ALAAmericanLibraryAssociation

Cutting-edge
Technology for Library Services

June 2014

Every year since 2009, the American Library Association has recognized a handful of libraries for projects and practices that use technology in innovative ways. "Cutting edge" refers to successful implementations of technological advancements and their use in library environments—particularly those that libraries develop themselves (rather than buy "off the shelf").

A selection committee appointed by the ALA Office for Information Technology Policy (OITP) and the Library Information Technology Association (LITA) annually reviews submissions from dozens of libraries of all types and highlights those few that best demonstrate novel and innovative technologies that are solving problems and serving their communities. Each project has already been proven to work successfully and might cost-effectively be replicated by libraries everywhere.

For 2014, ALA is pleased to present four projects that have been widely embraced by the communities served:

- **Edmonton Public Library** - Edmonton, Alberta, Canada
- **North Carolina State University Libraries** - Raleigh, North Carolina
- **Pennsylvania State University Library** - University Park, Pennsylvania
- **Somerset County Library System** - Bridgewater, New Jersey

Links to sample code and/or instructions for implementation are provided, as these libraries and ALA hope to see these cutting-edge technologies widely adopted (or adapted) by libraries elsewhere.

"This was a very competitive year for cutting-edge applicants," said Marc Gartler of Madison (Wis.) Public Library, who chaired the selection committee.

"These four libraries successfully developed technologies to address issues that are common to libraries everywhere—how to increase access and interlibrary cooperation, how to promote a new library building, how to facilitate the creation of digital content, and how to provide new technology cost-effectively. This year's honorees stood out in the ways they creatively solved problems, engaged library patrons, and strengthened library services and visibility. We are excited to recognize these four projects, several of which already have proven their potential to be successfully replicated by libraries around the globe."

Edmonton Public Library

"Me Card" Technology

The technology solves a number of problems that libraries are facing today when trying to increase access to collections for their users

For the Edmonton Public Library (EPL), it really is all about "me." More specifically, it's about the *Me Libraries* project that the library launched in October 2013—which also just happens to be Canada's Library Month—to provide users with greater and easier access to the information and collections held by libraries across the province. The technology developed by the project team underpins a reciprocal borrowing service among numerous libraries and features a self-service web form that allows users with a library card from one library to self-register to access collections of another desired library (or libraries).

Edmonton Public Library led the development of the technology as part of the Metro Edmonton Federation of Libraries' *Me Libraries* program after years of discussing a shared integrated library system (ILS) implementation and other solutions to increase accessibility. Other members of the federation include:

- Ft. Saskatchewan Public Library
- St. Albert Public Library
- Strathcona County Library

After the library patron registers, the *Me Libraries* technology contacts their home library's ILS and creates a user account in the ILS of their desired library. Users can then use their home library card at any participating library with which they have registered. The new accounts are available for immediate use, requiring no involvement from library staff and no additional physical library cards. What's more, *Me Libraries* technology does not require a shared ILS between participating libraries—it works with any ILS.

Most of the technologies EPL has developed provide incremental improvements; *Me Libraries* is a disruptive technology built for customers beyond EPL.

The project required a blend of skills including Java coding, network design, business analysis, and a good understanding of ILS systems and databases. These skills had to be brought together in a way that was functional, but with an eye to ease of maintenance and future development. Rising to meet this challenge helped staff increase their familiarity with their own ILS and determine available options and
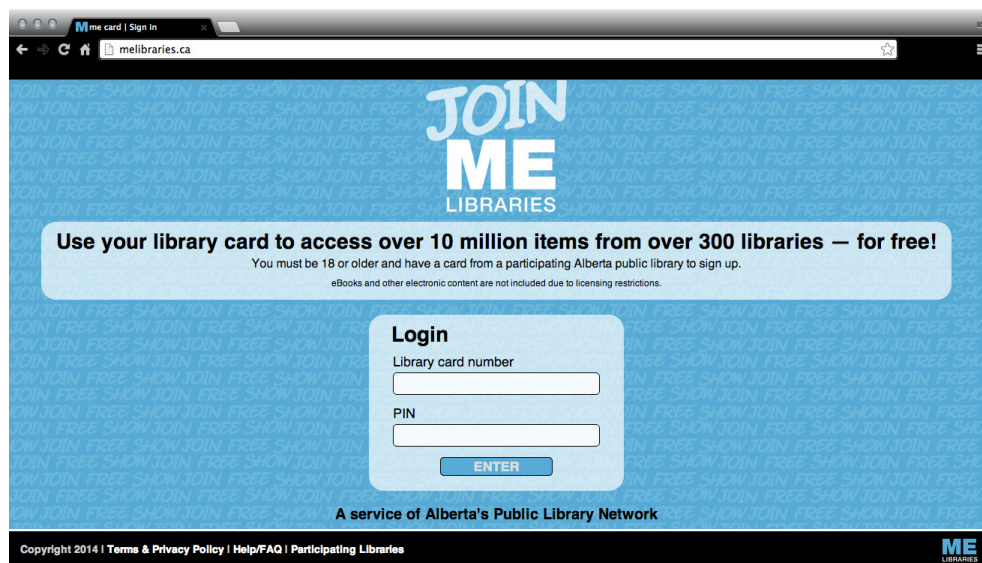
The tech behind the scenes

- A server that runs on the ILS server performs the function of negotiating and translating communications between different ILSs
- Any reasonable hardware (or virtual machine) is suitable, and the service is designed to run on any operating system without modification
- The design centers around a few simple requests that users initiate on a website, which the server then translates and sends to the home library.
- The website confirms the transaction in a way that ensures that no identifiable customer information is stored.

Learn more

- Find more information
- Get the server code
- Get the website code

capabilities. With this increased understanding, they developed a model and began working with ILS administrators at other participating libraries—each with a different ILS. The team worked to keep the system as simple and automated as possible. Over the course of the process, they established useful professional relationships among library staff, and everyone involved is constantly learning more about the strengths and weaknesses of the systems they are responsible for supporting.

Costs of the project related mostly to staff time at the ILS administrator level on development and implementation, including time working with other libraries. Other staff costs included web developer time, project manager time to work through policy and procedural details with partner libraries and developing marketing concept and promotional materials.

Signs of the success of the project are readily apparent. Since the *Me Libraries* launch, the Province of Alberta's Public Library Services Branch has adopted it to serve as the technology solution providing users with Alberta-wide borrowing privileges. Initially, the EPL team anticipated that their own library system would see the most new registrations—with most new users wanting access to EPL while they are in the City of Edmonton for work. Instead, registrations for access to the *Me Libraries* service have been strong across all participating libraries. Over 3,700 users accessed the service to register for membership with a library other than their home library in the first three months after *Me Libraries* launched.

"The technology is an innovative way to increase user access to library collections in a cost-effective way through partnerships with other libraries," said Pilar Martinez, EPL's deputy chief executive officer. "Expansion of this technological approach to a provincial-wide service will provide access to the collections of over 350 public libraries in Alberta by the end of June."

NCSU Libraries

My #HuntLibrary

My #HuntLibrary showed us that the collaborative creation of a photographic archive is a fantastic way to engage with our community

When North Carolina State University (NCSU) Libraries opened the James B. Hunt Jr. Library in January 2013, library leaders saw that they had a perfect opportunity both to raise the profile of the university and to let the community share their pride in a facility designed to challenge assumptions about what an academic library should be.

The project team devised the *My #HuntLibrary* project to leverage social media and the library's unique visualization environments to crowdsource the story of the library's arrival.

The solution was an application built with the Ruby on Rails web development framework that takes advantage of Instagram's application programming interface (API) to capture photos that users have tagged with *#HuntLibrary* and display them on the web. The app is usable on mobile devices, tablets, desktops, e-boards, and larger screens. Users can then vote on the best photos, and the Libraries' official university archives digitally preserves the selected photos so that they become a permanent part of NCSU history. The library also displays the selected photos in two key places:

- On an e-board near the popular bookBot automated book retrieval system
- In the iPearl Immersion Theater—a 21-foot wide curved video wall

A photo contest built around the app provided an anchor of sorts for the library's opening activities and helped create a greater sense of community ownership regarding the new facility.

Library leaders and staff faced a number of challenges in designing *My #HuntLibrary*, not the least of which was trying to design the app while the display infrastructure to support it and the library itself were still under construction. The solution was to conduct early testing using a test installation in the other main library and to simulate the display environment on a desktop computer. In the end, the project team completed the app in roughly three months from conception to launch.

App designers also had initial concerns about whether or not people—and students in particular—would participate in the project and use

The tech behind the scenes

- Built as a Ruby on Rails application using responsive design principles
- Takes advantage of Instagram's API
- Includes staff moderation function to filter unacceptable or inappropriate content

Learn more

- Find more information
- Get the code

the #*HuntLibrary* tag. Library leaders encouraged participation by featuring simple instructions for using the app on digital displays, and NCSU's Chancellor even invited people to use the app during his Hunt Library dedication speech.

The community's response to *My #HuntLibrary* has been very encouraging. In the first 11 months after launching the app, more than 1,200 different users had tagged more than 3,000 photos, generating over 7,700 "likes" and over 70,000 "battle" votes. Meanwhile, the website recorded over 235,000 page views from more than 18,000 unique visitors.

Signs of success also can be seen in the interest that the broader community has shown for *My #HuntLibrary*. Several libraries have made inquiries, and in May 2013 the project team released the source code for *My #HuntLibrary* as an open-source Rails Engine called "lentil" so that other institutions can create similar projects.

But perhaps the most rewarding aspect of the project has been the realization that so many in the community are keen to use the app for archival purposes. As NCSU Libraries' Mike Nutt puts it, the project "has shown us that the collaborative creation of a photographic archive is a fantastic way to engage with our community. Students and others in the community are enthusiastic and supportive of the archival contribution opportunities, and through *My #HuntLibrary*, the library can support students' desires to leave a mark on the historical documentation of their university."

Penn State University Libraries

One Button Studio

The One Button Studio drastically simplifies the workflow surrounding video production

Today, university professors and students are taking advantage of the possibilities associated with video like never before—producing and recording lectures, presentations, group projects, and much more. However, high-quality video production has mostly remained a complex and technical endeavor, requiring knowledge and experience with lighting, cameras, different video formats, and production software. For these reasons, the folks at Pennsylvania State University Libraries decided to solve the problem and create a tool for simple, easy-to-use video production, resulting in the One Button Studio.

The studio is a simplified video recording setup for which users need no previous experience with video production. Faculty and students only need to bring a flash drive, plug it in, and push a single button.

The studio is part of the Tombros McWhirter Knowledge Commons on the campus of Penn State University Libraries, University Park. The addition of the Knowledge Commons was a key part of an $11 million renovation of the library's first floor, featuring a combination of library, information technology, and multimedia services.

For the One Button studio project team, the biggest challenges developed after they launched the studio. For starters, the studio met with high demand by faculty, staff, and students. In its first full academic year, 4,200 people created over 270 hours of video. The library adapted its online scheduling system to help manage the high demand. They also added a library media specialist and additional consultants to support the studio and its users.

While the first challenge might be thought of as coping with individual demand, the other challenge they faced involved more of an *institutional* demand. Indeed, campuses across the Penn State system began wanting to implement the technology at their own locations. In addition to University Park, there are 24 other campuses across the state.

To address this demand, the project team undertook additional research and development, leading to the design and implementation
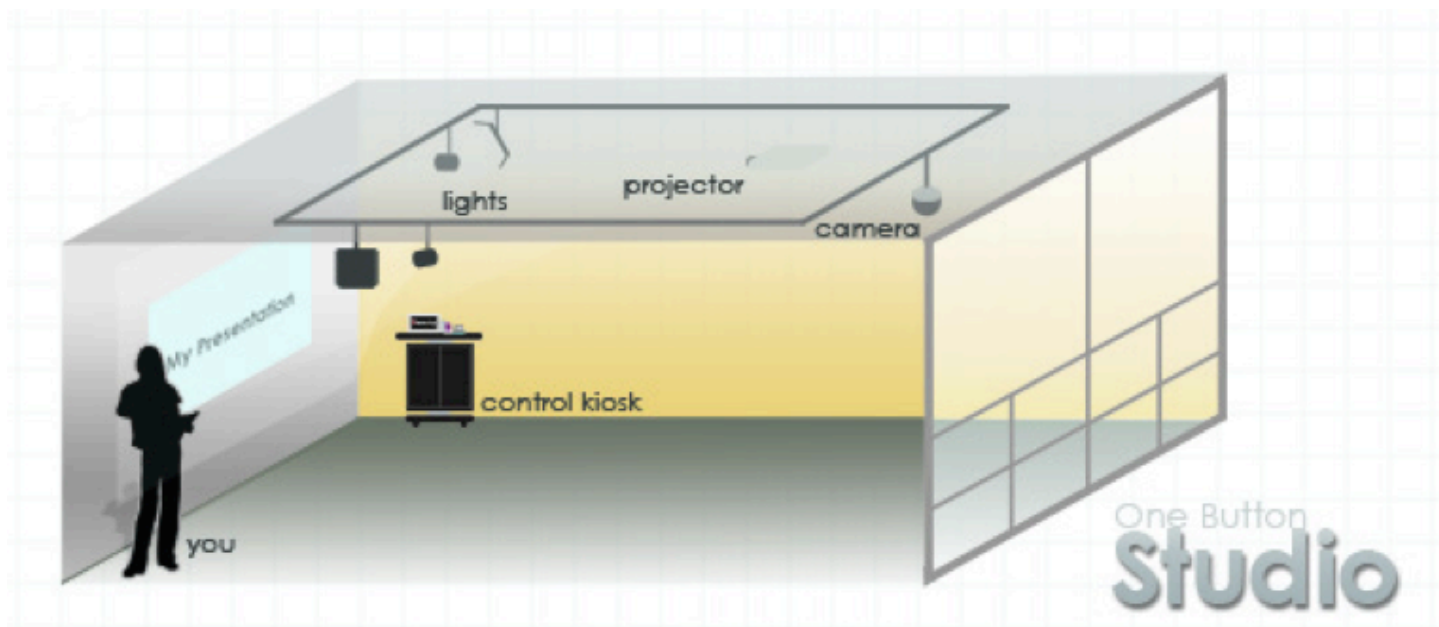
The tech behind the scenes

- Mac Mini and iMac computers
- Any camera with live HDMI out
- Microphones
- Audio mixer
- Data projector and mounting hardware
- At installation, the equipment costs for the studio were around $11,000, but with the savings created by the Mac app, current equipment costs are kept under $7,500

Learn more

- Find more information
- View the equipment guide
- View the setup guide

of a native One Button Studio application for Mac computers. The app enables a high level of hardware automation so that users have no need to interact physically with most of the system's components. Once a user's thumb drive is engaged in the system, the app activates the camera, lights, and microphones automatically.

The app also allows for easier installation and drastically reduces the cost of a studio by thousands of dollars due to the changes to the required equipment. In the first iteration of the studio, the computer code would only work with a very expensive ($3000+) modified security camera. With the app, any camera that has an HDMI output can work. PSU currently uses a $300 camera in the studios in the Knowledge Commons.

"The One Button Studio drastically simplifies the workflow surrounding video production and eliminates many time-consuming and technical steps," says Joe Fennewald, head of the Tombros McWhirter Knowledge Commons. The end result is a replicable studio experience that requires the minimal time and effort while delivering a high-quality result packaged neatly on a thumb drive in a standard video format.

The project has allowed students and faculty who have previously been intimidated by the complexity of video production to create videos simply and easily—allowing teachers and learners to concentrate on creating compelling content.

Somerset County Library System

Cut-rate Digital Signboards

It is very easy for us to update, remove, or add slides, making sure the content is always current and relevant

With new digital signboards still costing upwards of $1,300 and printing costs as high as ever, the Somerset County (NJ) Library System needed an affordable yet simple and easily managed solution for communicating useful information to their community of users. Their cutting-edge solution is a digital signboard system that combines low-cost computers, free web-based content development and hosting, and other off-the-shelf components in a novel way to deliver a first-rate viewing experience.

What drives the signboard system is a low-cost Raspberry Pi computer, connected to display monitors by HDMI and to the Internet via Wi-Fi. The Raspberry Pi is a credit-card sized computer that plugs into a computer monitor or TV and uses a standard keyboard and mouse. Models are available for as little as $35. The entire project—including the computer and a 32-inch TV monitor—costs as little as $325.

Project designers positioned the video monitors in key high-traffic areas, such as near the circulation desk. The monitors can be placed anywhere that there is power and a Wi-Fi connection, which allows the library to push new and revised content out to viewers.

Signboard managers create and serve the content displayed by the monitors using Google Docs Presentations, a free online presentation tool. According to Somerset's Rich Loomis, "With Google Docs, it is very easy for us to update, remove, or add slides, making sure the content is always current and relevant."

Indeed, working with the new signboards is much simpler and saves staff time. In the past, staff would need to go to each signboard, remove the SD card, walk back to their office, create and replace the images, then return back to the sign and replace the SD card. Now all they have to do is log into Google Drive at any computer and change their slides. After a few minutes, the digital signboards refresh themselves to show the new presentation.

However, it wasn't all smooth sailing. Signboard system designers had to overcome a few obstacles to get the system working
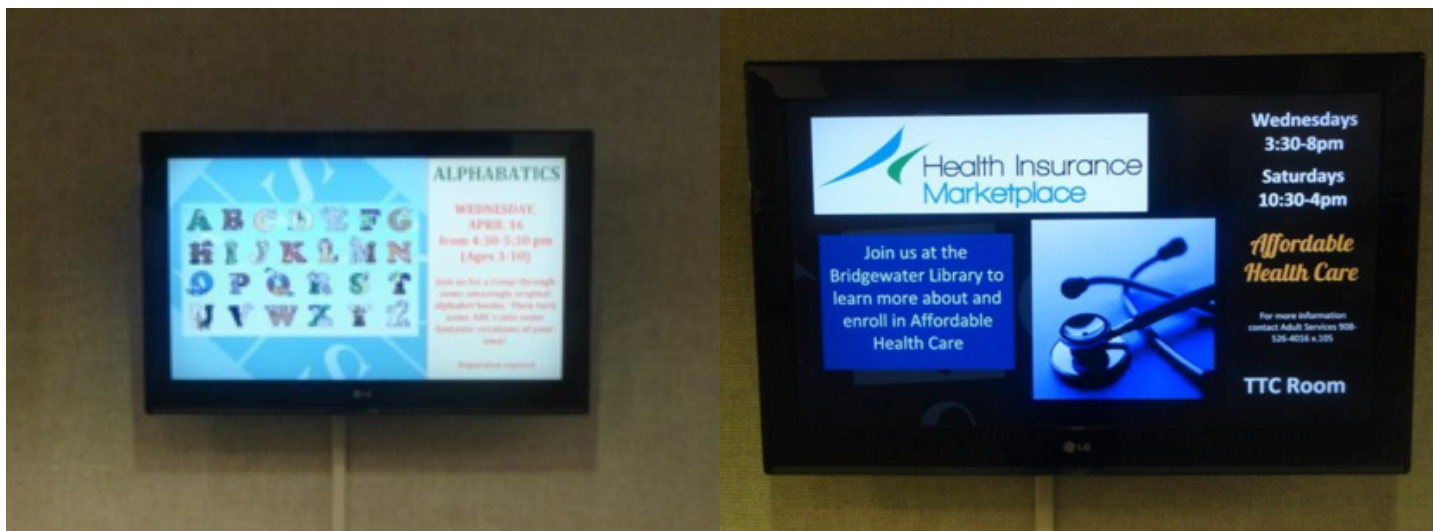
The tech behind the scenes

- Raspberry Pi computer running Linux
- 4GB or larger SD card
- HDMI video monitors
- WiFi connection
- HDMI cables
- Google Docs Presenta-tions

Learn more

- View a sample presenta-tion loop
- Learn how to do this for your library

properly. First, they had to adapt the operating system—a distribution of Linux—to properly match the screen size and resolution of the monitors they chose and to automatically start the presentation with no user interaction beyond plugging in the device. They also had to adapt to the constraints of creating and publishing their content through Google Doc Presentations and reach the optimal mix of resolution, screen size, and scrolling. The library is now adapting the set-up to work with 7- and 39-inch monitors.

The project meets the library system's needs perfectly, allowing them to make the best use of staff time and cut printing costs, while pushing dynamic and up-to-date information to library patrons. And, let's face it, dynamic digital signboards just look smarter and are more interesting and flexible than any paper poster could ever hope to be.

The library system has shown the signboards to other libraries, and they regularly receive calls and inquiries—at least one from as far away as Queensland, Australia—about how to duplicate the signboard system. For this reason, the library system has made the instructions for replicating the system available for free online so that any library that wishes can take advantage of this cutting-edge solution.

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