

State Assisted Academic Library Council of Kentucky

## *Next Generation Library System*

Committee Report

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## **EXECUTIVE SUMMARY:**

The integrated library system of the Kentucky Virtual Library (KYVL) has provided Kentucky's citizenry with unprecedented access to a vast array of research resources. Since its implementation in 1999, the system has grown to include all of the state university libraries, the Kentucky Community and Technical College System (KCTCS), the Kentucky Department of Libraries and Archives (KDLA), and eight other affiliate libraries that collectively house over 7 million volumes. The provision of these information resources through a common Internet-accessible library system significantly simplifies the search for information by serious researchers and casual browsers alike. Usage statistics for 2006 indicate that over 54 million "hits" were made to the KYVL library catalogs.

Over the past seven years, user expectations of a library system have become more sophisticated due to the increased use of the Internet and an increasing familiarity and comfort with technology in everyday life. Recently, the concept of "Web 2.0" has been used to describe these more sophisticated user expectations and social networking skills. Elements of these expectations include the ability of users to more freely gather and share information in multiple formats as well as the ability to manipulate and remix content in order to customize and personalize a web-based library experience. Expectations and technological realities necessitate a more flexible library catalog – hence the "next generation library system" as described below. While printed materials will remain

viable and key resources, the accelerating importance and accessibility of electronic resources demand a decisive move above and beyond the print-centric nature of the traditional integrated library system (ILS).

Renewed funding would allow the implementation of a new statewide system that could elevate functions and services for the citizens of Kentucky. Timing of this funding is critical. The current system requires hardware replacement and expansion; with a rapidly changing library marketplace investigation of enhanced systems is critical and also serves as an opportunity to investigate the physical configuration of a future system that will meet the expanded needs and efficient operation of the next generation.

The next generation library system would have as its primary base the “traditional” administrative applications, Online Public Access Catalog (OPAC), Circulation, Cataloging, etc., but it would build upon this base by connecting to other enhanced products or modules, whether from the same or another vendor. As much as possible, these enhanced products would provide seamless, expanded access to library owned and licensed resources beyond the traditional library catalog and make them available via the Internet 24 hours per day, 7 days per week. Examples of these products are outlined later in this document. It should be noted that this next generation library system would be ever evolving and improving. As user expectations expand and library information marketplace products roll out, the system will need to likewise adapt. This information system would enable the citizens of Kentucky -- particularly college students and professors -- to refine their research, offer better finished products, and enhance their

educational experience. Finally, it would further help us to reach one of the original (1997) goals of the Kentucky Virtual University (KYVU) “to provide universal, easy, cost-effective access to library collections and information services for every student, faculty, and staff member in Kentucky state-supported postsecondary education institutions.”

## VISION

*The next generation library system for Kentucky will expand beyond the current catalog to a robust system which administers and provides access to library collections and resources, regardless of format. While using the library catalog as its base, this continuously evolving system will provide users with seamless access to a variety of information products and services, all of which will enhance user research anywhere, anytime.*

## **I. BACKGROUND**

When conceived in 1997, the concept of a statewide integrated library system (ILS) fit into one of the mandates of the original proposal for KYVU, now the Kentucky Virtual Campus (KYVC) to “provide universal, easy, cost-effective access to library collections and information services for every student, faculty and staff member in Kentucky state-supported post-secondary education institutions.” This system also supported KYVU’s plan of action “to provide transparent system linking for all online library catalogs.” The budget support document of 1997 also stated that an appropriate technology base needed to be established “in order to store, index, and deliver information resources and that database servers and software needed to be installed in host libraries to serve as hubs for services in their regions.” This software was to provide a single, unified and seamless Web interface to all the linked online catalogs and all other information resources on the servers or the Internet. The goal would be for patrons to access all information at a single place by using a familiar graphical user interface no matter where they were enrolled. Subsequently, the decision was made to implement these visions with the Web-Z and Endeavor Voyager products. This combination best suited needs at the time, but never lived up to the full potential of the original vision.

During the past seven years, technology has advanced, the marketplace has changed and, most notably, user expectations have become more sophisticated so that this solution is no longer the most viable. In particular, a more seamless search technology (MetaLib) has emerged, difficulties with the current ILS vendor have escalated, and hardware has

aged to the point that new options must be considered. Among the current goals of KYVC are the following: 1) to be an information clearinghouse to increase educational opportunities by using technology to overcome the barriers of location, time, and physical challenges, 2) to support focused initiatives that identify, structure, and guide multi-partner efforts to explore, acquire, and manage statewide instructional technologies, and 3) to foster innovative technologies that enhance the quality and accessibility of eLearning. The next generation library catalog would build on these goals and expand on those originally conceived by KYVC.

The time has now come for the state to reaffirm and reassess its commitment to this type of configuration. The consortium has grown to 18 participants, including private universities and corporate libraries, with two “hub sites” maintaining the necessary hardware which hosts the software that provides access to over 7 million titles, 8 million items and 234 thousand patrons. In the past year there have been over 54 million “hits” on the library system websites. Prior to implementation, the Kentucky Endeavor Consortium Work Group (KEWG), a statewide committee of systems librarians and others from the participating institutions, was established to handle issues regarding implementation and maintenance of the system. This group continues to meet quarterly in Frankfort for updates from the vendor and to discuss ongoing issues related to the system. KEWG members have had an excellent working relationship over the years and the group remains the authoritative body for administrative system decisions. The members of KEWG affirm the continuing validity of the consortial approach to library

systems and feel a compelling need to move forward on this basis for the next generation library system.

The collegial participation within KEWG has led to enhancements that may not have been attainable by individual institutions -- a real benefit. Staff training on system use, group hardware purchases and the purchase of a "test" server are specific examples of enhancements and initiatives. A statewide user group was established and meets yearly. This user group provides a forum for librarians to gather, share ideas, attend system presentations, and hone their library software skills and knowledge. With limited travel funds, this meeting provides a unique and economical alternative to attendance at the vendor's national user group meeting outside the state. The meetings also provide a place for librarians to establish acquaintances and network for further, more detailed idea sharing and troubleshooting. The strengths of these relationships further enhance the efficiency of the library system and, consequently, the user benefits.

## II. FOUNDATIONAL EXPECTATIONS

As a prelude to the investigation of the next generation library catalog, a Kentucky Virtual Library (KYVL) committee was established in 2005 and spent a year investigating the foundational elements for a new system. It is essential that the recommendations of the KYVL committee be incorporated into the investigation for future expenditures. These recommendations and brief descriptions follow:

- Server site cost accounting: Currently two “hub sites” at the University of Kentucky (UK) and the University of Louisville (U of L) physically host the library system hardware and software. In order to efficiently plan for the future, the implementation of detailed cost accounting of system operation from the hub sites is urged.
- It should be understood that in order to get quality products and services for library operations, the state should be prepared to pay fair market value for server operation.
- Funding for server operations should be centralized in order to efficiently and fairly distribute the appropriate monies.
- When investigating the next generation library catalog, consideration should be given to moving to a single server site, rather than maintaining two separate hub sites. This would improve efficient operation and possibly save costs.
- Whenever possible, emphasis should be given to purchasing library products on the “native” development platform. The current library system does not

run on the primary hardware/software platform used to develop enhancements. As a result, enhancements lag behind those released to the library community on the primary platform. This has caused the Kentucky libraries to run a year or more behind others in the marketplace and, at one point, the Kentucky libraries were forced to run their library system software on an unsupported operating system.

- Software – All day-to-day business functions performed by library staff should be performed on web-based clients that do NOT require software installation on individual PCs.
- Make additional modules for managing e-resources, digital library collections, institutional repositories, etc., affordable or included in the system at a one-time cost

### **III. USER EXPECTATIONS**

*Scenario:* Just imagine! A student in the library, at home, in a residence hall, or sitting on the beach somewhere during fall break needs to research Maya Angelou's inaugural poem for President William Jefferson Clinton. The student logs in to the "local" online catalog and enters some words to search. The "hits" generate not only the text of the poem but also a video clip of the inauguration ceremony, music played, and a reading of the poem by Angelou. A true multi-media experience! There may even be a link to the poem as it was originally written before publication, all available versions, and critiques of the poetry.

Due to the increased use of the Internet for research, user expectations of library services have become more sophisticated. Research has shown that college students have the highest rate of library use and the broadest use of library resources. In one study, one of the top answers to the question "Based on your experiences, what two things should your campus library do to help you with your study assignments" was "Make it easier to use and access library resources." Users are also demanding that the library catalog and associated services "act" more like the Internet. If not, users abandon these resources for those more accessible on the Internet, which may be less reliable. User friendliness is a key element of the next generation library system both for public searching and for staff functions. Recently the user expectations described above have come to be known as "Web 2.0" concepts. In general, these concepts center around collaboration, contribution, decentralization, and participation. Library resources must be flexible for "mashing up"

by the user. “Mashing up” requires that information be free for manipulation into documents created by the user. In the past, the rigid nature of library catalogs did not allow this amount of freedom. Library products are now being created and released that are beginning to allow manipulation of content. In designing the next generation library catalog, it will be important to investigate the possibilities and implement the Web 2.0 functions that are most cost effective and affordable for the state. Some of the possibilities are outlined later in this document.

The next generation library catalog would incorporate the concepts of Web 2.0 in a number of practical ways. The foundation of the catalog would consist of a number of core system elements: public access, circulation, acquisitions, cataloging and general services. Details of the expectations of these core elements follow. Built upon this core would be best practices and new features which would enhance the research experience. The key to a successful next generation library catalog would be the integration of the core system elements with best practices and new features. An element of primary importance would be the adherence to open standards, which would ease the integration of software applications from various vendors without the need for complex programming skills or convoluted procedures. Incorporating aspects of Web 2.0 would include providing information on a wide number of devices (PCs, laptops, handheld devices, etc.) as well as integrating with services beyond the library. These services would include tools of the “social web” (instant messaging, blogs, wikis, etc.) that are already being used by those searching the Internet.

A next generation ILS would be a wholly web-based product to easily take advantage of emerging technologies, rather than relying solely on an aging client-server model. It would be a product designed for flexibility and ease of use and implementation, all scalable for situations ranging from the small, single room public library to the largest academic research library.

#### **IV. NEXT GENERATION ILS CORE SYSTEM VALUES**

*Scenario:* A freshman student from rural Kentucky needs to find a book, a peer-reviewed journal article about, and an image of Aldous Huxley. One search, and all are easily returned, easily browsed, and readily available. Assumption: The student is not that familiar with the library's online catalog or with searching anything but Google, Yahoo, or another commercial search engine. How can this come about? The student goes to the online catalog, which provides cross-searching of databases of full-text journals for the journal article, and books held not just in the local catalog but a statewide catalog that provides Interlibrary Loan (ILL) service to all libraries (and the ability to access ILL if the book is not held locally or within the state). The search also brings up images harvested from a content management database (ContentDM, for example), or images and all other types of content (a more refined Internet search engine search) from local, regional, national, and international sources.

In order to most effectively create a next generation library system, a solid base needs to be established that is user friendly for both public and staff use. This base consists of core system values of the ILS. Outlined below are the requirements for these core elements.

##### a. Public Access (Online Public Access Catalog or OPAC)

- Facilitates academic learning and research – This value above all others is the central core value of an ILS; every aspect of an ILS should ultimately lead back to this value. The OPAC is the public face of an ILS; this value is its primary role.

- Enhances access to information – The catalog would allow for simple searching, faceted searching, and complex searching of ALL of a library's physical and electronic information resources. The catalog would provide patrons with multimedia-based access to the catalog that allows for scanned book or journal covers to promote resources, video streaming, and audio files, including digitization of collections with logical searching capabilities.
- Enhances searching – Search results could show either listed results or combinations of other possible searches based on additional facets like formats, subject headings, keyword clouds, library locations, language, reviews, or user ratings of library material. Searching should also provide features like spell checking, and alternate search suggestions. The system would provide a powerful search capability to cross databases and return hits that are highly relevant. Additionally, it should cluster hits so that the user can go in different directions if needed or "drill down" for a more refined scope on a given topic. This would be a significant move beyond the awkwardness of the Boolean searches used in the current system.
- Offers user customization – Users should have the ability to gather and collect information resources and search strategies in a personal web space.
- Extends modification – The interface should allow the library to arrange the display in all ways possible using a standard markup language (HTML, XHTML, XML, etc.). Its interface should look professional, interesting, clean, and "hip" so that it is appealing and attractive to the eye – especially to student users. This

interface may emulate Google searches and returned hits, thereby addressing user expectations when searching the Internet.

- Expands usability – The OPAC should be pleasing and easy to use and the interface design should be based on web usability studies and allow for quick customization based on study results. The results should be clearly and logically organized with expected value-added features, such as linking, sorting, post-results searching, reviews, cover art, etc., easily available for the user to choose. And, the search should automatically provide access to the library catalog, online databases, image collections, and other resources without the user having to exit one interface and select a new search product or utility.
- Assists education – The system should allow easy access to and retrieval of collections of virtual material into a course reserve that can be searched by students and linked directly from course management systems.

In essence, the ILS would ideally allow for granularity of the information--broad-based but with the ability to drill down to specific information in specific locations.

## b. Library Functions

Library functions would include, but not be limited to, the following:

### 1. Circulation

- Inventory tracking – Allow patrons to borrow and staff to track and find physical information resources held within and outside the institution.

- Cooperative borrowing – Provide an ILL system or communicate with standard ILL systems.
- Course Reserves – Allow educators to identify and gather information resources for specific classes into a course reserves. Also allow students to identify and access physical and electronic information resources for specific classes.
- Course management system compatibility – Allow course reserves listings for specific classes to be immediately linked from course management systems or allow direct linking to saved searches or other lists of course specific collections.
- Notification – Provide the ability to email and/or print notices to patrons.
- Scheduling/Booking - Allow for scheduling of library rooms and media and provide for efficient and effective public access of their scheduled use.

## 2. Acquisitions

- Allow staff to place purchase orders for both physical and electronic information resources.
- Allow for the payment of invoices on resources when they arrive and provide reminders when ordered information does not arrive.
- Allow for customization of serials tracking based on any imaginable periodic pattern and irregular occurrences when journals arrive.

- Provide the ability to transfer financial and item information to and from information resource vendors based on industry data standards like EDI (Electronic Data Interchange).
- Provide interfaces with Enterprise Resource Planning (ERP) systems (e.g., PeopleSoft, SAP) that allow the export of employee, student, and financial information to the ERP systems and allow the import of the same information into the ILS.
- Allow for the complete management and maintenance of all aspects of electronic information resources used by the libraries and by their patrons.
- Provide the ability to manage electronic resources and share license agreements or restrictions to products with the public through only one point of data entry rather than re-keying information for technical and public views.
- Improve access to journal holdings by providing binding information when items are received and ready to bind.

### 3. Cataloging

- Allow staff to identify and describe information resources and relate them together in ways that will be meaningful to users and assist them in finding the information they desire.
- Allow for easy uploading and manipulation of library bibliographic records.
- Allow for easy export of library information.

- Allow for easy, customizable, and proper labeling of physical material.

*Scenario:* An ILS system administrator who wants to change the background color of the entire user interface or update colors of specific links and buttons can login to the ILS administrator web page and select the service or functional area, click a color button, get a web pop-up color chart and select the color (or enter the value) and have it automatically selected and applied. Or, an ILS administrator who wants to turn on links to Amazon.com item descriptions and reviews can do so by simply selecting a pre-defined link to Amazon.com features by putting a checkmark in a selection box on a “linking” administrator web page.

#### 4. General Services

- Software – All day-to-day business functions performed by library staff should be performed on web-based clients that do not require the installation of software on individual PCs.
- Reliability – The system must be stable in regards to the day-to-day operations and it must continue to function well when upgrades are applied, with no loss of previous functions. The customer service center and vendor should provide 24/7 support.
- Capacity – The hardware platform must be configurable such that it is able to handle expected growth of all institutions and handle upgrade requirements without a degradation of performance.

- Performance – The system should respond to all client software requests and user searches within a few seconds.
- Stability – All operating systems, database software and client software should be versions that are supported by each of their respective companies, and all security patches provided by these companies should be applied in a timely manner.
- Security – Sensitive system data should only be accessible by authorized individuals and the system should be free from hacking, and virus attacks.
- Access – System should be online and available to every user who needs it at all times.
- Modularity – All system components and specific functions should be modular and should pass information based on standards that will work with other vendor's components and/ or ILSs. Ease of data transfer from one system to another must be ensured to avoid human error and enable workflow.
- Reporting – Core system elements or add-on services should provide a means for detailed reporting for various staff, executive, and user needs in accepted formats. The system must provide essential use statistics for all items in the catalog, and particularly allow for electronic journals and database statistics in a standard format.
- Tracking – The system must easily track both physical and virtual resources through circulation, interlibrary lending, binding, etc.

## V. BEST PRACTICES/NEW FEATURES

In general, there are no new ILS systems being developed--only upgrades to existing systems or mergers and buyouts of systems. There have been very few new companies or organizations developing complete ILS package systems over the last five years. Much focus has been placed on development of additional products or modules such as digital resource tools and linking tools, rather than the wholesale restructuring of an ILS.

Therefore, the next generation library system may be an enhanced ILS from another vendor currently active in the library marketplace or a combination of various vendors with integrated products. And, *no* product will meet *all* of the needs of *all* the people.

Best practices of the next generation library system are outlined for both the core system elements of the ILS above and new features below. Additional functionalities, such as electronic resource and copyright management, OpenURL linking, multi-database or resource searching (both local and external), and personal user customizations (such as remembering favorite resources, remembering personal interface layout preferences, etc.) should come as part of the product offering.

An ideal situation would be to have an interface like Amazon.com (especially for books and videos), with administrative capabilities for local customization of individual or consortia libraries that provide users with a search experience to which they are accustomed and almost always now expect from the Internet, Google, and online shopping and social software. The familiar features would not only provide access most

useful for undergraduate work but also provide a starting point for more complex research.

Specifically, consideration should be given to the following best practice and new feature elements of the next generation library system:

- Make available upgrades and support for any library within the group regardless of computer operating system, such that releases are brought up and patches produced for all platforms in a reasonable timeframe, not years in between.
- Should the system change, allow for the transfer of current data and records, such that there is virtually no loss and virtually no massive reconstruction needed to be operational.
- Consider further simplification of current appearance of catalog records so that only essential, minimal information is presented to the patron with the option for a more detailed record view.

## **VI. CONCLUSION**

The time has come to evaluate the current KYVL integrated library system. Aging hardware and changes in the library software industry necessitate a fresh look at how the system is currently meeting user expectations. At the same time, the current “two-hub” consortial model of hosting the system needs reassessment to ensure effective provision of support. The committee feels that this document addresses key issues for consideration and if acted upon, can improve library services to all Kentuckians.