Mapping the Vicksburg Campaign

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The Lincoln Memorial Shrine Redlands, CA
- Established 1932
- The American Civil War
- Abraham Lincoln
The Problem

• A large number of documents such as letters in the Shrine’s archive, an excellent educational/historical resource
• No way to effectively disseminate information
Proposed Solution

• Development of Story Map Application:
  - Able to be integrated into the Lincoln Shrine’s online presence
  - Presents a narrative of a major battle which would be engaging and informative to potential visitors
  - Integrate text and imagery of letters from the archive
## Requirements

### Functional

<table>
<thead>
<tr>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Story map shall be accessible from Lincoln Shrine’s Website</td>
</tr>
<tr>
<td>Map shall incorporate digitized documents from the Lincoln Shrine’s archive</td>
</tr>
</tbody>
</table>

### Nonfunctional

<table>
<thead>
<tr>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battle map can be accessed via link in correspondence-based story map, &amp; vice versa</td>
</tr>
<tr>
<td>Clicking individual points on the map will provide links to relevant contextual information and imagery</td>
</tr>
<tr>
<td>Battle map shall contain a visual hierarchy to clearly direct the observer</td>
</tr>
<tr>
<td>Story map shall utilize historical basemaps wherever possible</td>
</tr>
</tbody>
</table>

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**Introduction**

**System Design**

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**Implementation**

**Conclusion**
The Letters of Logan Crawford

• Union Military Officer
• Served in the 5th Iowa Volunteer Infantry Regiment
• Large number of contiguous letters from the Vicksburg Campaign
The Vicksburg Campaign

- April – July 1863
- One of the Key Cities in the Confederacy
- Controlled the Mississippi River and supply routes West
System Design

ArcGIS Desktop: Vector and Raster Datasets

File Geodatabase

ArcGIS Server: Feature and Map Services

ArcGIS Online: Web Maps

End User Client: Journal Story Map Application

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Conceptual Data Model

- **Routes**
  - Lead To: 1...
  - Utilize: 1...
  - Army Affiliation: 1

- **Troops**
  - 1

- **Fortifications**
  - 1...

- **Events**
  - 1...

- **Battles**
  - 1...
  - Letter Locations: 1...

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Data Collection/Creation

**Basemaps**
- Overview: 1875 Military Atlas
- David Rumsey Map Collection
- Georeferenced Via ArcMap
- Control Points: Towns/Roads
- Web Mercator
- Detail: Army Corps of Engineers Siege Map
- Library of Congress
Data Collection/Creation

- **Grant’s Campaign**
  - 6 Major Battle Locations
    - National Park Service
    - CWSAC Battle Summaries
    - Civil War Trust
  - 3 Significant Events

**Feature Classes**

**URL Fields**

**Image Hosting Service**

**Website w/ Supplemental Info**
Data Collection/Creation

- Feature Classes
  - 6 Logan Crawford Letters
    - Uncensored Letters

- Image Hosting Service
- Full Resolution Letter
- URL Fields
Data Collection/Creation

- Siege Detail
  - Allocations of 3 Major Union Army Corps + 2 supporting divisions
  - 6 Confederate Forts Attacked
  - 4 Major Confederate Divisions
Story Map Development

Web Maps

Vicksburg Overview Map
- Battle Points/Routes
- Events
- Letter Points/Routes
- Overview as basemap

Siege Detail Map
- Union & Confederate Troop Positions
- Fortifications
- Routes
- Siege Detail as basemap

Clickhandling Map
- Same configuration and Overview Map
- Specifically for on-click navigation function

Exploration Map
- Contains both maps + all feature classes
- Different visibility extent for siege detail

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Story Map Development

**Pop-Ups**

**Events/Troops/Fortifications**

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**XVII Army Corps**

**Commanding Officer:**

Gen. James B. McPherson

*Click the picture below for more information on this individual/unit.*

---

**Configure Image**

Specify the title, caption and URL for this image. Insert field names to derive the display from attribute values.

- **Title:**
  
  `Sent From {Sent_From}`

- **Caption:**
  
  *Click the picture below to see images of the entire letter sent from this location.*

- **URL:**
  
  `{Image}`

- **Link (optional):**
  
  `{Link}`

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Custom Symbology

- Symbols for each point feature created with Photoshop

Image Hosting Service
Story Map Development

Journal Story Map Creation w/ Builder

- Builder Interface
- For each slide, set:
  - Location/extent
  - Layer Visibility
  - Pop-up Visibility
  - Display Legend
- Set text panel content
- Add text links to sections
Story Map Development

Introduction

Civil War Background

Grant’s Campaign

Siege Phases

Logan Crawford’s Journey

Exploration Map

Time-enabled Maps

Narrative Flow

Introduction

Civil War Background

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Exploration Map

Time-enabled Maps

Implementation
Story Map Development

Customization via JavaScript API

- Downloaded Template from Github
- Hosted via Local Server
- Tagged ID of app created with Builder

```javascript
var configOptions = {
    // Enter an application ID created through the Map Journal builder
    appid: "d61166ad2a96437fa4ed1f527ac3b5b6",
};
```
Story Map Development

Customization via JavaScript API

- Customization of theme through JS Config file
- Major theme, dot navigation panel, main panel, header text color altered
- Dot navigation group size increased to separate narrative themes

```
// Side and Floating panel dot navigation group size
DOTNAV_GROUPSIZE: 22,
```
Story Map Development

- Added rules to CSS file w/ !important tag

```css
.legendContainer {
  background-color: #999966!important
}
#mainStagePanel {
  background-color: #ffffff!important;
}
.legendContainer {
  position: absolute;
  top: 0;
  right: 5%;
  width: 200px
}
.navDots .dot[data-index="1"],[data-index="2"],[data-index="30"],[data-index="29"] {
  color: #f2f2f2!important
}
```
Story Map Development

Adding On-Click navigation to Point Features

- Add code to end of app html file
- Retrieve Web and Layer IDs from Clickhandling web map
- Set variables for each unique layer
- On mouse over, change cursor and format/display info window
- On mouse out, return cursor to normal and hide window
- On click, navigate to section based on “Index” attribute field

```
if (bat_layer.on("mouse-out").function(e){
    bat_layer.on("click", function(e){
        console.log(e.graphic.attributes);
        var index = e.graphic.attributes["Index_"];
        topic.publish("story-navigate-section", index);
    });
});
```
Story Map Development

Temporal Visualizations

Custom Map Series embedded in Journal

3 Time Enabled Web Maps:
- Campaign
- Letters
- Simultaneous

Apps + “&embed” tag

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Live Demo
Conclusions

• A spatial and visual way for visitors to the Lincoln Shrine to experience a historical event

• A platform to host imagery of otherwise inaccessible documents and artifacts
Future Work

• Additional or more detailed data from Vicksburg region
  • 3d Visualization
  • Spatial/Statistical Analysis

• Application of the same structure to additional letters/other major events
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Thank You