instant and accurate information have created important matters for the librarian community which is looking for new roads and trustworthy solutions, realizing at the same time that their role has been changed from offering traditional services to the proactive or even interactive ones and along with the integrated library services offering advanced support to their patrons (Kamar & Clair, 2015).

In addition libraries acquired access in several databases signing subscriptions with great dealers and vendors, paying a lot of money (Fu and Fitzgerald, 2013; Breeding, 2015). Subsequently, academic libraries have created institutional repositories aiming at gathering the scientific, research and educational work produced by the universities and at the same time, through collaborations and synergies they are creating consortia in order to reduce the cost of subscribing in grand publishers and vendors (Fu and Fitzgerald, 2013).

Finally, apart from these developments many libraries have access to other less known resources (databases or web sites) which are nevertheless necessary for them. In the first decade of the 21st century the traditional ILS were well established, but the libraries needed new tools for managing those resources as well (Breeding, 2015).

In addition to that there are also practical reasons for libraries to change their old ILSs. One possible reason is that old software systems needs to be replaced because of their oldness that brings them to the end of their life, meaning that there is no more maintenance (Kelley et.al, 2013). Another possible reason is the ongoing changes, mergers and synergies between the leading vendors in the library systems field that drives to the creation of new products offered by them.

These issues are being discussed between the professional librarians and the system analysts and so far there are a number of surveys and case studies that are coping with these matters. Wang and Dawes (2012) mention both the tremendous changes in resources and services that libraries are provided with and the fact that the electronic material is outrunning the printed one and is gradually becoming a dominant library resource. Furthermore, Breeding (2009) mentions the dissatisfaction towards the current ILS products because they have failed to manage the electronic content and their user interfaces do not meet the contemporary expectations.

The recent developments show that most academic libraries still rely on integrated library systems despite the fact that procurements of new systems result in the selection of a library services platform, with Ex Libris Alma currently seeing strong popularity (Breeding, 2016). The transition from the old systems to the new ones is still in early stage but if the trend continues, the number of traditional ILS will decrease over time among large academic libraries (Breeding, 2016, p. 3). In the beginning of a new cycle of transition, academic libraries are expected to replace their ILS with the new platforms

during the next decade (Breeding, 2014) and this shift signifies the way that libraries will manage their resources and increased users' needs and deliver their services.

Marshall Breeding (2013) also mentions that the most successful library automation products are those who will manage to retain the classic ILS model and at the same time will offer fast responding search services to satisfy the arising needs of their clients.

Despite the fact that the current legacy systems have helped out libraries at organizing and diffusing their resources and automating their procedures, the development of the next generation library systems in combination with the increasing publications and the dramatic transformation in their collections have resulted in the creation of new standards that libraries need to follow up (Breeding, 2014). It is worth mentioning that those "new systems" are called with different names amongst the librarian community, "library services platform" (Breeding, 2012, p. 24) or "the next generation integrated library system" (Wang and Dawes, 2012, p. 1) or "web-scale management solution" (Burke, 2012) but they describe the same content.

Next generation library systems were developed as separate systems in the sense of the electronic management systems (ERM) in order to facilitate libraries in organizing and providing their electronic resources (Pace, 2015; Romaine & Wang, 2017). This happened because the traditional ILS were developed only for managing the printed material and this resulted in a hard condition where the libraries separated their workflows and the staff from traditional workflows.

The aim of this research is to describe the recent developments on this field and to identify the implications for academic libraries establishing these new systems in their internals workflows. We also examine in brief the current situation in Greek academic libraries comparing with the international one attempting to identify for the Greek context possible implications on their workflows as well. As there is no study so far concerning the Greek academic libraries overall, but partial ones, we believe that our contribution to the Greek context will be useful and it may provoke further studies on this field.

The research question is:

"What are the implications for the academic libraries regarding the adoption of the next generation ILS in their internal workflows?"

The research was conducted in three axes : a) studying the current literature regarding the ILS and making a comparison with the past and the present situation and looking at the future developments, b) following the qualitative approach by conducting semi-structured interviews and observation as well and c) following the interpretive paradigm.

We strongly believe that this kind of approach was the suitable one for our study because, a) we explored a global phenomenon in the field of library information systems and more specifically in the academic libraries, b) we were able to conduct the study with fellow colleagues and partners that we have been collaborating with for several years and c) we were able to make interpretations based on both our previous experience and our colleagues as well.

2. Review of the Literature

In the international literature there are a plenty of published articles regarding the transition from the traditional systems to the new ones and what the academic libraries are facing up with concerning a number of issues from distributed services and data exchange (Wang and Dawes, 2012) to libraries consortia and synergies (Mahovech, 2014) covering a big part of what the university librarians are dealing with.

Apart from that there are references mentioning from the one hand the vendors' contribution to the development of the new proprietary systems examining the reasons why they are investing so much in their creation (Green, 2014) and on the other hand there are a number of references (Yang & Hofmann, 2010; Wale, 2011 and Breeding, 2016) mentioning the existence of open source solutions examining the reasons why libraries are turning to these options (reducing costs of running, licensing and maintenance issues, ease of customizations amongst others).

All these developments and changes have led the librarian community to examine and to deepen on the implications in the libraries' workflows. Fu and Fitzgerald (2013) in their study compare two traditional ILSs and three next generation ones, by focusing on software architecture and functionality resulted in an outcome that the next generation library systems do have essential impacts on academic libraries' workflows and the librarians' role need to be redesigned in order to meet the new challenges.

Furthermore, they mention that the modular structure of the new systems do lead the libraries to redesign their typical workflows from one module to a more and different ones such as Systems Administration, Cataloging, Acquisitions, Serials, Circulation, and Statistics and Reports processes. From this transition a major change happened when large academic libraries established the new systems the "electronic or systems librarian" position emerged (Stachokas, 2018). This position begun as a public service generalist, evolving in a technical service specialist and resulting in an "electronic resources management expert".

The implementation of the next generation ILSs do have a vast impact on their workflows and their staff positioning as, for instance, there are no more requirement for local staff to perform tasks such as local backup - restore

operations and system maintenance or local network administration (Fu and Fitzgerald, 2013). Another option for this staff is to be assigned to other positions or to get trained in other tasks such as the knowledge of API's in order to help their institutions by customizing their local discovery interfaces. In contrary, we saw above that new roles or tasks have emerged (electronic or systems librarian) and according to Stachokas (2018) the academic libraries hire new staff in order to cover new clusters that are being created by the acquisition and use of electronic material. One for acquisition and licencing and one for managing knowledge databases, metadata, discovery and technical issues resolving.

While, it is a common truth that the electronic or digital material is surpassing the printed one and more than 50% of the whole library budget is spent on covering these needs (Burke, 2012 & Yang, 2013), yet much fewer of the 50% of the library's staff is devoted to cover the new emerged workflows mainly for the e-material (Pace, 2015). Some researchers (Ohler, 2013 & Pace, 2015) argue that the main defect of the next generation library systems is that they were created to handle only electronic material (exactly as their progenitors to handle only printed material) resulting in having multiple systems in play and leading the librarians to cope with such kind of issues.

Furthermore, other researchers mention the pros and cons of these new systems focusing mostly on the problems and obstacles the systems brought in. Pace (2015) mentions that although the new systems allow for advanced workflows in terms of ordering and purchasing printed and electronic material, however the librarians have to handle complex packages and orders from multiple platforms and mechanisms leading in a need for better and efficient workflows management (Pace, 2015; Romaine & Wang, 2017).

What is more is many cases the workflows are considered as processes (Mackinder, 2014) something completely different as the workflows actually are a set of directives that allow staff to execute its daily work (investigating, ordering, licensing), while processes are a number of tasks that need to be done simultaneously with the workflows such as the federated search tool, institutional repository, Electronic Resource Management, discovery tools, management interface, etc (Andrews, 2007).

To sum up, we can say that workflows are the general guidelines that set the boundaries of the procedures and the steps that staff have to follow up in order to accomplish its tasks (Mackinder, 2014). No doubt, the internal workflows are decided and limited by the library and its policy decision and depict of what has to be done in order a normal flux to be established for librarians.

3. Methodology

3.1 Hermeneutics

As our study was an interpretive approach, hermeneutics were applied as well. Myers (2004) informs us that hermeneutics mainly has to do with the "meanings" of a text or a text – analogue. Meaning that the main target of hermeneutics is to understand what humans mean by their acts and why they act at a specific manner. Within the field of Information Systems, hermeneutics may help us to discern how information systems are built, used and how the information itself influences the social and organizational contexts. According to Myers (2004), hermeneutics as an elemental philosophy offers the philosophical base for interpretivism, while as a methodological approach provides a way of the text – analogue data.

Of course, in order to interpret the phenomenon of LISs, next generation ILSs and library platform services, we make use of one of the principles of the hermeneutics, the historicity (Myers, 2004), which implies that we are able to understand ourselves and the phenomenon through a history line, thus we are able to talk about it with the community. Another cornerstone of hermeneutics is the hermeneutic circle of understanding of the text or the text – analogue, here dialectic is used between understanding the text as a whole and the interpretation and understanding of its parts. Due to understanding is always related to a phenomenon there is a need to presume the elemental structure of such phenomena (Butler, 1998). Gadamer (1975) as cited in Butler (1998), indicates that the "whole" that is a phenomenon includes and contains "parts" or "details" that compose it.

As we already mentioned above Academic Libraries are complex organizations where people and information systems are interwoven. In that context we are able to see the Library as a "whole" and then the information systems that are being used within library as a part. Accordingly, the Information system of a library can be perceived as a "whole" and its different modules as the "parts" of the "whole". Our effort is on trying to interpret the implications of the transition and migration from one type of information system to another, over the workflows of the library and the everyday routines of the staff.

3.2 Interpretive Research

According to Orlikowski and Baroudi (1991) interpretive studies assume that people while interacting with others, create and come along their subjective meanings of the environment they are into. Interpretivism claims that the knowledge we have for what is named reality are social products and for that reason it is not possible to understand them if we try to separate them from the factors, including the researchers, thus suggests that in order to understand the social process one have to get inside the world that generates them. According to interpretivism, everyday practices are consisted by the language people uses when trying to describe those practices (Orlikowski and Baroudi, 1991). Thus the research methods that are appropriate for producing interpretive knowledge

are field studies because they let researchers to examine humans in their natural everyday environment.

Academic Libraries is a well-organized system of humans and information technology systems. In our study we tried to investigate how the use of a library information system can affect the workflows of a library by investigating how librarians understand and make use of the system and how their understanding leads to the alteration of workflows. For that reason, we used the Interpretive approach as lots of organization researchers used it, as they are concerned on interpreting patterns of symbolic patterns that form and compose and maintain the sense of an organization (Walsham, 1995).

3.3 Exploratory Study

As exploratory study is well suited for explaining, clarifying and sensing a problem (Saunders, Lewis and Thornill, 2007), we are going to use it as the changes in Academic Libraries routines and workflows are ongoing and the nature of these changes are not always the same, nor are easy to describe in precision. Moreover, Exploratory Study fits to our way of conducting this research as we are willing to conduct a qualitative research using an amount of literature for reviewing it as well as semi – structured interviews and some observation to gather our data and as Saunders, Lewis and Thornill (2007) reports, the three main ways to conduct exploratory research are the search of the literature, the interviews of people that are experts in the subject and the focus group interviews. In our case the focus group interviews replaced by on site observation. In our work we intended to gather, classify and assay our data using an inductive prospect.

3.4 Research Design

Our method narrowed down the analysis for the implications of the next generation ILSs on academic library systems in their workflows, including the potential effects on them both from positive and negative perspective. Through our analysis we attempted to identify how these systems affect the libraries' organizational structure and librarians' designed positions in order to manage the different tasks that are derived from the implementation of the next generation ILS. Moreover, we tried to identify what are the limitations that these systems incur for the universities libraries in the sense that they were developed to manage electronic and digital material and there are conflicts when it is attempted to integrate on them other local library's resources such as the OPAC and the institutional repository. Thus in our study we followed the inductive approach (Saunders, et.al. 2012)

3.5 Data Collection

In order to collect the data we needed beyond reading the international literature, we used the observation as well as semi-structured interviews. Observation is a data collection method that allows the researchers to identify and acknowledge the differences of what staff say they are doing and what the

researcher witness they are doing. Also observation offers a method to acknowledge a process when the staff is unable to describe it. In our study we used the two extremes of observation as they described by Bødker et al. (2004). The first one was the passive observation where we were not to interfere at all with the environment we were studying, while the other one was the participatory observation where the researcher becomes an active member of the group and do tasks that other staff member do.

The interviews were contacted either face to face or via skype. We came in contact not only with librarians in Greek academic libraries but with vendors' sales representatives and technical support staff as well, but as this was within the frame of our Master Thesis, the number of the interviews was limited. This means that we cannot make generalizations but as there is a lack of such research in Greece, we believe that our work will be a point of comparison to current international trends and a point of reference for future research in Greece.

3.6 Data Analysis

In our analysis, we followed a linear, hierarchical approach trying to organize, analyze and present our data in a way that it would be easier and understandable for the reader, so this approach is a deeper analysis of the inductive approach, a qualitative strategy is based on the study of the whole situation of the phenomenon and tries to give some answers or to interpret the examined situation through the meaning that is assigned to it.

Very briefly we can say that in our analysis we followed the following series of steps. 1.) Organize and prepare the data.We type our field notes both for the observations and the interviews and we arranged the data depending on the type of information from the participants and the interviewees. 2.) Read through all the collected data. A first attempt to understand and to have a general sense of the data. 3.) Coding process. Perhaps the most interesting part of the procedure where we had to consider how to make categories of the findings both from the literature and the empirical data. 4.) Using the codes we moved on the description of the identified categories trying to be as detailed as possible regarding the implications in workflows. 5.) Depiction of the findings in tables. 6.) Data interpretation. Lessons learned, personal interpretation according to previous experience, comparison with the previous studies, new emerged questions.

4. Results

The findings of the empirical data are presented in two parts : first, the results from the observation in an academic library and how the implementation of the new system has affected both traditional and new workflows and second, the findings from the semi-structured interviews are presented illustrating the most widespread changes making categories for better understanding.

4.1 Observation

The observation took place in the library where one of the researchers works in so it was quite easy from the ones hand to explain in details to their colleagues the whole procedure and on the other hand to participate himself as a passive observer. The library runs Sierra platform developed by Innovative since September of 2015 participating in a consortium of 26 academic libraries under the umbrella of one leading institution. Very briefly, the findings are presented below:

4.1.1 Acquisitions

The acquisition task has significantly changed as both the requested time and the entire procedure are executed in a more convenient manner. In Sierra platform the significant change is that before typing the requested order, the acquisition librarian can search both on the existing database and the database of the Library of Congress. If the record already exist in the L.C. just downloads it without typing creating at the same time a new record in the local catalogue adding at the end the ordered copies. In case that the record exists in the local database from previous processing then he adds only the ordered copies. By this way the time of ordering has been significantly reduced enabling the librarian either to execute other duties such as circulation or to organize information literacy seminars for the academic community.

4.1.2 Cataloguing Module

Alike with the acquisitions the time of originally cataloguing has been dramatically reduced, regarding the ordered titles, as the cataloguer can see and process the created record from the acquisition module and to make minor changes. It is estimated that for the English (or American) editions the proportion of the original cataloguing has been reduced for over 80% and for the Greek editions almost 50% comparing to the old system where it was necessary 100% original cataloguing.

4.1.3 Library's IT Department

The main change that happened from the implementation of the new system is that currently the local IT specialist(s) is(are) no more responsible not for updates, maintenance and upgrades as these procedures have been transferred to the leading institution. The local IT staff when needed, can communicate with the central IT specialists for specific matters or when a problem occurs. This enables the local IT department to perform other tasks such as suggestions for improving upgrading policies or

contributing the electronic resource librarian to manage the entire e-material of the library. The fact that the burdens of updating and maintenance are not anymore local responsibility enables the IT department to handle with functionality and interoperability issues improving library's interfaces and making the interconnection library's resources easier and friendly to the users.

4.1.4 Electronic Resources Librarian

This task was created when the library started to acquire electronic and digital material and making contracts with vendors for subscriptions in e-platforms for access in full text articles and e-books. During the product of time and once the new system established, this duty has been maximized as all the e-sources of the

library has to be managed and integrated in the library's web site in a user-friendly interface.

4.2 Interviews

Before conducting the interviews, we followed a two steps approach: firstly, we evaluated and categorized the findings from the literature to see the most relevant for our case and secondly, based on these findings we developed an interview guide for semi-structured interviews to identify whether the findings from the literature are in accordance with the finding from the interviews. The criteria for recruiting libraries were: a). the library has implemented a new next generation ILS (proprietary or open source) within the last three years because these systems are the current generation of ILS, b) the possibility to conduct an interview with the head librarian or alternatively with the head of IT department, c) the size of the library and d) we would like to have as much as possible a represented sample in Greek context. From the interviews several changes emerged in libraries' workflows not only after the implementation of a next generation ILS but also before it as the libraries had to designate at least two or more people for organizing the transition in terms of preparing the standards, the library's data (both records and loan data) and the entire project for the transition.The results are presented below :

4.2.1 Acquisitions

The acquisition module has been significantly affected and the requested time has been reduced as now the staff is able to download records and to add the ordered items. This workflow has been significantly improved and the librarians are well-satisfied :

"The ordering workflow has been affected as it became ten times easier and faster as in most of the cases the only task the librarian must do is just to add the number of the copies of the recommended book" (library 4) (Grammenis and Mourikis, 2018).

4.2.2 Cataloguing

Likewise, the acquisitions module, the cataloguing has been also affected by the implementation of the new systems as the extensive copy cataloguing, they offer tends to eliminate the original one. Records are now shared within the members of the consortia, offering this way the collective development of the member's collection avoiding the same time the duplications.

"We are able to make copy cataloguing reducing the time.... there is lack of personnel and adequate funding, so the new system was a bonus for us, even if there are still changes in common cataloguing policies (library 1)"

"The original cataloguing was a burden because two people have to catalogue over 1.200 items per year...now this has changes at least 70% "(library 4)

"There is no original cataloguing at all...."(library 2) (ibid.)

4.2.3 Circulation - Interlibrary Loan

This is another task that has been affected by the transition to new system to the better, especially when there is use of the RFID technology due to the lack of need for the librarian to be present when a student loans or returns a book, as this is now a process that is performed by the automated loaning system which

offers also a better tracking capability, allowing the librarians to notify the users about the material they borrowed or they are interested into.

"We have the possibility to send alert and notification messages to the users at no time. We are also able to send a message just after he/she has borrowed the book, but we do not want to proceed so deeply because finally after so many messages and notifications the user will lose the important part of the information" (library 5). (ibid).

4.2.4 Electronic Resources Management

This is found to be, maybe, the most important advancement by the implementation of the new system's electronic resource management as it allows an easy way to manage all types of electronic and digital material and offer it to the library's users outside the physical boundaries by the use of network services. So in cooperation with vendors new discovery search engines created in order to make the electronic and digital material easily searchable by the users.

"Today the library is able to fulfill, compared to the past, its users' needs, as everybody has access everywhere outside the physical library's boundaries" (library 3).

4.2.5 Updates and Maintenance

Updates and maintenance of a library's database and technological infrastructure are the two critical operations that are fundamental for its operation and existence that are also affected by the transition to a new system. These two operations had to be performed by the local librarians while now they are performed either by the vendor of the ILS or by a central IT service agency designated to the leader of the libraries consortium, allowing both a better utilization of libraries' staff and significant cost reduction as maintenance and update contracts have been reduced.

"Every year we had to pay a significant amount of money in maintenance and updates signing contracts...now this has been undertaken by the leading institution" (library 1).

4.2.6 Data Analytics

Data analytics is a vital part of library's life as they allow to measure every aspect of library's life from the terms of acquisitions and loans, to the size of their collections, the reference transactions and even the creation of questionnaires that are used to evaluate the users' satisfaction or / and users' perceptiveness and future needs.

"We are able to have data and library statistics in no time, not only from the existing queries but also creating the SQL queries we want" (library 5)

5. Discussion

The major role of academic libraries was, is and will continue to be the support of the higher education and for that reason they receive funding in order to provide to their users high quality services both in facilities and resources, printed or electronic (Pace, 2009; Breeding, 2015; Breeding, 2016; Omeluzor & Oyovwe-Tinuoye, 2016) . In Greece due to monetary crisis, libraries are facing funding reduction as well as human resources that consequently leads in

problems in supporting their users' needs. For that reason Greek academic libraries started to create synergies and consortiums so to keep providing high quality services to their patrons since now they are able to follow up the increasing volume of electronic and digital material (Papadatou, et,al, 2018). Keeping in mind all these changes we can say that the role of the libraries has changed and libraries and librarians have to confront and to conformed with the developments (Chan, 2015, p.746; Grammenis and Mourikis, 2018).

The aforementioned reasons and the ongoing developments in library information systems, was the trigger for us to conduct an exploratory qualitative study in our Master Thesis (Grammenis and Mourikis, 2018), trying to identify the possible implications in academic libraries workflows from the emerging deployment and use of the next generation information libraries systems. For that reason we studied the international literature and we conducted semi - structured interviews and observation in order to identify the changes.

From our study we found that indeed the workflows have been affected and they are depicted in the following table

Table 1 Findings (Source Grammenis and Mourikis, 2018)

Workflows affected	Before the transition	After the transition
Traditional workflows (cataloguing, acquisitions, circulation - ILL)	No	Yes (Reduced times)
E.R.M. - Electronic Resources Librarian	No	Yes (New workflow)
Updates, maintenance & upgrading	No	Yes (Many tasks integrated into one workflow)
Data analytics	No	Yes (Reduced times)

What we see from the literature above academic libraries are moving towards the new generation ILSs and Library Services Platforms in order to overcome the constantly raising needs of managing and integrating the new e-sources (Yeh & Walter, 2016) while the same time they try to keep their users within the academia by providing better search services both in printed and in digital

resources (Breeding, 2012). Also they do provide new tools that affect the daily workflows of the librarians (Yand, 2013).

One of the main issues that Academic Libraries have to consider is whether they will choose between proprietary or open source software (Breeding, 2012), as this is an essential decision both for the librarians and the IT staff as they will have to decide the system requirements and design the new processes.

6. Conclusions

Our purpose for conducting our research was to explore the current situation on the so called "New Generation ILS". Our effort was to identify and explore this phenomenon both in global and in local greek context.

We decided to to perform an exploratory qualitative study by studying the international literature and conducting observation and semi - structured interviews with librarians for collecting and interpreting qualitative approach to answer our research question *"What are the implications for the academic libraries regarding the adoption of the next generation ILS in their internal workflows?"* .

Both from literature and our own research we found that Academic Libraries are willing to perform transition to next generation ILSs and by doing so, daily workflow times have been reduced significantly. Yet there is a common sense that there are still a lot of drawbacks such as the alignment with the new systems and procedures.

Finally we have to mention that there is need for further research and investigation on topics such as the public dialogue between libraries, vendors and IT staff. There is also need to keep Academic Libraries a live learning center both for academics and local communities. More on the Greek context we do believe that full scale studies have to be conducted in order to focus more on the results of the greek academic libraries consortium.

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