1. Narrative description of innovative project

Explanation of the library’s innovation

Building on our vision of “Everywhere you are, the Library,” the University of Arizona Libraries have developed and implemented software that allows library services and resources to be pushed out to students at their point of study, in the campus course management system (CMS). Successfully embedding the library, its resources, and services into the campus CMS can help us to:

- increase student discovery of and access to library materials;
- improve campus (faculty and student) awareness of library resources and services;
- reach the entire student “market” with resources and services largely appropriate to their specific course needs;
- establish a solid foundation and venue for more in-depth librarian/faculty collaboration; and
- free up librarian time that is currently spent doing iterative work to allow for more time and focus on “Cadillac” services, programs, or resources for higher need or high impact areas.

Published mission statement of nominated institution

The University of Arizona Libraries and Center for Creative Photography advance the University’s mission through the active contributions of knowledgeable staff who choose cost effective methods of acquiring, curating, managing, and connecting customers to information services and resources and providing education in their use.

History of development and implementation of program

In the mid-2000s, the University of Arizona Libraries, confronted with the fact that students and researchers were increasingly bypassing library websites as part of the research process, began to conceptually rethink its customer service model. The thrust of our efforts to put our services and resources where the user is, when they need it, has been in integrating the library into the campus course management system (CMS). More and more, the CMS is where students “are.” CMS integration can be a daunting task, and our experience at the University of Arizona was no exception; our first attempts at CMS integration began in 2006 and are only now really paying off. There are a number of key reasons for this. Before we could become embedded in our campus CMS, 1) there had to be “a” primary campus CMS to begin with (we had more than half a dozen being used), 2) we needed to have good relations with those who would manage a central CMS (we didn’t), 3) faculty had to be using it (most weren’t), and 4) the faculty using it needed to be receptive to the library intruding into their instructional space (most were wary of us being there at best).

A “CMS Program” that the UA Libraries initiated around this time consisted of a suite of related projects intended to address the problems noted above. As part of this programmatic effort, we mended relations and began collaborating with the campus units responsible for CMS management. We then worked to establish the technical infrastructure to ensure single sign-on authentication (so that students would have seamless access to all authenticated library and campus resources once they signed on to the CMS). Because students were unhappy with the plethora of different systems faculty had them using, we leveraged this dissatisfaction to compel faculty to reduce the number of systems they were using. We also employed a carrot-and-stick approach to entice (and pressure) faculty to either begin using (if they weren’t using one already), or move over to a single, centrally supported CMS. As part of this effort, we discontinued our distinct e-reserves service and required all faculty to use (or move to)
the central CMS if they wanted us to provide them with scanned articles or book chapters for their classes. We also started a streaming video service that we only offered to those who agreed to make the streaming content available through the central CMS. Lastly, we were able to get our original library “widget,” with links to core library resources and service, added to each student’s default CMS home page (Figure 1).

![Figure 1. Original library “widget” on student course management home page.](image)

While the strategies we used to move faculty and campus over to a single, centrally supported campus CMS were largely successful, our attempts to meaningfully embed access to the library in the CMS were less successful. We found that our library “widget,” while embedded in the CMS, was too small, was relegated to a page on the CMS where it was largely overlooked (a student’s CMS “home page,” instead of the individual course sites where most of their virtual class time was spent), and did not provide students with library resources and services tailored to their specific research and learning needs.

With this limited “embeddedness” in place, the Libraries continued to advocate with others on campus for stronger centralized instructional support, especially support (both technological and pedagogical) for online and hybrid learning. This advocacy, along with the growing importance of supporting online and hybrid learning, eventually resulted in a new, centralized unit (the Office for Instruction and Assessment [OIA]) under the Vice Provost for Academic Affairs, and a new opportunity for the Libraries to become more meaningfully embedded in the CMS campus-wide. After negotiations with the Vice Provost and others in OIA, the Libraries were given an entire “tab”/page within each CMS course site
through which to expose tailored library services and resources to students.\(^1\) One requirement from the Vice Provost and OIA was that faculty have the option of removing the tab from their course sites, if they wished. Additionally, those managing the CMS servers and infrastructure asked that, for security purposes and in order to make managing our content more seamless, we host all these pages and content on the library’s servers, and use an iframe to make the page only appear to reside within the CMS.

In Fall 2011, our first generation SuperWidget pages were debuted in the campus CMS. These pages were embedded in nearly all campus course sites, and were tailored to the expected needs of students at the course designation/disciplinary level (i.e. all PSYCH[ology] courses, all ASTR[onomy] courses, etc.). The entire page could be removed from a course site by a faculty member, but the content of the page could not be modified.

Over FY 2011/12, we did needs assessment and usability testing to identify issues with the current interface, functionality, and content, and planned for a second generation SuperWidget to roll out in Fall 2012. This new (and current) rollout included an expanded suite of content and services that could be added to the pages. It also included a faculty and administrative interface, through which changes could be made to course groupings, single courses, or even individual sections. Librarians tailored this release of SuperWidget pages beyond the course designation level, often selecting different content and services for core courses, for courses at the graduate or upper-division level, or even at the individual course level, as appropriate.

**Future Directions:**
We are currently looking into how we could use this same conceptual and technological approach (of “taking the library to the user”) to embed targeted content and services in the virtual workspaces used by our faculty and graduate students (websites or home pages for departments, institutes, centers, or other research or academic units). This work has also led us to rethink the concept of “guides” as a whole (subject guides, course guides, etc.), and investigate whether or not the approach and technology we’ve used for the SuperWidget could help us to move away from the static, twentieth-century guide model, and toward a more fluid and holistic approach, where pushing out targeted content and services to different user groups (or to the same users for different needs) can truly result in a realization of the Libraries’ vision.

Intended clientele; including a brief description of the method(s) of assessing effects on clientele

The intended clientele for the SuperWidget are students within the campus CMS and their instructors.

While a comprehensive study focusing on the use and impact of the Library Tools tab has yet to be done, a preliminary analysis conducted in Spring 2012 provides strong evidence that the tool is widely used, and used much differently from previous online research guides. Using Google Analytics to evaluate use patterns, it was apparent that during both the Fall 2011 and Spring 2012 semesters, our standalone course guides were primarily accessed at the beginning of the semester, whereas the Library Tools tab received greatest use during the middle of the semester (see Figure 2). We have interpreted this difference in times of usage to mean that students are accessing the Library Tools tab at their point of

\(^1\) While we largely use the term “SuperWidget” (both internally and externally) to refer to this new access point and the content that is made available through the CMS, we call it “Library Tools” on the navigation bar within the CMS.
need and not just when the tool is first presented to them, giving us greater confidence that our embedded library approach will help us achieve the return on investment in online instruction and services that we have been seeking.

![Resource Usage by Access Point](image)

**Figure 2. Difference in resource usage by access point.**

In addition to the increased use of the tool, we believe the tool will also serve as a valuable component in assessing the needs of our clients. Patron privacy concerns have prevented libraries from tracking individual student and faculty online research behaviors, and the Library Tools tab was developed to purposefully maintain this anonymity. It will, however, allow us to get iterative snapshots of how students are actually using specific library resources and services at the college, discipline, and course levels. While use does not necessarily correlate with value, having this kind of data to share with our university administration can help show how we are supporting instruction and student learning, and the degree to which that support is being taken advantage of. It can also be used to inform departments or instructors about which resources or services their students seem to value. With this kind of data, and additional analytics gleaned through the campus CMS, we may also be in a better position to collaborate with teaching faculty to design and conduct research studies to look for correlations between the use of library resources or services and student retention or success.

Principal players (staff, consultants), with brief biographical statements

**Michael M. Brewer** is Team Leader for Instructional Services at the University of Arizona Libraries, where he previously also worked as Slavic studies, German Studies, and Media Arts Librarian. He received his MLIS from the University of Pittsburgh, where he also completed all coursework and comprehensive exams toward a doctorate in Slavic Languages, Literatures and Cultures. His current

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2 We use Google Analytics (GA) to track both visits to the tab itself and clicks on the resources. When someone visits the tab, we send the course prefix and course number to GA. On a resource click, we send the same information plus the type of resource (subscription, tutorial, hours widget, etc.) and the URL of the resource. We can then use GA to parse the data along any of these variables.
research interests include online learning and assessment, strategic planning, copyright, and library administration. He is the author of the suite of online copyright tools (created between 2007-2012) that are hosted by ALA's Office for Information Technology Policy at: http://librarycopyright.net/resources/. These include the Fair Use Evaluator, the Section 108 Spinner, and the Copyright Genie, among others. He may be contacted by email at brewerm@u.library.arizona.edu.

Erica DeFrain is an Assistant Librarian on the Instructional Services Team at the University of Arizona Libraries. She earned her MA in Information Resources and Library Science and MS in Educational Technology from the University of Arizona, and is currently working on a PhD in Educational Psychology. She may be contacted by email at defraine@u.library.arizona.edu.

Mike Hagedon is a Software Engineer, Senior, on the Library Infrastructure Team at the University of Arizona Libraries. He is the principal software developer behind the Library Tools tab. During the four years he has been with the University of Arizona Libraries, he has also created the award-winning Guide on the Side open-source tutorial creation software as well as numerous other applications. He participates in the campus web development community as Chair of the UA Web Developers Group. Mike holds a Bachelor of Science degree in Computer Science from Oklahoma Baptist University and a Master of Arts degree in Classics from the University of Arizona. He may be contacted by email at hagedonm@u.library.arizona.edu.

Elizabeth Kline is an Associate Librarian on the Instructional Services Team at the University of Arizona Libraries. She earned a Master's in Information Sciences from the University of Tennessee and a Bachelor's in Microbiology from Tennessee Technological University. She has written on various topics, including changing reference services in the science library; the public services aspect of handling users' frustrations with regard to technical requirements; and lessons from the development of an online credit-bearing information fluency course. She has served on committees of the American Library Association and chaired the UA Libraries Curriculum Committee. Elizabeth completed the coursework in the UA's Digital Information Management Graduate Certificate Program in August 2010. Her work and research interests focus on educational technology, online pedagogy, and organization and management of online instructional resources. She may be contacted at klinee@email.arizona.edu.

Jim Martin is an Associate Librarian on the Research Services Team at the University of Arizona Libraries. He works on issues related to needs assessment of faculty and students and information resources management. He may be contacted by email at martinj@u.library.arizona.edu.

Leslie Sult is an Associate Librarian on the Instructional Services Team at the University of Arizona Libraries. She earned her MLS from the School of Information and Library Science at the University of North Carolina at Chapel Hill. Over the last 10 years, she has worked with numerous campus departments, including the University's English Composition program and the Department of Psychology to develop and improve scalable teaching models that enable the Libraries to reach and support many more students than was possible earlier through traditional one-shot instructional sessions. She also developed the Libraries' first fully online credit granting course and helped overhaul the manner in which course and subject guides are created and delivered to the campus community. Leslie spent the last several years collaborating with University of Arizona Libraries programmer Mike Hagedon to develop and expand the "Guide on the Side" tutorial creation software, which was released by the University of Arizona Libraries as an open source tool in July of 2012. The Guide on the Side software was named a 2013 Cutting Edge Technology Service by the American Library Association's Office for Information Technology Policy. Leslie can be reached via email at sult@u.library.arizona.edu.
Functional specifications and requirements

The SuperWidget software is based on two core concepts: scalability and customizability. In contrast to a traditional course guide service, the Library Tools tab must respond to requests for any section of any course which may be taught at the University. Thus it is not feasible to manually create these tabs. In order to address the issue of scalability, we created a script which imports all sections of all courses from the current term and all future terms into the Library Tools tab database using a newly-released web-based Courses API released by our central IT unit. We preserved the course hierarchy, as one might expect, adding a layer (this layer is not yet complete) to accommodate the fact that not all libraries at the University of Arizona are part of the same organization. It looks like this:

Library (e.g., University Libraries, Arizona Health Sciences Library)
    |------ Course Prefix (e.g., PSIO, ENGL, CLAS)
    |      |------ Course (e.g., PSIO 201, ENGL 102, CLAS 510A)
    |      |      |------ Section (e.g., section 1 of CLAS 510A)

With that structure in place, we are almost ready to respond to a request to any level of the hierarchy. Of course, we must deliver some sort of content in response to such a request. What we deliver is an instance of the Library Tools tab (a “portal”) which has the following (simplified) structure:

Portal
    |------ Box
    |      |------ Resource

This structure is reflected in the view that students see. Figure 3 (next page) is an example of what a student in a Classics course might see. The portal is the entire view, the boxes are the containers with blue headers, and the resources are the individual items in the boxes. Any type of resource (including subscriptions, tutorials, services, and various widgets like “Today’s hours” above) can be embedded in any box. Once a portal is made, it must be attached to one or more items in the course hierarchy. This particular example is attached to a course prefix, CLAS (Classics), but a portal can be attached to libraries, courses, and sections as well.

Now we have all the pieces necessary to deliver tailored content to the student. Since the course management system always sends requests at the section level and we can’t possibly make a portal for each section, requests from LMS will be handled by the closest item in the course hierarchy. So if, for example, a student is visiting the LMS course site for CLAS 510A, section 1, and we do not have a portal attached to that section, the Library Tools tab will check whether a portal is attached to CLAS 510A. If not, the CLAS portal is delivered. We strive to have a portal attached to every prefix, but in the event that one is missing, the University Libraries portal will be delivered instead. In this way, the software can scale out to thousands of course sections without the massive human investment that would be necessary with traditional course guides.

Of course, this scalability must in some ways sacrifice relevance. We have courses (for example, upper-division colloquia) in which a different topic is covered in each section, and thus our generic resources might be better replaced by specific ones. In these cases, it is possible for librarians and instructors to
customize the tab using an interface which looks very similar to the public interface. (Librarians have permission to attach portals only to course prefixes and courses, while instructors can only attach portals to sections.) Figure 4 shows some of the controls for moving and deleting boxes and resources.

Figure 4. Library Tools tab customization interface.
Adding resources is, naturally, a bit more involved. We developed two web-based APIs for our subscription databases and catalog resources that would allow us to get data into the Library Tools tab without having to copy all the relevant data from those systems. This allows us to, say, add a resource to our custom “database of databases” and immediately have that resource available for librarians and instructors to add to their portals. Figure 5 shows the interface for adding databases.

Figure 5. Interface used to add databases to the Library Tools tab.

It should be noted that the Library Tools tab is ineffective if not combined with cooperation from the caretakers of the course management systems on campus. Our campus primarily uses D2L, and our D2L administrators have made this effort possible by (1) inserting a link to Library Tools tab into every course site and (2) providing us with a nightly data dump of course metadata including a custom D2L identifier, term, prefix, course, and section number. We synchronized that data with our new Courses API to allow the tab to dynamically map the custom identifier (which we receive when someone clicks the tab link in D2L) onto our imported course hierarchy.
Library Tools tab in the campus course management system.
Portion of a Library Tools tab page in edit mode (faculty view).
2. Nominator’s statement: Why is the nominee particularly worthy of this recognition?

Over the past several years, the University of Arizona Libraries have endeavored to make good on our vision of “Everywhere you are, the Library” – of fully embedding the library’s content and services where our users are, when they need them. A central strategy in achieving this goal for our students has been achieving seamless, user-centered library/course management system (CMS) integration. Enter the Libraries’ new CMS “SuperWidget,” which pushes course-appropriate library content and services into nearly every course site on campus. This approach of “taking the library to the user” not only gives the Libraries nearly 100% penetration of the UA “student market,” it also engages the teaching faculty within their instructional context, providing the Libraries with a firm foundation for further faculty/librarian instructional collaboration.

Among the content and services the SuperWidget can push to CMS course sites are:

- electronic databases/resources (with description),
- individual titles (books, journals, reference resources) from the library’s catalog,
- static or interactive library tutorials/guides,
- current hours for library buildings or services, and
- a live chat reference instance (active nearly 24/7).

Because all of the content available for display on SuperWidget course pages is pulled centrally, any changes made to that content (changes in description, URL, etc.) are made automatically across all SuperWidget course pages, significantly reducing the resources required to keep our pages current, and allowing us to easily and quickly push out new or changing content globally, or to targeted user groups.

While UA librarians have tailored all SuperWidget pages (many down to the course level) to meet the expected research and learning needs of students, instructors have the option of modifying the content and services displayed for their own course or section (adding, removing, rearranging, or renaming content) through an easy-to-use administrative interface. They can also request that specific changes be made for them, or collaborate with a librarian in redesigning their SuperWidget page. Monitoring trends in the changes instructors make to the established “profiles” for various courses or course groupings can help the library fine-tune those profiles to better suit changing user needs.

For these reasons, and in recognition of the potential impact of this technology, I nominate the University of Arizona Libraries for serious consideration for the Stanford Prize for Innovation in Research Libraries (SPIRL).

3. Listing of publications or references, if any, by the nominee that support this nomination.
Brewer, M. “The embedded library: how the University of Arizona Libraries are taking it to their users.” Invited presentation at the California Conference on Library Instruction, Sacramento, CA, April 27, 2012.

DeFrain, E. “More than an online pathfinder: getting the most out of online course guides.” Poster session at Living the Future 8 Conference, Tucson, AZ, April 24, 2012.

4. Letters of support and/or testimonials may be submitted by readers/users, other research libraries, and others.
See attached.
To the Stanford University Libraries Advisory Council,

I am writing to support the nomination of the SuperWidget, from the University of Arizona Libraries, for the Stanford Innovation Award. I became familiar with the SuperWidget last year during my tenure as the Chair of the California Conference on Library Instruction. Our steering committee invited Michael Brewer, Team Leader for Instructional Services at University of Arizona Libraries, to speak at our annual one-day conference about the SuperWidget. Michael shared with us some of the background on the product, as well as the uses and possible implications and future plans of this project.

I was impressed with the intentional planning that went into the production of the SuperWidget. I believe it is a boon to our profession when librarians share the details of their process gaining support and administrative collaboration, which can be applied to other libraries and campuses for the benefit of our patrons. It was very helpful to hear about the project from the planning perspective, and I was also interested to hear about the implementation. Since products such as the SuperWidget are usually inaccessible to librarians from outside the specific university’s community, it’s particularly important for these ideas to be shared in professional communication. Without articles or conference presentations, we would not have the ability to learn from and be inspired by the work of the University of Arizona Libraries.

I work at a university that provides many online courses, so a learning management system is an integral part of our library services. Using the example of University of Arizona, communicated by Michael Brewer’s presentation, I brought the ideas back to my own campus and championed the idea of including a ubiquitous library widget in our learning management system. I planned with other librarians and online instructional designers, and we designed several versions of a widget that I hope we will soon implement. It provides a consistent library presence in a location and format that students can rely on and come to expect. I think this project will yield the same fruits that the University of Arizona has sown--increased access for our students to relevant library materials at their point of need.

Best,

Margot Hanson
Web Services Librarian
Golden Gate University
January 14, 2013

I am writing to express my enthusiasm and support for the D2L SuperWidget project underway at the University of Arizona Libraries. I was first introduced to the project when it was presented at a California Clearinghouse for Library Instruction workshop in March 2012. The project so impressed me I followed-up by inviting another U of A librarian to visit and present their project to my library staff. My college, Diablo Valley College, a California Community College is implementing the same learning management system so I was naturally intrigued with how other campuses were integrating library services into a Desire@Learn implementation.

This multi-faceted, innovative project breaks new ground in how academic libraries bring services and resources to their students. It is proactive, based on the notion that the library should be everywhere students are, rather than passively waiting for students to “come” to the library by visiting a building or going to the library’s online presence. It is “just in time” by providing actual resources, instruction and access to further assistance right there inside each student’s online classroom for use when needed. The SuperWidget literally reaches every student taking a class utilizing the campus learning management system. And the project insure a high degree of relevance for each student as the resources and tools displayed are customized especially for the subject matter presented in the course.

The project exhibits other highly valuable attributes. It is designed to increase collaboration between classroom instructors and librarians as these resource tools are developed and customized for a course. It relies on sophisticated technology to realize true economies of scale as this database-driven tool automatically pushes customized content into every classroom. Without doubt, the project has the potential of freeing up limited librarian hours to work on deeper collaborative projects with faculty, and pursue more involvement in the teaching of specific assignments or academic topics.

Additionally, the project is grounded in evidence-based decision making. The library analyzed the use patterns of other tools they had been developing, such as their online course guides, before embarking on this project. Consequently, it has been designed to specifically address the shortcomings of more static tools already in use.

The University of Arizona Library’s SuperWidget is the most innovative and successful effort I have seen at embedding an entire academic library into every online classroom. It brings relevant and accessible tools into student hands in ways unimaginable with a traditional library web presence. With additional resources at my disposal, I would be embarking on duplicating this terrific project as fast as I could.

Sincerely,

Andy Kivel
Library Director and Distance Education Coordinator

321 Golf Club Road, Pleasant Hill, CA 94523 • 925-685-1230 • www.dvc.edu
January 9, 2013

Dear Judges of the Stanford Prize for Innovation in Research Libraries:

I am writing to endorse the University of Arizona Libraries and their SuperWidget project as an outstanding example of innovation in libraries.

The SuperWidget came to my attention in early 2012 at a conference about embedded librarianship. In my work with embedded library projects, I often hear the question "how can we grow our embedded presence in a sustainable way with limited budgets and staff?” At Arizona, librarians embraced the motto “Everywhere you are, the Library” in a time of decreasing funds and increasing enrollment. The SuperWidget is one of the most innovative tools I’ve witnessed that successfully embeds the library into a large volume of classes without straining budgets or schedules.

There are numerous challenges in embedding the library in a course management system (CMS). Arizona librarians worked closely with departmental faculty members, Academic Affairs, Information Technology, the Office of Instruction and Assessment, even the Provost, to implement access to library resources within the CMS for every single class. In the process of developing the SuperWidget, the Libraries positioned themselves as campus leaders in online education. They built stronger relationships with departments and faculty members. Their efforts were successful: the SuperWidget has achieved the elusive goal of reaching 100% of the student population.

Achieving 100% embeddedness with a homegrown product is innovative on its own, but the University of Arizona librarians did not rest there. They regularly improve the widget, increasing functionality and visibility. They conduct assessment projects and track student usage of library resources via the SuperWidget. They use the widget to connect more students to library resources, to save librarian time for in-depth collaboration with students and faculty, and to learn more about how students use the library. In addition, librarians from the University of Arizona share their knowledge at conferences and share the programming and code to be adopted and adapted by others. Their intensive efforts in creating the widget now benefit librarians throughout the country.

I applaud their creativity, innovation, and commitment to improve services.

Sincerely,
Cass Kvenild
University of Wyoming Libraries
January 10, 2013

Dear Judges:

I write to add my strong support to the University of Arizona’s nomination of the SuperWidget for the Stanford Prize for Innovation in Research Libraries. This innovative approach to embedding the library into the campus Learning Management System (LMS) will significantly impact how undergraduate students, graduate students, and those learning to become researchers interact with and use the library and its resources. We see this innovation as a pivotal technology that will accelerate the education about library resources for all students while documenting the impact of the library on instruction.

With the transition to online education rapidly established across the globe, library resources are often included in the LMS on a single link available on the LMS homepage or as separate links embedded within individual classes by the instructor or a subject librarian. While available to students, the library is external to their main online learning environment. The innovative approach of the SuperWidget leverages the work of subject librarians who have developed subject-specific pages with resources targeted to students and researchers, embedding library content directly into course pages where students work. The SuperWidget puts the library in the center of their online learning environment rather than treating it as an afterthought or outside entity to be consulted. Making library resources directly available within the class encourages students to use them (and to discover resources they may not otherwise) and introduces them as integral to the learning and research enterprise.

In 2012 I sent five librarians from California State University, Fresno to learn more about the SuperWidget. Fresno State is piloting an implementation of the SuperWidget for the California State University (CSU) system in collaboration with several other CSU libraries. It is our plan that the library databases and metasearch tools will be implemented through adopting the SuperWidget approach with the BlackBoard LMS. We are also working with CSU libraries that want to implement the SuperWidget approach in other Learning Management Systems. As the CSU system advances toward documenting how campus services impact graduation and student success, the CSU Council of Library Directors anticipates the data received from the SuperWidget as important to meeting this goal.

We see the SuperWidget making a significant contribution to the services of the library and are looking to replicate their success across the CSU libraries and campuses. Such an innovative approach to promoting library services to students deserves wide recognition.

Sincerely,

Peter McDonald
Dean of Library Services
Henry Madden Library
California State University Fresno