The Mobile Future of Place-Based Digital Collections
by Dan DeSanto

As the number of patrons carrying iPhones, Androids and other mobile devices continues to grow, an opportunity has arisen for libraries to make their digital collections accessible via these mobile devices. Mobile technologies can be used to provide another access point into a digital collection, and, in the case of place-based digital collections (collections focused on a certain geographic location), mobile technologies can provide access to a collection at the geographic point where the collection is most relevant. A patron might download an application, or app, that delivers historical digital items related to the place where he or she grew up. That patron could then use this app to directly access the materials provided by a place-based digital collection while traveling around that town or neighborhood. The patron might stand on a mountain summit and use a mobile device to view the historic images of that summit provided by a library’s digital collection. By integrating place-based digital collections with mobile technologies, patrons are offered a way to inform their current experience of a place with the rich historical context within libraries’ digital collections.

This article presents the process of developing a place-based app for the University of Vermont Center for Digital Initiatives (CDI) Long Trail Collection. The Long Trail Collection houses images of Vermont’s Long Trail, the oldest long-distance hiking trail in the United States. The collection comprises over 900 digitized lantern slides, many of which were hand-colored, with original photos taken during the early days of building, cutting and hiking the trail, 1912-1937. The app developed for this collection will provide hikers with a means to access the collection’s historic images of the Long Trail as they hike along it. This one project is representative of both the opportunities and challenges of designing apps for place-based digital collections, and it is an example of the library field’s baby-step advances in an area of development that will soon be off and running.
The Long Trail to a Place-Based Digital Collection

For a number of different reasons, the Long Trail Collection distinguished itself early on as being well-suited to mobile development. USGS Geographic Names Information System (GNIS) headings, which provide latitude and longitude points, were included in the item record metadata so that the collection could be accessed via clickable points on a Google map. This geospatial metadata allows us to build a similar smartphone map view. The Long Trail Collection in particular has a potential user base of hikers as well as a well-recognized organization, the Green Mountain Club, dedicated to publicizing and maintaining the trail. The Green Mountain Club offers an avenue for outreach and cooperation during and after the app’s development. Further, the Long Trail is widely recognized throughout Vermont and New England. While it has a focused potential user group, interest would not be limited to one town or city; rather, a user might be anyone who has ever hiked or is planning to hike the trail. Considering these factors, the Long Trail Collection in particular seemed to lend itself to mobile development.

However, choosing this collection for mobile development is not without its obstacles. Perhaps the biggest of these is the spotty cellular and data connections along the trail. The app would not be usable in spots with little or no cell coverage, and there are many such places along the heavily wooded Long Trail. The app’s design also needs to take into consideration battery usage issues which become increasingly important if a user is also using the smartphone as a means of emergency contact. As to the first issue, cellular coverage can be quite adequate above the tree line and on the summits of many of the trail’s peaks, and cellular coverage will only improve in the future. As to the second issue, the app will need to poll for a signal only when prompted by the user, helping to save battery life. If these concerns prove to be a barrier for this collection, the project can serve as a framework for use with other digital collections.

Work began on the app in October of 2010. A colleague and I hatched the original idea over coffee and, by the time we had walked back to our offices, the notion of a Long Trail Collection app seemed quite feasible. I had no prior mobile programming experience to speak of, so I started reading app development documentation and trying to familiarize myself. The first decision was whether to begin working with the Android platform or the iPhone iOS platform. Apple provided very extensive development documentation but charged a $100 fee for a developer’s license. By paying the licensing fee, one may download Apple’s development suite: Xcode, Interface Builder and iPhone Simulator. Android development is free, but, at the time, there was no way to do development without having an Android phone. Google released a product called “App Inventor” around this time, essentially a DIY app-creation product, but I could not find anyone with an Android phone nor did my institution have phones available to use for development. Because Apple offered the iPhone simulator, a “virtual phone” that lives on your computer for the purpose of development, I chose to begin working with iOS on the iPhone. From that point forward, I charged headlong into familiarizing myself with Apple’s Objective C programming language and slowly worked my way through Beginning iPhone 4 Development: Exploring the iOS SDK by Jack Nutting, David Mark and Jeff LaMarche. After creating a number of small test apps, I began to gain a bit of competency and was able to develop a partially functioning Long Trail Collection app that at least had the look and feel of what I hoped to create. My roadblock became the back-end querying – pulling the jpgs and metadata that would provide the heart of the app’s functionality. Having limited programming knowledge, I knew it was time to seek out expert help.

At the 2011 ACRL National Conference, I presented a poster titled, Hitting the Trail: Making Digital Collections Mobile. My goal was to assess the level of interest in the project and to perhaps meet those working on similar app-based projects. While there was a high level of interest, very few libraries were developing mobile projects, and I met no one who had built an app for a digital collection. Upon returning to campus, I sought out help from the computer science department here at the University of Vermont. I eventually found myself at the door of Robert Snapp, a professor teaching a computer science course titled Integrative Computing. The course will use mobile phone development to synthesize a number of different technologies, such as database management and geospatial location, in order to teach students to design practical apps for mobile phones. After discussing the Long Trail project, Snapp agreed to help design the app. The Long Trail
Collection will provide his class with a pragmatic example of how mobile technology design integrates multiple computing skills and also how this technology can be used to benefit the larger community.

Indeed, the unexpected positives of the project have continued to grow. As design has taken place, the possibilities for lived experience ("being there") and historical experience (viewing the collection) to intersect have become increasingly apparent. Images continue to identify themselves as potential learning opportunities. In partnering with the computer science department, the process of building the app will become a practical teaching tool. Perhaps most importantly, the project may benefit the field of digital archives by introducing an app that is extensible to other place-based digital collections. This last point is of great importance. The creation of a toolkit for building digital collection apps is poised to become a necessity in the very near future.

Mapping the Possibilities for Future Mobile Projects

Beyond good design, an additional goal of the Long Trail Collection app project is to create a product that could be used by other collections, both at the UVM Center for Digital Initiatives and possibly at other institutions. The Long Trail Collection’s metadata already includes geospatial coordinates (the aforementioned GNIS headings), but it may be feasible to retroactively add these headings to other place-based digital collections, therefore making them also deliverable in a geo-mobile format. Those creating new place-based digital collections might consider initially adding geospatial coordinates to their metadata in order to leverage both web-based and mobile possibilities for delivery.

Libraries might further choose to deliver multiple collections in one app. A state historical society may have multiple collections from different places around the state. In a mobile format, that historical society would have the option to build one app that maps all or some of the items in their digital collections to different points around the state, regardless of an item’s parent collection. They could include or exclude whatever items or collections they chose, differentiate with different icons as they saw fit, and provide as much or as little item-level information as they desired. By embarking on mobile development, archives can design means of delivery that best fit the needs of a collection or an entire archive.

The types of flexibility promised by mobile technologies may also open up new avenues for collaboration. Two archives with collections focused around similar themes could combine access to their collections in the same app. If two similar collections are focused on the same place, the collections might be featured together in order to provide a deeper perspective into that place’s history. As long as metadata standards are uniform across partnering institutions, it is feasible for those institutions to collaborate and build expansive access through one app’s interface, rather than be constricted by the demands of each archive’s method of delivery.

Mobile technologies provide all of the options for extensibility and visual representation delivered in a web-based format (maps, timelines and so forth); yet the added benefit of being mobile, of the patron actually “being there,” can create a meaningful experience that is greater than the sum of its parts. Libraries now have the option of providing high quality digital materials and associated metadata to patrons at a collection’s point-of-interest. Much more than a virtual tour, mobile technology can offer patrons robust access to digital collections, presented in a number of visual formats, at the very point that a patron might best enhance his or her historical and cultural understanding.

A Fork in the Trail for Mobile Development in Libraries

Mobile technologies have presented digital archives with a tremendous opportunity to make collections available where patrons are most interested in them. It remains to be seen whether libraries and archives will be proactive in developing library-centered mobile technologies or whether libraries will passively wait for proprietary companies to design and sell the technology back to us. As libraries scramble to build mobile access to their catalogs and websites, it would be a great loss to, in our haste, forget about the possibilities for greater access to digital collections. Just as the greater library must begin thinking about creating infrastructure that best capitalizes on the proliferation of mobile devices, so must libraries’ digital archives begin thinking about the same issues of mobile access and delivery.

We in libraries have the opportunity to develop the suites and toolkits
that best meet our mobile development needs, and there are examples of collaborative development for us to follow. Recently, the Library of Congress’ National Digital Information Infrastructure and Preservation Program (NDIIPP) and its 185 partners have worked with a company named Zephira to create an open-source software called Recollection. Recollection (now in beta) can be used to create visually enhanced, web-based displays for digital collections and allows metadata to be leveraged in order to populate graphical displays. Partnering libraries and institutions have contributed to and will benefit from the project, and it will be distributed as an open source product. The Recollection project provides an example of how a graphical display product can be designed for digital collections with an end goal of open-source distribution to libraries.

The map for discipline-wide collaborative development exists, both in process and in content. Yet, the question remains: Will we do it? Will we lead the development process of mobile technologies for libraries and digital archives, or will we allow others to do it for us and create yet another line in library budgets five or 10 years from now?

If libraries choose to embark on their own path of mobile development, digital archives may have the chance to deliver collections in new ways, in new places, providing users with a completely new experience of accessing a digital collection. For the Long Trail Collection, this means providing hikers with historic views of vistas, lodges and mountains as they experience the same vistas and lodges en route. The Long Trail Collection mobile development project is one small effort toward creating point-of-interest mobile access to digital collections. It serves as a model for other collaborative, extensible mobile development initiatives, and its completion may allow other digital archives to move forward with making their own place-based mobile digital collections.