

University of California Larry L. Sautter Award Submission  
for Innovation in Information Technology

University of California, Los Angeles  
MALCOM:  
*Mostly Automated Laptop Check Out Machine*

**Submitted by:**

*Lisa Kemp Jones, CLICC Manager*  
UCLA  
[lkemp@ucla.edu](mailto:lkemp@ucla.edu)  
310-206-3040

**Project Team**

**College Library Instructional Computing Commons (CLICC):**

Lisa Kemp Jones, Manager  
Ricardo Garcia, Systems Manager  
Charles Ahn, Laptop Coordinator

**UCLA Library:**

Robert Freel, Ayumi Kameda, Juan Jaime, Biomedical Library  
Daniel Contreras, Chemistry Library  
Charlene Vinetz, Engineering and Math Sciences Library  
Anthony Ragan, Geology Library



*Ricardo Garcia, MALCOM, Charles Ahn*

## Summary

The College Library Instructional Computing Commons (CLICC) lends laptops to students from seven library locations. Challenged by the need to reduce student staffing and increase efficiency, CLICC and Library staff collaborated to design, develop, implement and support a laptop lending system using a touchscreen kiosk and web-based applications. Laptop lending is now integrated with library circulation desk activities, and the process is streamlined for students. Support staff is focused in one location, accessible by phone, and on-site when needed. This project addresses a specific need to reduce student staffing costs, and also serves as a model for collaborative service and support.

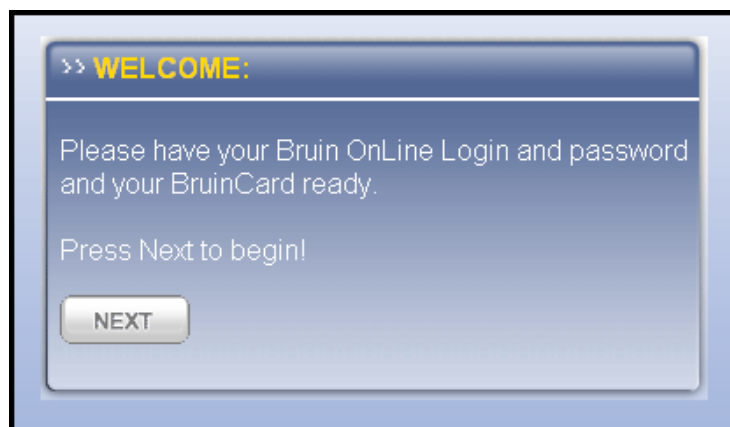
## Project Description:

### Background

CLICC offers a computer lab, electronic classrooms, and also lends laptops to students. Launched as a pilot with ten laptops in 1999, the laptop lending program became very popular with students, and in 2006, we have nearly 300 laptops that we lend from seven different library locations. CLICC used student employees to staff the laptop lending desks alongside the library student staff in the libraries, providing a dedicated student consultant for the sole purpose of lending laptops. Challenged by budget uncertainty and the drive to improve efficiency, we began assessing the possibilities for using existing library staff to perform the laptop lending operation and removing the dedicated CLICC student staff post. As the library student employees are not trained to support laptops or their usage, CLICC and library staff needed to develop a system that met the following criteria:

1. Easy, straightforward interface for library student staff and students checking out laptops.
2. Easy access for both staff and students on either side of the counter.
3. Good, reliable communication mechanisms for library staff and students.
4. Minimal required training.
5. Responsive back-end support systems.

CLICC and library staff collaborated to design, develop, implement and support touchscreen laptop lending kiosks during the summer of 2005. The project was approved in June, 2005 and the first three kiosks were in operation in the libraries by October 2005. The kiosk system and the collaborative support mechanisms have been very successful, effectively eliminating the need to separately staff the laptop lending desks in four locations. Laptop lending is now incorporated into the circulation desk duties of the library student staff, with CLICC providing support for the hardware, software and usage through a phone hotline and centralized problem tracking.



## How it Works



1. Student approaches the laptop lending kiosk, swipes their BruinCard and enters their Bruin OnLine ID and password. On the back-end, the system authenticates the student based on a database of valid Bruin OnLine IDs maintained by the campus' Communication and Technology Services department.
2. Student chooses which function to perform: checkout, check-in or renew (if a laptop is already checked out).
3. If checking out, the student is asked to agree to a set of terms regarding laptop damage and late fees.



4. After agreeing to the terms, the student is asked to get the attention of the library staff member who gets a laptop, scans the barcode, inserts a fresh battery, and verifies that the contents of the laptop bag are present.

5. The staff member then checks that everything is ok.
6. The student finishes the transaction by noting when the laptop is due back.
7. On check-in, the process is reversed, with the added element that the student and/or staff can note anything wrong with the laptop.
8. If something is noted wrong with the laptop, the laptop is taken out of service and CLICC staff are notified and pick it up for troubleshooting.
9. Renewals can also be handled by the kiosk system, or students can renew online or even call the Laptop Helpline.
10. If students or staff have any problems at the kiosk, they can call CLICC staff at the Laptop Helpline located in the CLICC lab which is open 24 hours weekdays, and for lengthy weekend hours as well.

The project consists of four elements: design, development, implementation, and support.

## **Design**

To meet the physical needs of the library circulation desks, we chose a touchscreen kiosk to be mounted on an arm that was secured to the desk. The arm allows the kiosk to be moved up, down, and sideways so that the library staff and the student could easily turn it without damaging equipment or requiring a lot of desk space. There is no keyboard or mouse. The barcode scanner and card swiper are incorporated on the kiosk unit so that there is only one piece of hardware on the desk.

At the library itself, MALCOM is composed of an IBM Anyplace Kiosk, running Windows XP as the operating system. On top of that, we have a copy of SiteKiosk installed, which works as a tamper-resistant shell around Microsoft's Internet Explorer. SiteKiosk itself points to a website on our main web server, which creates the user experience on the kiosk. That kiosk website consists of the same computer code that we use for other parts of our staff and administrative websites to keep errors to a minimum, and we collaborated with staff at the Center for Digital Humanities to create the visual layout. Windows XP itself has the device drivers provided by IBM installed, which allows the javascript on the webpages to control and receive data from the magnetic stripe readers and the barcode scanners. We did not receive funding from any of these vendors to produce the kiosks. The products we used to pull together all the kiosk components were a combination of new hardware, software that we were already familiar with, and programming that tied the interface to our existing database infrastructure. It was designed to be scalable within our own environment to expand opportunities for providing more laptop lending locations around the UCLA campus. Because the components are modular and easily obtainable, we would also hope it could be portable to other locations either in part or as a whole.

## **Development**

We started by drawing each screen the kiosk would display. We planned out the step by step process of checking out a laptop the way we wanted it to happen, not the way it had been done in the past. We did not consider hardware or software solutions while we made a diagram of how these "screenshots" would fit together. We tried to put the user experience first by speeding up the overall transaction time and allowing the user to report problems back to us during the check-in process. After making these initial drawings, we sought the input of the library staff who would be involved in the laptop transactions with the students. A group of CLICC staff and library staff met bi-weekly throughout the summer to develop the kiosk methodology, assess support needs, and define processes for hardware repair and updates. By September, we had developed a streamlined laptop checkout process that is easy and straight-forward for the students and staff.

## Implementation

We deployed our first test kiosk in our busiest lending location in the Powell Library and fielded the initial questions about the new system from users and our student staff. After the kiosk was deemed stable enough to put on a service desk, we took it to the first library, and began using it to train the student staff. Four training sessions were held at 90 minutes each, and a notebook with brief instructions was created and left with the library staff. This combined with additional on-the-spot coaching from the library supervisors was all the training that was required.

A suite of documentation was also developed to answer questions students or staff may have regarding how to check out a laptop, connect with your own laptop, print, access specialized software packages, and where to find ports or wireless locations. Documents are color coded so that support staff can refer to the color of the appropriate document when talking to someone on the phone. CLICC provides the documentation, and library staff offer input or recommendations for changes or updates.

Once the first kiosk was tested and the students trained, we cloned the image (using Ghost) and installed it on the other kiosks and mounted them at the other library locations. CLICC and library staff tested the kiosks and the processes and then opened them up to the students in October 2005.

## Support

In prior years, CLICC staffed the laptop lending desks with specially-trained student consultants to address any laptop related questions. Now that the students handling the laptop checkout process had only 90 minutes of training in the process, it was important for CLICC to provide reliable back-end support of both the hardware and the processes. CLICC set up a Laptop Helpline where library staff and students could call with any questions or problems.



*CLICC Consultant Ajita Gupta at the Laptop Helpline in the CLICC Lab in Powell Library*

The phone is staffed by CLICC consultants trained in laptop checkout procedures, and with experience in troubleshooting laptops and connection issues. Logs of all calls are kept to assess patterns and assist with troubleshooting. During high traffic times, there is a dedicated consultant assigned to answer the phone, and during lower traffic times, one of the student staff members assigned to normal lab duties wears a wireless headset so they can answer incoming calls while performing their normal duties. These consultants have access to our staff websites, which control the central database to answer questions or perform transactions if the kiosk is malfunctioning. They also have access to the staff problem tracking

system, which can clear reported problems on a remote laptop to allow its checkout, or report a problem on it to prevent checkout so our technical staff can service it.

Phones are available next to each kiosk for easy access by both students and staff, and the CLICC lab (where the phone support staff is located) is open 24 hours weekdays and many hours on the weekends as well.

CLICC designated three student consultants as Laptop Specialists, who focus on laptop support, repair, and cloning. They make “rounds” to the kiosk locations twice a week to check the status of the kiosk and the laptops available for checkout. They collect any laptops in need of repair or recloning, bring them back to the CLICC lab, troubleshoot them, repair them and bring them back out to the lending location within a few days. Laptops are also cloned regularly to keep up with software updates and security patches. The Laptop Specialists handle the rotation of laptops for cloning as well.

MALCOM consists of existing CLICC technology at its core, with an attractive and easy-to-use interface for student and staff. MALCOM is a combination of phone support, websites, and a self-contained kiosk system that works with our central database to track checkouts of laptops. This allows other trained staff to handle CLICC’s resources while still allowing us to maintain the same level of quality and service that we have in the past.

## Project Benefits and Customer Satisfaction:

By deploying the kiosks, we were able to reduce our staffing needs by approximately \$65,000 annually. Prior to this project, CLICC had 75-80 student consultants that were deployed to the lab, classrooms, and all of the laptop lending locations. Reducing the number of places CLICC consultants were deployed not only saved CLICC the student staffing costs, but also simplified the scheduling and administrative overhead associated with such a large pool of student workers. Currently, a full roster for CLICC would be 60-65 student consultants. For the library staff assuming the new duties, no additional students were hired. Throughout the planning process, it was important that library staff burden be minimal, and that CLICC staff were always available to provide support. After nearly a year of operation, library staff at each location have successfully integrated the laptop checkout duties into the regular circulation desk activities. While there was some initial hesitation to add another task to the circulation staff duties, all participants felt that the laptop lending service was well worth the additional efforts, and students would ultimately benefit from the library's excellent services.

The kiosk greatly simplifies the laptop checkout process and we are now able to train library staff to operate the kiosk in addition to their other duties. CLICC's Laptop Helpline phone is housed in the CLICC lab, and this phone support has been integrated into their normal duties.

The time per checkout/check-in transaction has been reduced from about 4-5 minutes per transaction to about 2 minutes per transaction. Since the students initiate the transaction and authenticate themselves, staff involvement has also been greatly reduced. In our busier libraries we will be able to reduce the lines of people waiting to check out a laptop while maintaining the same efficiency.

Each library location determines their student staffing, so service hours are now controlled locally rather than by CLICC's ability to schedule consultants to staff the station. As such, the libraries are choosing to open their laptop lending operations for longer hours, providing better service to the students. Each library also has a unique clientele based on discipline, allowing the local staff to better serve their needs. This results in a better experience for the students and library patrons.

Finally, the touchscreen kiosk itself is an interesting item for the students. Many enjoy the experience of walking up to it, swiping their card, and using the cheerfully colored touchscreen.



*Student using MALCOM to check out a laptop at the Biomedical Library*

## Future Steps:

Now that MALCOM has been in use for nearly a full academic year, we're planning to expand the kiosks into our higher-use installations. In shaking out problems in the currently deployed kiosks, we have a good idea of what to expect as we expand the program. We're steadily improving the existing kiosks and anticipating the needs of the busier laptop lending sites based on our experiences.

Not only does MALCOM represent the achievement of a technical challenge, it also illustrates the effectiveness of collaboration. Technically, we're now able to roll MALCOM out to other laptop lending sites easily, and we've also paved the way for future collaborative projects with our library colleagues. Developing the support mechanisms were as much a focus as developing the technology, and as a result, we're in a good position to scale our phone support operations to add services there as well.

Although we do not yet have survey data to begin assessing customer service satisfaction, we plan to launch a survey in early June 2006 to gather feedback. Based on informal conversations with students and our student staff, we believe our users have responded well to MALCOM and have offered constructive criticism as well as positive comments. We plan to continue to enhance the system, incorporating input from staff and students to develop MALCOM 2.0 and beyond.



*Lisa Kemp Jones, MALCOM at the Engineering and Math Sciences Library*

## Relevant Links:

CLICC Web Site – overall services:

<http://www.clicc.ucla.edu>

CLICC Web Site – specific laptop lending information:

[http://www.clicc.ucla.edu/laptops\\_whatyouneed.asp](http://www.clicc.ucla.edu/laptops_whatyouneed.asp)

## Acknowledgements:

Behind the project team were many people who provided ideas, encouragement and support. Those people include: University Librarian Gary E. Strong, Associate University Librarian for Research and Instructional Services Sarah Watstein, Deputy University Librarian Susan Parker, Director of the Biomedical Library Judy Consales, and Director of the Science and Engineering Libraries Audrey Jackson. We would also like to thank Gaby Mittelbach (CLICC) for her diligent work getting equipment in on a tight deadline. Thank you also to Jessica Mentessoglu and Salvador Zapien (CLICC) for picking up the slack while we had our heads buried in the kiosk project, and special thanks to Sal for dreaming up the name MALCOM: Mostly Automated Laptop Check Out Machine. And we're nothing without our students who really do all the work. Thank you!