Mapping the Library Collections

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This handout distills the main points of our PowerPoint slideshow.

**Introduction: Interactive Web Maps**

To create a web map, you need three things:

- Spatial data
- Map rendering
- User Interface

These elements are explained more fully below.

First, you need spatial data. Digital mapping in general uses two kinds of data: raster (things like aerial photos, elevation models, vegetation classification) and vector (which is essentially shapes drawn using points, lines or polygons). Most web maps use primarily vector data, and most have an underlying layer (the basemap) with points on interest drawn on top. The data in your map is either provided by someone else (like the streets in Google maps) or you have to create it yourself.

Data comes in different formats: it might reside in a database, in a shapefile, in a text file, or in a tiled map service.
Once you have your data, you need a way to draw it on the screen. One easy way to do this is use any one of a number of JavaScript mapping APIs. For example:

- **Google** (proprietary, well-documented)
- **OpenLayers** (venerable, open source)
- **Leaflet** (open source, new hotness, all the cool kids are using it)
- **Polymaps**
- **tile5**

Finally, you need a way to interact with the map data. Some of this functionality is provided by the JavaScript APIs (pan and zoom, popups). Other elements can be coded using JavaScript or a JavaScript library like jQuery, Dojo, or Sencha.

**First Project: Interactive Historical Campus Map**

Our first project was to take the typical campus map and give it the ability to show what the campus looked like in the past.

This was our existing campus map.
One of Emily’s tasks was to research the history of our buildings (this photo was taken in 1966, right before our library was built). She spent a lot of time looking at old aerial photos like this one, looking at old campus maps, and reading campus histories.

We also thought this would provide an opportunity to showcase some photos from our digitized collection of SOU historic photographs. So we added small historical pictures of buildings with links to the original record.


We needed outlines for our campus buildings. Luckily Jackson County has a very nice repository of GIS data. First, Grant grabbed all the buildings in Ashland.

Link to Jackson County’s GIS data: [http://www.smartmap.org/portal/gis-data.aspx](http://www.smartmap.org/portal/gis-data.aspx)

Then he identified the parcels owned by SOU.
Then he selected buildings within those parcels that would be useful to our map. Performing these tasks requires GIS software, such as ArcGIS or Quantum GIS.

To deal with older building outlines (i.e. before current day additions) or buildings that no longer exist, he aligned old campus maps with current aerial photography. This is called georeferencing. Finally, the buildings can be digitized using GIS software.

We decided to store our vector data in a Google Fusion Table which is basically a spreadsheet in the cloud that includes the necessary geometry field. It was particularly nice for group work since we could both edit it.

We chose the Google Maps JavaScript API to render it. Grant liked it because it has excellent documentation and it worked well with the Google Fusion Table.

Link to Google Maps JavaScript API: http://code.google.com/apis/maps/documentation/javascript/
For the user interface, we added an interactive timeline slider using jQuery and a directory using straight up JavaScript.

Link for the SOU Historical Campus Map: http://hanlib.sou.edu/historicalcampusmap/

This project is near completion, although we could still add more building photos. But there are many possible future projects that would be similar to this one. We could make a regional map that tied into our various regional collections. We could also make a global map that linked to our collections that draw from all over the world.

Second Project: Mobile Friendly Floormap

Our second (ongoing) project is to create a floor map of the library that is mobile friendly.

We began with our typical floor map.
Then Grant georeferenced the existing PDF map of the library. Emily compiled information that was included in the table. Grant converted the data from shapefile to GeoJSON.

For rendering the map, Grant chose Leaflet. Leaflet is simple, lightweight, fast, and gorgeous.


The most challenging part of creating a mobile map has been the user interface. Initially Grant wanted to use jQuery Mobile, since it would integrate with Emily’s existing mobile site for the library, and he has some familiarity with jQuery. He got disappointing results with elements not displaying properly. So he recently decided to switch to Sencha Touch, but that has had a steep learning curve.


This map isn’t live yet, but this is what we have for the first floor.
If you touch on a room or a point of interest, a popup displays with more information. Here is an example for an office. It shows the librarian along with his subject areas and contact information.

For art collections or areas with significant amounts of information, there will also be a link to read more. This information may still be abbreviated to be appropriate for the mobile site.

The map will also have a directory so that patrons can look up things that they don’t know how to find. We are in the process of determining appropriate headings to list the various areas under. There will also be a “list all” option. Users will have the ability to toggle the directory on or off as needed.

When something is selected on the directory, the area highlights on the map and the popup displays.
For things like bathrooms, elevators, water fountains, and copies, we would like to show appropriate icons. We may use smaller versions of these icons as markers on the map.

In addition to tweaking the floor map, we also have to resolve the issues we have between Leaflet and Sencha Touch. But this should be doable since University of Kent has had success with a map using both technologies.

Link for University of Kent’s map:
https://www.kent.ac.uk/mobile/#/maps/map (use Chrome or Safari)

We still have some work to do before we’re ready to roll this out. But there are also several future possibilities. One is to have tours that use QR Codes. These tours could lead new students through the areas and services of the library or community members through our art collections. The QR codes would make it possible for an interested person to jump into it at any point. We could also create layers that show our Wifi hotspots or quiet study areas. In the more distant future we’d like to use Wifi hotspot triangulation to make the map user position aware. Then it could show the user the actual path from their location to where they want to go.