

# **Waypoints:** Developing a Digital U.S. Coast Guard Historical Archive



Submitted by:

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December 16, 2005

*With thanks to*

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## ***I. Executive Summary***

This report documents the findings of a database development effort and usability evaluation for a digital library project underway at the U.C. Berkeley, School of Information Management and Systems. This project, *Waypoints: A Digital Archive for Coast Guard History*, includes an effort to design a Web-based digital archive which supports content browsing and search retrieval of a collection of historical artifacts.

The most important findings in our report include:

1. **A digital archive is desired.** Both administrators and potential users are excited about the prospect of a digital U.S. Coast Guard historical archive.
2. **The system meets organizational goals.** Development of an archive supports the U.S. Coast Guard's goal of preserving and promoting the organization's history.
3. **The browsing and search interface was easy to understand.** Basic browsing and search functionality in the initial prototype was intuitive and easy to understand.
4. **The system was well-liked.** Testing subjects commented that they were interested in using the system and exploring the archives contents once an interactive system is on line.
5. **The database design supports our information needs.** As we worked through the design process, we built a database to support the different types of artifacts managed by the historian's office.

Areas for continued development/research include:

1. **Continued prototype development.** With basic implemented, the interactive prototype should be further developed to align with features outlined in the paper prototype.
2. **Metadata is difficult to understand.** Though browsing through a drill-down menu is easy to navigate for novice users, the idea of an established hierarchy is somewhat difficult to understand. Metadata presentation must be refined and presented in a more intuitive manner before users can fully understand its value/use.
3. **Data/metadata entry needs further analysis.** Though user testing (paper prototype) revealed that basic record entry was easy to accomplish, adding descriptive metadata to the same artifact proved more difficult to understand.
4. **Identifying resources is a priority.** Four of the five interviewees commented that resources to develop and maintain a digital archive might be difficult to come by. As development moves forward, one of our goals will be to identify a funding source and host for our archive.

## ***II. Project Description***

Target Market: The target market for the system includes two basic user groups - the Coast Guard historian's office and the general public (anyone interested in searching through the archive). Uses for each group are dependent on the specific tasks they wish to accomplish; however, both will use the system for artifact search and retrieval.

Stakeholders: Internal stakeholders include the U.S. Coast Guard's historian's office and its field personnel. Their goals include promoting the history of the organization while preserving all relevant materials necessary to do so. In meeting these goals, the stakeholders provide a valuable service to the public while preserving the institutional memory of the service.

The External stakeholders include individuals interested in searching through the Coast Guard's historical archive – for professional or personal research. Specific examples of external stakeholders are provided in our users and personas descriptions, but could include retired military members and their families, researchers, teachers, or anyone interested in learning more about the Coast Guard.

Opportunity: The need for this project stems from the lack of a digital archive for U.S. Coast Guard history. There are a great number of historical artifacts available through the Coast Guard historian's office. The collection is quite diverse and contains artifacts such as physical objects (e.g. lighthouse lenses, artistic works), case records (e.g. the Titanic sinking), and photographic images. With the exception of physical objects, materials are typically stored in large filing cabinets and organized according to topic. In order to access the artifacts, a person must submit a written request or alternatively come to the Washington, D.C. office to search through the collection. Unfortunately, much of the collection remains idle either because people do not know what is available or they are in a position where they cannot manually search through the materials.

A digital archive allows the historian's office to catalog materials under multiple topics, thereby increasing search retrieval. Additionally, a web-based system broadens availability of the collection to those who were previously unable to access the materials.

Competitors: There is currently no alternate vendor developing a tool to explore the contents of this historical collection; however, there are digital libraries/archives available via the Internet that have implemented user interfaces which aid in content browsing. What I consider the "best" examples are The Flamenco Search Interface Project (<http://flamenco.berkeley.edu>) and Indiana University's Charles W. Cushman Photograph Collection (<http://webapp1.dlib.indiana.edu/cushman/index.jsp>). Samples of these and other libraries can be found in our competitive evaluation section.

Additionally, through contact with the California Historical Society, the California Digital Library, and other organizations that have done work with historical archiving – we hope to gain insights into digital library development.

Focus: The focus of this project will be on an interface that facilitates data entry and administration of the collection and exploration of the collection's contents.

Objectives: The overall objective for this project is to develop a user interface that promotes content exploration and efficient search/retrieval. The data entry interface should minimize the steps required to add, update, and delete records. The browsing interface should be intuitive, easy to use, and effective.

Team: Participating members include:

Ken Langford: System development; UI functionality; project manager

Christine Jones: Database development; UI functionality

Jennifer Hastings: Database development; UI functionality

Ray Larson: SIMS professor; faculty advisor

Scott Price: Coast Guard historian; content specialist

### **III. Methods Plan**

<b>Phase</b>	<b>Method</b>	<b>Date</b>
Users	Initial site visit to interview Coast Guard historian; Phone interview with historian's office to clarify needs/goals and gather user information.	9/16 – 9/18; 10/11 – 10/18
Tasks	Interview user groups to identify tasks/scenarios (based on previous task analysis); Conduct survey with three-five users to prioritize tasks.	10/19 – 10/21
Competitor	Conduct competitive evaluations on web sites with similar themes (i.e. San Francisco public library, MuseumFinland, etc.).	10/22 – 10/31
Inspection	Two individual interviews seeking input on design alternatives; heuristic evaluation of initial design.	10/28 – 11/12
Testing	One iteration of think-aloud testing with paper prototype (two users); additional iterations of think-aloud testing with interactive prototype (two – three users) as available.	11/13 – 12/5
Analysis	Analyze data and finalize report.	12/5 – 12/16

## ***IV. User Descriptions & Personas***

### User Descriptions

To aid in user interface development, the project team developed several personas, or detailed descriptions of archetypal users. In developing the personas, we explored a broad spectrum of potential users and focused on varying goals, content familiarity, and technical skill level. While there are numerous combinations of these characteristics, we have chosen to focus on three fundamental personas that will help us develop the core functionality in our system.

These are:

- system administrator
- subject matter expert
- casual browser

Each persona has different skills that allow them to interact with the system in different ways. For example, the system administrator is highly educated, technically oriented, and knowledgeable about the content of the collection. In contrast, the casual browser is unfamiliar with the content of the collection, is less technically oriented, and has goals that may not be as precise as the other personas.

To validate who we thought our users were and test our persona hypotheses, we interviewed users in two different groups – administrators and customers. Observation was not a viable option because it would require travel, and be extremely time consuming. We interviewed a total of five people – three administrators and two customers. Separate interview questionnaires were developed to gather information from each group.<sup>1</sup>

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<sup>1</sup> See Appendices B and C.

## Personas



**Stan Ranier**

Stan Ranier is a 42 year-old historian who works for the federal government in Washington, D.C. Married with two children, he earned his doctorate in history from the University of Maryland. Stan spends the majority of his evenings/weekends with his wife, Mary, and his children, Alex (13) and Sarah (10). In his spare time, he plays guitar with a local folk band, The Wandering Maestros. During the work week, Stan researches nautical history for the U.S. Coast Guard. In addition to responding to public requests for materials, he helps maintain a historical archive for the service. Included in his responsibilities, Stan often receives donated materials, reviews them for acceptance, and files the artifacts which are deemed appropriate for the archive. Working on a desktop computer daily, he is efficient at using e-mail, the Internet, and the many software applications necessary to do his job.

Goals: To promote U.S. history by responding to customer queries as quickly as possible; locate materials in the digital archive using the search/browse functionality in the UI; add materials to the collection as they are digitized and make them available to the public as quickly as possible; manage his workload through effective use of resources; leave work on schedule and spend quality time with his family at home.

(Note – Stan represents our system administrator and the person responsible for content management.)



**Brett Smyth**

Brett Smyth is a retired Captain from the U.S. Navy and a general nautical history buff. Living in Sun Lakes, Arizona, he enjoys helping fellow retirees locate information about places they served or units they were assigned. Brett earned his bachelor's degree while serving in the Navy and went onto a profitable career in sales after leaving the service. A widower, he recently celebrated his 65<sup>th</sup> birthday with his daughters Sara (37) and Nicole (32). Brett is familiar with computers, but his skills are limited to what he's learned through trial and error at the public library. He has recently begun conducting research for a memoir about his time in the military. In his spare time, Brett enjoys golfing and traveling the United States in his 32-foot recreational vehicle.

Goals: To remain close to his family; use the digital archive to search for specific content; browse queried materials quickly to determine whether they meet his needs; keep in touch with his former shipmates; continue research for his memoir.

(Note – Brett represents someone who would have a fairly good understanding of the archive's contents and would likely be searching for specific information.)



**Suzanne Peterson**

Suzanne Peterson is a 22 year-old student who currently resides in San Francisco, California. Working on her bachelor's degree in sociology, she has been attending the University of San Francisco for the last 3 years. A skilled athlete, Suzanne windsurfs with her free time and often jogs along the San Francisco waterfront with her dog Buster. Suzanne uses her laptop computer on a daily basis and often conducts online research for her academic pursuits. As an amateur photographer, Suzanne enjoys taking digital photographs of her experiences and routinely shares them with friends and family via her blog.

Goals: To complete her bachelor's degree while continuing her leisure activities; interactively browse the archive in order to locate artifacts of interest.

(Note – Represents someone who has limited knowledge about the organization, but who might be interested in browsing the collection for enjoyment or for academic needs (i.e. teaching, written report).

## V. Task Analysis

Users often assign different priorities to tasks depending on their desired interaction with the system. Using feedback from our interviews, we developed a list of common tasks for our three personas. The table below organizes the tasks into general categories (e.g. data admin, search). Listed below each persona, the priority of that task is recorded on a scale of low, medium, or high.

Task	Stan Ranier	Brett Smith	Suzanne Peterson
<b>Data Entry</b>			
Log into system	High	Low	Low
Enter artifact information into database	High	Low	Low
Enter metadata about artifact into database	High	Low	Low
Update artifact record	High	Low	Low
Delete artifact record	High	Low	Low
Review artifact record for accuracy (prior to final entry)	High	Low	Low
Tag artifact for subsequent review	High	Low	Low
<b>Content Review</b>			
Search collection for specific content (by keyword)	High	High	Medium
Save search results	Low	Medium	Medium
Retrieve saved results	Low	Medium	Medium
Sort search results	Medium	Medium	Medium
Download copy of image	Low	High	High
View images similar to current selection	Low	High	Medium
Browse collection by topic	Low	Medium	High
Locate a specific artifact within a broad topic	Low	Medium	High
View descriptive data about an artifact	Medium	High	High
Submit feedback on artifact	Low	High	Low
Links to other sources of info/web sites	Low	High	Medium

Key: Low = Low priority; Medium = Medium priority; High = High priority

## **VI. Scenarios**

While specific tasks that our personas would hope to accomplish are listed in our testing script,<sup>2</sup> we have developed scenarios to help us focus on our users' more broad needs. Each scenario has a specific goal in mind (i.e. data entry, search/retrieval, content browsing) and is associated with one of our three personas.

### Scenario #1: A New Find

Upon receiving the call three weeks ago, Stan knew that a box of donated photographs would arrive any day. He had already received the Deed of Gift form from Mr. Johnson's family, so when the materials arrived he knew he could immediately review them to see if they should be added to the archive. Late in the afternoon, the suitcase sized package arrived and Stan immediately got to work. Sorting through the black and white photographs, he saw that most had been noted with the location and date they were taken. Since most were taken during World War II, he knew that the majority would be added to the collection. Once sorting was complete, Stan began the process of adding the materials to the digital archive. With no work taking precedence, he began by scanning the photographs into the database. Thumbnail images were created and descriptive data was added to the system. As each record was saved, it was immediately available for viewing via the World Wide Web.

### Scenario #2: Searching for a Friend

Brett began his morning with a round of golf with his best friend John. Having known each other since serving military together, John had been remiss in visiting his old friend. After completing their outing, they returned home. In conversation, Brett mentioned that he had begun an attempt to write about his time in the military. John thought it was a great idea and told Stan he would be the first in line to buy the book. As they reminisced about old times, John remarked that he would like to have some photographs of the units he had served on. His grandson often asked about what he had done and John thought it would be fun to educate his young friend. With a grin, Brett let John know that he would have some photographs by days end. Walking to the computer, they sat down to search for what they were looking for.

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<sup>2</sup> See Appendix F.

### Scenario #3: The History Lesson

As Suzanne began her day, she knew that spending time at the library was going to help her finish the paper she'd been working on. Though it was almost complete, she had some final revisions to complete before it was due at the end of the week. As she arrived at the library, Suzanne thought of the History Channel television show she had seen the night before. She wasn't familiar with the U.S. Coast Guard and found it fascinating that the service had employed women lighthouse keepers at a time when men dominated the workforce. She knew there was a way to work the information into her paper and hoped to find a photograph to include in her paper. As she began to work on her laptop, she conducted an Internet search for women lighthouse keepers. Finding the Coast Guard historian's web site, she was optimistic that she would find what she was looking for. At a glance she noted a topic for "people." Selecting the topic, she began to browse through the photographs.

## ***VII. Competitive Evaluation***

### Introduction

“Meaningful and stable categories help searchers explore and understand large result sets.”<sup>3</sup>

The Waypoints project was initiated as a final project for a Master’s program in Information Management and Systems. When the project began, one of our goals was to develop a user interface which provided customers with an experience similar to walking through an art museum. Our design revolves around the idea that faceted (browsing) hierarchies facilitate content exploration. This concept has been explored by researchers and digital libraries, some of which have implemented designs using searchable hierarchies. As such, our competitive evaluation focuses on those systems that we believe have implemented design strategies we hope to employ in our interface. These include:

- The Flamenco Search Interface Project (University of California)
- The Charles W. Cushman Photography Collection (University of Indiana)
- The Japanese American Relocation Digital Archive
- MuseoSuomi (MuseumFinland)
- The San Francisco Public Library
- The International Children’s Digital Library

### Analysis

In lieu of design exploration, the Waypoints development team conducted an in-house competitive evaluation of the systems noted above. The team began with the simple task of exploring each collection and locating content of interest. While navigating each system, “think aloud” observations were recorded. These notes are listed below along with critiques on specific screen shots for each system.

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<sup>3</sup> *Helping users understand search results with categorized overviews* available from <http://www.cs.umd.edu/hcil/categorizedsearch/>; Internet; accessed 11 Nov 2005.

## Competitors

### **The Charles W. Cushman Photography Collection**

<http://webapp1.dlib.indiana.edu/cushman/index.jsp>

#### Description:

*The Charles W. Cushman collection is a digital library of approximately 14,500 Kodachrome color slides that were bequeathed to the University of Indiana by one of its alumnus. The user interface (UI) begins with an introduction page providing users an overview of the collection and its contents. Menus allow users to search for specific content (using keywords) or browse the collection using predefined categories.*

#### Strengths:

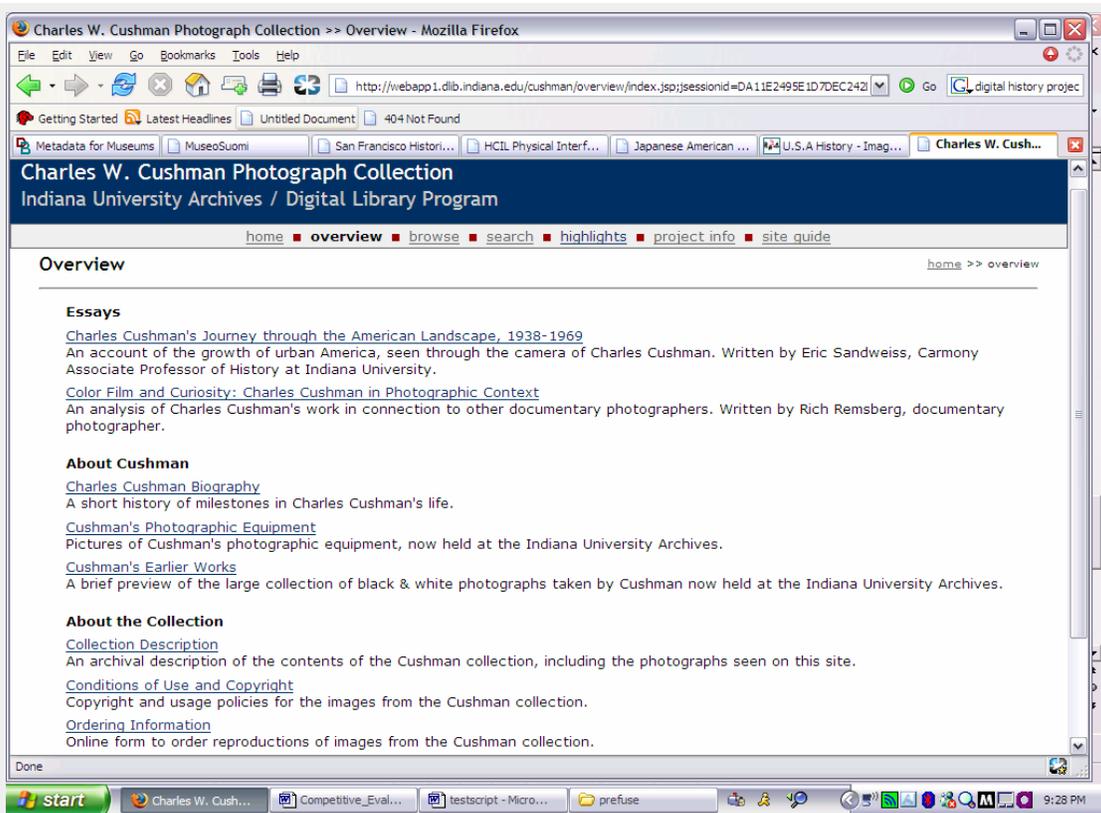
*Outstanding overall design. The UI is kept relatively simple while allowing users to explore the collection via keyword search or browsing. Of the interfaces in our analysis, we consider this among the top two.*

## Screen Shots:



## Home Page

- Provides overview of collection, contents, and project
- Images in display are selectable & immediately bring to endgame image



## Overview

- Lists written works (essays) in topic groups along with documentation on collection
- Include guidance on conditions of use & copyright

Charles W. Cushman Photograph Collection  
Indiana University Archives / Digital Library Program

home ■ overview ■ browse ■ search ■ highlights ■ project info ■ site guide

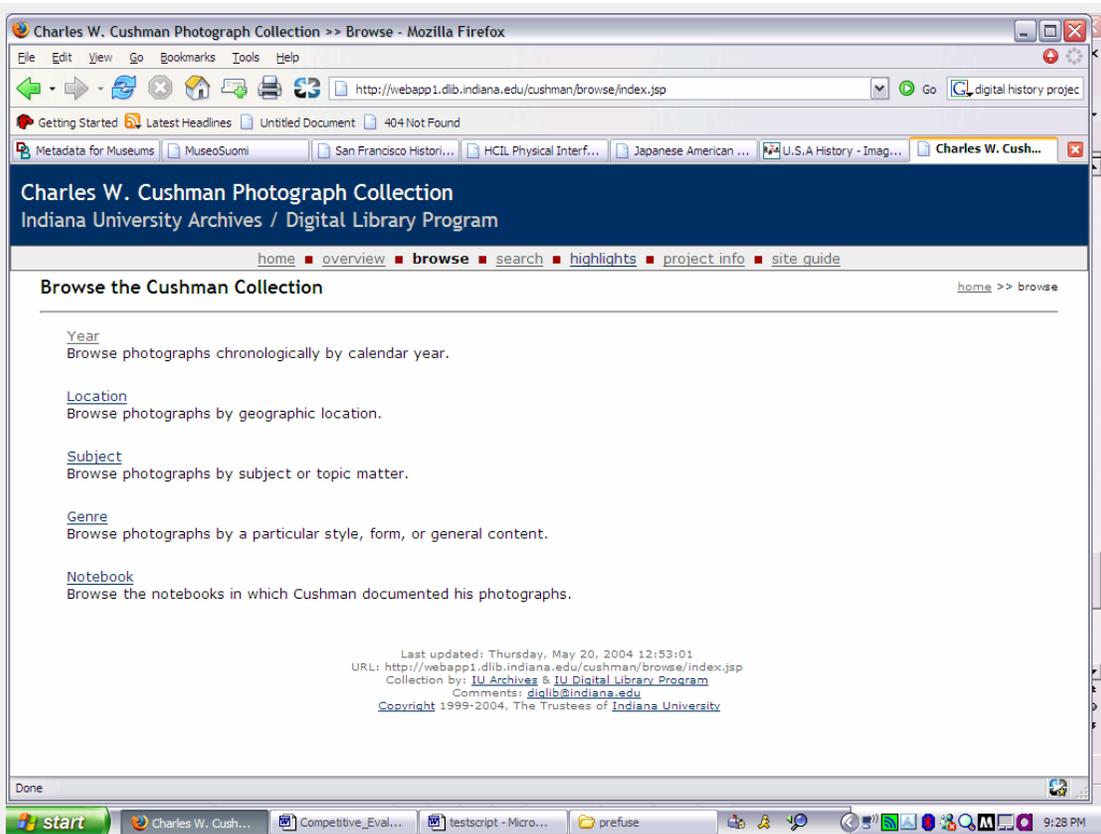
**Browse Notebooks** home >> browse >> notebook | ?

<a href="#">C223.1 (September 3, 1938 - December 25, 1946)</a>	<a href="#">C223.14 (July 26, 1959 - April 15, 1963)</a>
<a href="#">C223.2 (April 23, 1947 - October 28, 1951)</a>	<a href="#">C223.15 (May 7, 1960 - July 11, 1960)</a>
<a href="#">C223.3 (August 18, 1948 - December 11, 1951)</a>	<a href="#">C223.16 (April 21, 1961 - July 8, 1961)</a>
<a href="#">C223.4 (December 11, 1951 - April 19, 1952)</a>	<a href="#">C223.17 (July 18, 1961 - January 29, 1964)</a>
<a href="#">C223.5 (October 16, 1952 - October 9, 1953)</a>	<a href="#">C223.18 (May 8, 1963 - February 20, 1964)</a>
<a href="#">C223.6 (October 10, 1953 - December 31, 1954)</a>	<a href="#">C223.19 (April 29, 1964 - June 4, 1964)</a>
<a href="#">C223.7 (January 23, 1955 - May 9, 1955)</a>	<a href="#">C223.20 (June 5, 1964 - July 7, 1965)</a>
<a href="#">C223.8 (May 10, 1955 - September 27, 1955)</a>	<a href="#">C223.21 (February 8, 1965 - July 10, 1965)</a>
<a href="#">C223.9 (September 26, 1955 - July 24, 1956)</a>	<a href="#">C223.22 (May 2, 1965 - October 5, 1967)</a>
<a href="#">C223.10 (August 2, 1956 - July 21, 1957)</a>	<a href="#">C223.23 (February 25, 1968 - May 15, 1968)</a>
<a href="#">C223.11 (July 22, 1957 - April 27, 1958)</a>	<a href="#">C223.24 (January 1, 1956 - January 29, 1964)</a>
<a href="#">C223.12 (April 27, 1958 - October 5, 1958)</a>	<a href="#">C223.25 (Dates Unknown)</a>
<a href="#">C223.13 (October 10, 1958 - July 9, 1959)</a>	

Last updated: Thursday, May 20, 2004 12:53:02  
 URL: http://webapp1.dlib.indiana.edu/cushman/browse/notebookBrowse.jsp  
 Collection by: IU Archives & IU Digital Library Program  
 Comments: diglib@indiana.edu  
 Copyright 1999-2004, The Trustees of Indiana University

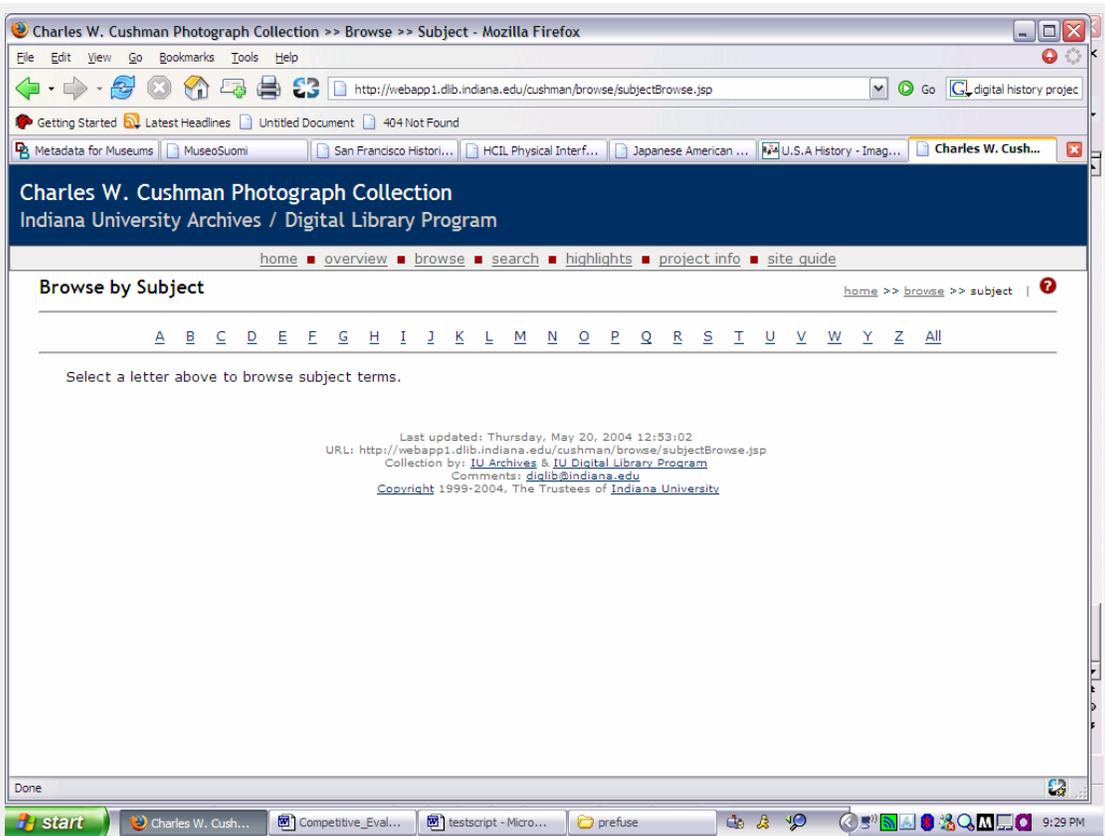
## Notebooks

- Written documents are separated from other content & available for browsing



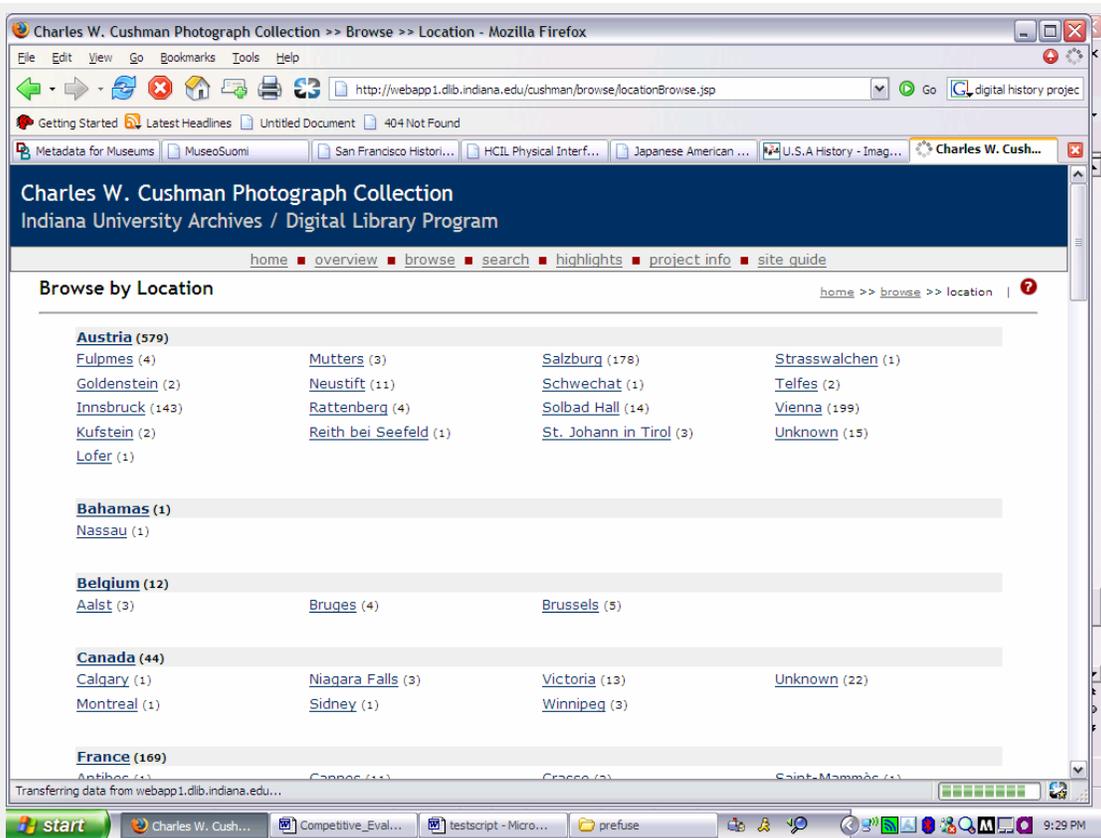
## Opening (main)

- Browsing categories are listed with short explanations of their content
- Lack of subcategories minimizes data on screen, but prevents direct subcategory browsing



## Opening (subject)

- Submenu of main (subject) browsing interface
- Alphabetic listing requires user know how data is organized in order to drill down.



## Opening (location)

- Menu shows locations with subcategories immediately viewable; allows for immediate subcategory selection & minimizes need to drill down through data
- Number of images in subcategories shown; provides info to user on number of selections in category

Charles W. Cushman Photograph Collection >> Results - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://webapp1.dlib.indiana.edu/cushman/results/result.do?query=state%3A%22Alabama%22&a

Getting Started Latest Headlines Untitled Document 404 Not Found

Metadatas for Museums MuseoSuomi San Francisco Histori... HCL Physical Interf... Japanese American ... U.S.A History - Imag... Charles W. Cush...

## Charles W. Cushman Photograph Collection

Indiana University Archives / Digital Library Program

home overview browse search highlights project info site guide

### Results

home >> browse >> location >> results | ?

#### United States >> Alabama

Search:   refine results  new search

Change Display: thumbnail & caption

Results 1-20 of 52 Results Pages: page >>

#### Browse Suggestions

Modify your original browse results by selecting options within any of the following available facets: year, location, genre and/or subject.

**Year**

[1941](#)

[1951](#)

**Location**

[Anniston](#)

[Birmingham](#)

[Clairborne](#)

[Demopolis](#)

[Eutaw](#)

[Heflin](#)

[Linden](#)

[Mobile](#)

[Thomsville](#)

1  Cushman ID No.: 2241.8  
Roll No.: [22-41](#)  
Date: Nov. 1, 1941  
Location: [Alabama, United States](#)  
Description: A negro shack in western Alabama.  
[view details](#)

---

2  Cushman ID No.: 2241.9  
Roll No.: [22-41](#)  
Date: Nov. 1, 1941  
Location: [Eutaw, Alabama, United States \(Greene county\)](#)  
Description: Yoked cows, farm wagon near Eutaw, Alabama  
[view details](#)

Done

Start Charles W. Cush... Competitive\_Eval... testscript - Micro... prefuse 9:30 PM

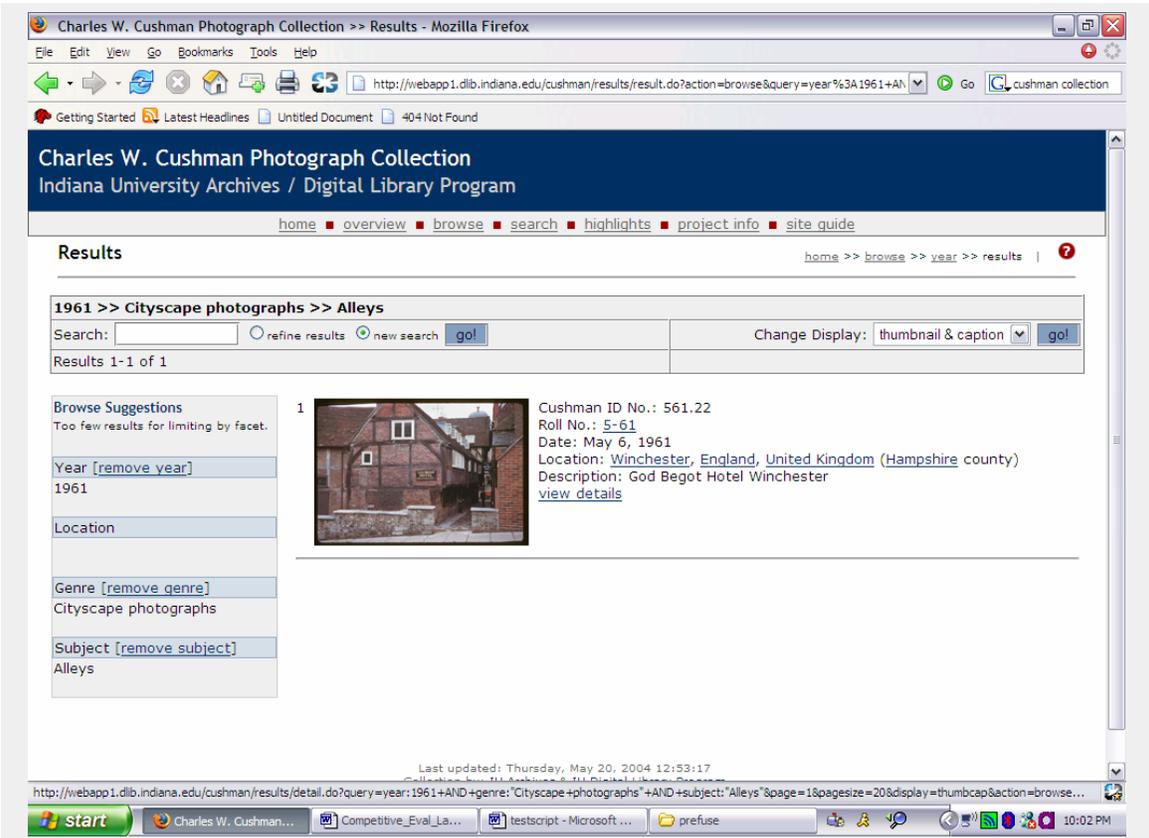
## Midgame (Initial)

- Images shown with short description.
- Ability to select thumbnail, caption, or both for display
- Layout different from previous menus (left menu added)
- Breadcrumbs show navigation trail
- Keyword search added (to refine search or begin new)

The screenshot shows a web browser window with the URL <http://webapp1.dlib.indiana.edu/cushman/results/display.do>. The page title is "Charles W. Cushman Photograph Collection" and it is part of the "Indiana University Archives / Digital Library Program". The navigation menu includes links for home, overview, browse, search, highlights, project info, and site guide. The current search results are for "Austria >> Innsbruck", showing 143 results. The search interface includes a search box, "refine results", "new search", and "go!" buttons. The "Change Display" dropdown is set to "thumbnail". The results are displayed as a grid of 9 thumbnail images, numbered 1 through 9. A left-hand navigation menu is visible, with sections for "Browse Suggestions", "Year" (1964), "Location" (Innsbruck), "Genre" (Aerial photographs, Architectural photographs, Cityscape photographs, Ethnographic photographs, Identification photographs, Landscape photographs, Paintings, Portraits, Reproductions, Snapshots, Views), and "Subject" (Air travel, Airline operations).

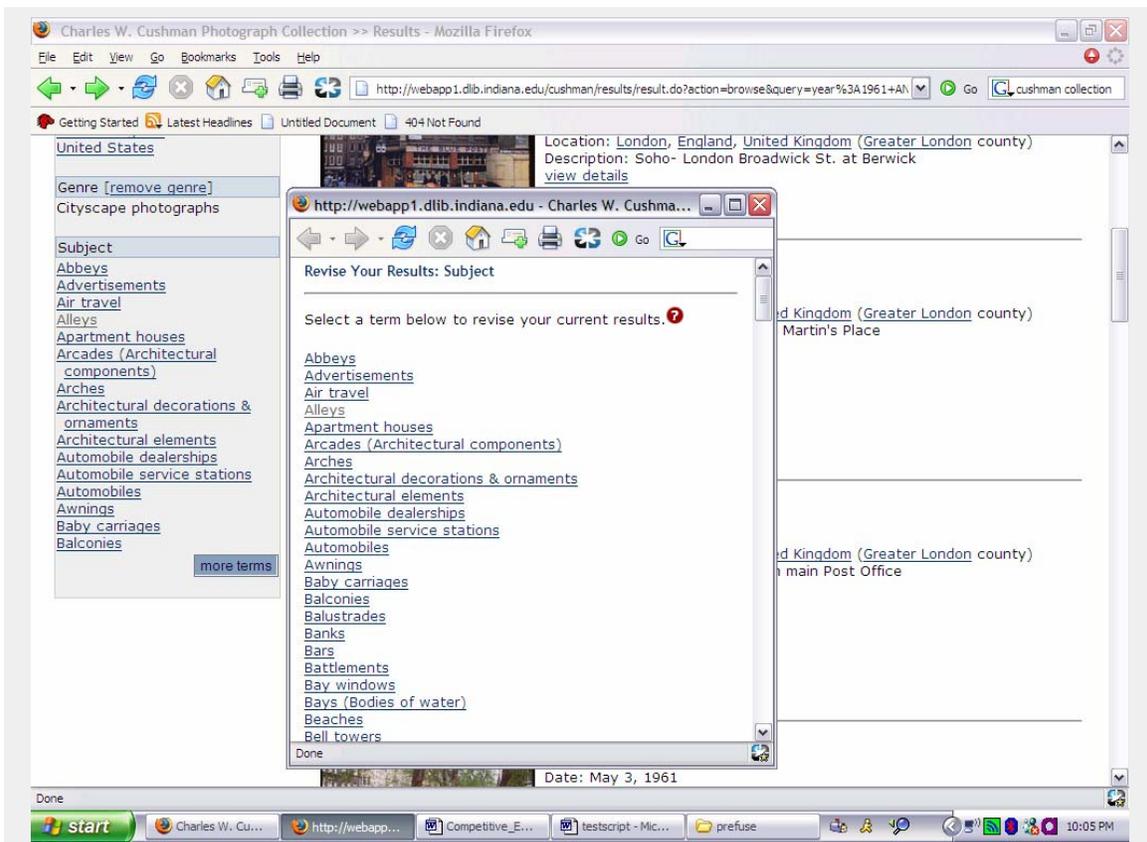
## Midgame (cont'd)

- Display shown with thumbnail only selected.
- Left menu shows available drill down categories (no image numbers shown).



## Midgame (cont'd)

- Breadcrumb trail maintained as submenus selected
- “Remove” selections added to left menu in order to broaden search results



## More Terms (pop-up)

- Submenus with numerous alternatives initiate pop-up when “more terms” selected; provides additional choices without making existing screen too long

Charles W. Cushman Photograph Collection >> Results >> Details - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://webapp1.dlib.indiana.edu/cushman/results/detail.do?query=year%3A1941+AND+country%3A' Go digital history projec

Getting Started Latest Headlines Untitled Document 404 Not Found

Metadata for Museums MuseoSuomi San Francisco Histori... HCIL Physical Interfa... Japanese American ... U.S.A History - Imag... Charles W. Cushm...

home overview browse search highlights project info site guide

### Details

home >> browse >> year >> results >> details | ?



600 pixels, long side

**Cushman ID:** 1941.11  
**Archives ID:** P02492  
**Date:** Sep. 21, 1941  
**Description (Slide):** Boston from Cambridge side of Charles river  
**Description (Notebook):** Downtown Boston, across Charles river, from Charles river Parkway, during regatta. Sunday afternoon  
**Street Address:** Charles River Parkway  
**Location:** [Boston, Massachusetts, United States \(Suffolk county\)](#)  
[Cambridge, Massachusetts, United States \(Middlesex county\)](#)

---

**Camera Settings:** (None)  
**Roll Number:** [19-41](#)  
**Frame Number:** 11

---

**Personal Names:** (None)  
**Corporate Names:** (None)  
**Other Names:** (None)

---

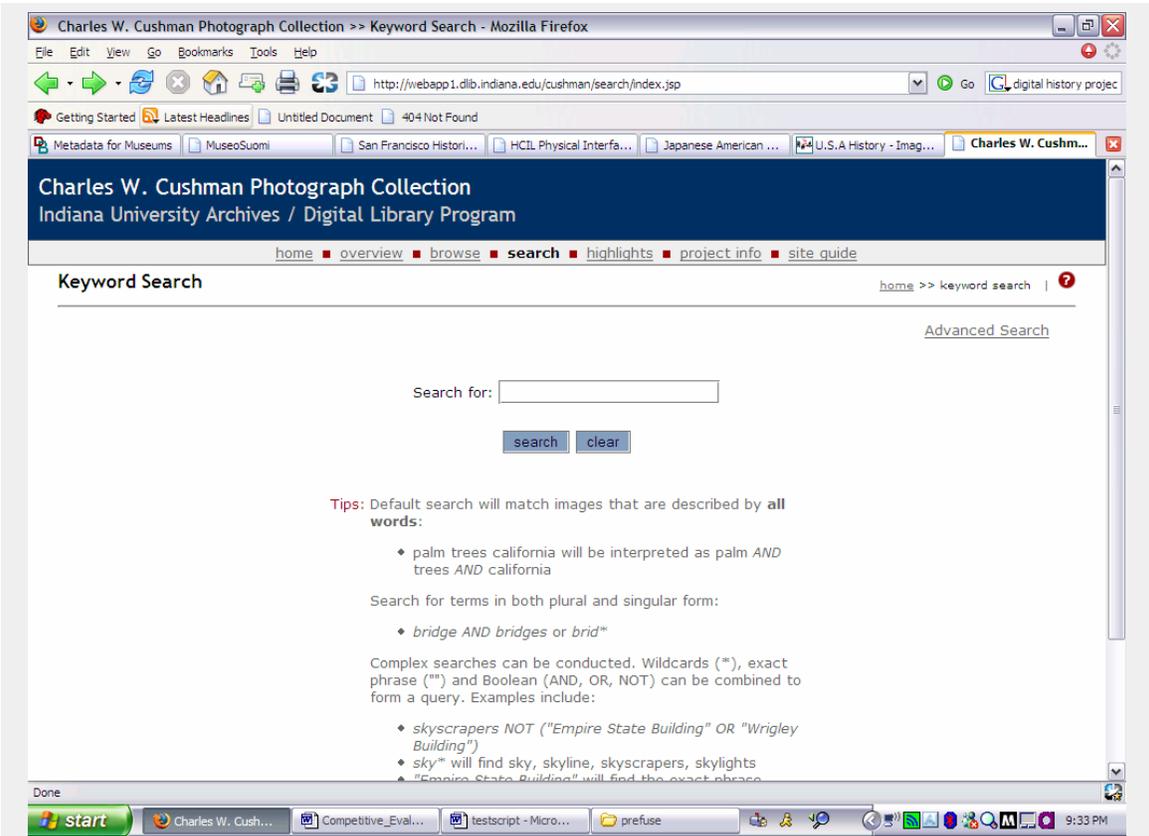
**Genre Headings:** [Marine photographs](#); [Cityscape photographs](#)

Done

start Charles W. Cush... Competitive\_Eval... testscript - Micro... prefuse 9:33 PM

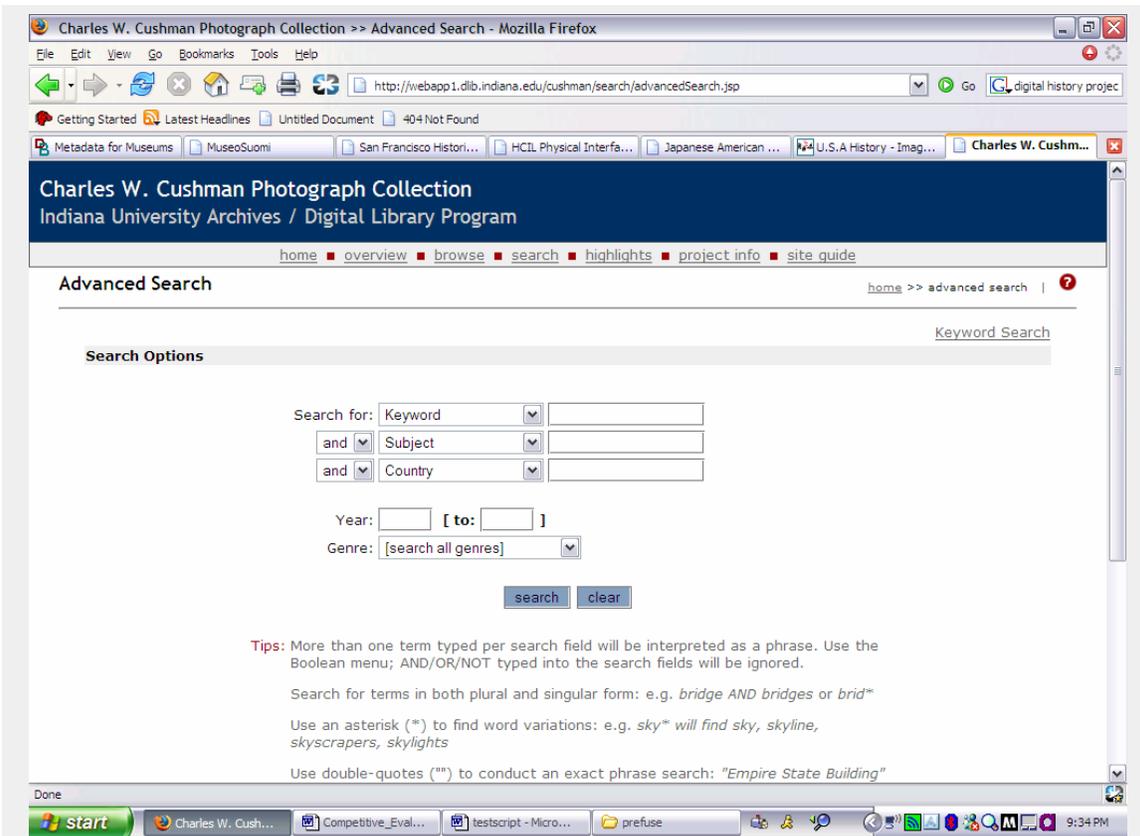
## Endgame

- Large image for viewing
- Displays all descriptive data for image with option to select broader categories (i.e. location, subject) for further exploration



## Keyword Search (basic)

- From home, users can select “search” for basic keyword search.
- How-to for search creation
- Advanced search option available



## Keyword Search (advanced)

- Search in specific facets
- Boolean search options (and/or/not)
- Drop down menu for subjects listing

## **MuseoSuomi (MuseumFinland)**

<http://museosuomi.cs.helsinki.fi>

### Description:

*Based on a multi-facet search paradigm, MuseoSuomi is a portal to an inter-museum collection of artifacts. The portal contents come from Finland's National Museum (<http://www.nba.fi>), Espoo City Museum (<http://www.espoo.fi/museo/>), and Lahti City Museum (<http://www.lahti.fi/museot>). The individual collections are maintained in three different relational database schemas, database systems, and collection management systems.*

### Strengths:

*MuseoSuomi incorporates data from several systems into one user interface (UI). The UI displays main categories/subcategories in the first screen you access. Allows users to immediately select a topic they are interested in.*

## Screen Shots:

The screenshot shows the MuseoSuomi website in a Mozilla Firefox browser. The browser's address bar shows the URL <http://museosuomi.cs.helsinki.fi/>. The website header features the MuseoSuomi logo and the text "Suomen museot semanttisessa webissä". Below the header is a navigation menu with links for "Uusi haku", "Ohjeet", "Näytä kaikki kategoriat", "Tietoa ohjelmasta", "MuseoSuomi-palaute", "English Tutorial", and "About Museum Finland". A search bar labeled "Käsitshaku:" is present. The main content area is divided into three columns, each with a header and a list of links with counts:

Esinetyyppi (koko luokittelu)	Valmistaja (koko luokittelu)	Käyttäjä (koko luokittelu)
<a href="#">taideteokset</a> (115), <a href="#">aseet ja ampumatarvikkeet</a> (59), <a href="#">astiat ja taloustarvikkeet</a> (410), <a href="#">henkilökohtaiset esineet</a> (159), <a href="#">julkisen tilan esineet</a> (21), <a href="#">kulkuneuvot ja kuljetusvälineet osineen</a> (97), <a href="#">koneet ja laitteet</a> (74), <a href="#">lämmitykseen käytettävät esineet</a> (4), <a href="#">muut esineet</a> (180), <a href="#">maatalous- ja karjanhoitovälineet</a> (4), <a href="#">puhtaanapitoon käytettävät esineet</a> (16), <a href="#">pukineet ja tekstiilit</a> (1803), <a href="#">säilyttimet</a> (582), <a href="#">ulkokahasteet ja pihatarvikkeet</a> (4), <a href="#">urheilu- ja pelivälineet</a> (30), <a href="#">valaisun käytettävät esineet</a> (57), <a href="#">yhteisölliset esineet</a> (20), <a href="#">käsivö</a> (12), <a href="#">leikkikalut</a> (200),	<a href="#">henkilöt</a> (867), <a href="#">kaupungit</a> (14), <a href="#">tuotemerkit</a> (122), <a href="#">yhteisöt</a> (5), <b>Valmistuspaikka (koko luokittelu)</b> <a href="#">Aasia</a> (35), <a href="#">Etelä-Amerikka</a> (1), <a href="#">Pohjois-Amerikka</a> (10), <a href="#">ulkomaat</a> (6), <b>Valmistusaika (koko luokittelu)</b> <a href="#">aikakaudet</a> (3024), <a href="#">vuosisadat</a> (3012)	<a href="#">henkilöt</a> (1774), <a href="#">kaupungit</a> (4), <a href="#">yhdistykset</a> (8), <a href="#">yritykset</a> (76), <b>Käyttöpaikka (koko luokittelu)</b> <a href="#">Afrikka</a> (3), <a href="#">Eurooppa</a> (2232), <a href="#">Pohjois-Amerikka</a> (2), <b>Käyttötilanne (koko luokittelu)</b> <a href="#">kulttuuritapahtumat</a> (16), <a href="#">kansalais-, harrastus- ja vapaa-ajantointiminta</a> (210), <a href="#">institutionaalinen toiminta</a> (15), <a href="#">juhlat ja seremoniat</a> (91), <a href="#">kohteelle tehtävät toimenpiteet</a> (559), <a href="#">kohteessa tapahtuvat muutokset</a> (120), <a href="#">muut tapahtumat</a> (12), <a href="#">maatalous ja karjanhoito</a> (82), <a href="#">ruoan- ja juomanvalmistus</a> (47),

## Opening

- Faceted hierarchy immediately usable
- Keyword search available
- Subcategories show number of artifacts available
- Very textual; somewhat sterile without images

MuseoSuomi - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://museosuomi.cs.helsinki.fi/?l=f&m=0&n=%2500%2501&g=c%2500%2501

Getting Started Latest Headlines Untitled Document 404 Not Found

Metadata for Museums MuseoSuomi San Francisco Historical P... HCLL Physical Interfaces P... Japanese American Reloc... U.S.A History - Image Arc...

**MuseoSuomi**  
- Suomen museot semanttisessa webissä -

UNIVERSITY OF HELSINKI

Uusi haku Ohjeet Näytä kaikki kategoriat Tietoa ohjelmasta MuseoSuomi-palaute English Tutorial About MuseumFinland

Käsitteihaku:  Hae  
 tarkenna hakua

**Esinetyyppi:** kaikki > aseet ja ampumatarvikkeet (koko luokittelu)  
 ampumatarvikkeet (24),  
 aseet (35)

**Materiaali:** (koko luokittelu) (ryhmittele kohteet)  
 materiaalit (55)

**Valmistaja:** (koko luokittelu) (ryhmittele kohteet)  
 henkilöt (5), yritykset (2)

**Valmistuspaikka:** (koko luokittelu) (ryhmittele kohteet)  
 Afrikka (21), Eurooppa (6)

**Valmistusaika:** (koko luokittelu) (ryhmittele kohteet)  
 aikakaudet (6), vuosisadat (6)

**Käyttäjä:** (koko luokittelu) (ryhmittele kohteet)  
 henkilöt (2)

**Käyttöpaikka:** (koko luokittelu) (ryhmittele kohteet)

**Hakuehdot**  
**Kategoria:** Esinetyyppi > aseet ja ampumatarvikkeet (ryhmittele kohteet) (poista)

**Kohteet ryhmiteltyinä kategorian aseet ja ampumatarvikkeet mukaisesti**  
 (näytä ilman ryhmittelyä)  
 ampumatarvikkeet, kohteet 1-8/24 (ryhmittele kohteet)

			
ruutimitta, vaeji (NBA SU4922 164)	latauspuikko, ruutimitta, zaboinkpuikko (NBA SU4922 165)	ruutimitat, timelhakkutin (NBA VK4835 78)	nallisarvi, njalletshuarvi (NBA SU4135 218)

start MuseoSuomi - Mo... Competitive\_Eval... testscript - Micro... prefuse 9:35 PM

## Midgame

- Consistent layout, look, & feel
- Subcategory contents shown; several images with short description
- Left menu allows for further drill down

MuseoSuomi - Mozilla Firefox

http://www.cs.helsinki.fi/group/seco/museums/tutorial/step7.html

Getting Started Latest Headlines

simMail 1.2.6 MuseoSuomi Dictionary.com/alumnus flamenco-chi03.pdf (application/pdf Object)

HELSENKI INSTITUTE FOR INFORMATION TECHNOLOGY

# MuseoSuomi

- Suomen museot semanttisessa webissä -

UNIVERSITY OF HELSINKI

Uusi haku Takaisin hakusivulle Ohjeet Tietoa ohjelmasta MuseoSuomi-palaute English Tutorial About MuseumFinland

joulukalenteri:adventtikalenteri



**Materiaali:** pahvi  
**Valmistuspaikka:** Saksa  
**Valmistusaika:** 1950-1959  
**Asiasana:** JOULU, KALENTERI  
**Museokokoelma:** Museokokoelma  
**Vastuumuseo:** Espoon kaupunginmuseo  
**Asiasanasto:** Espoon kaupunginmuseon sanasto  
**Esineen numero:** ECM:3550:4  
**ID:** 35504  
 Neljän muotoinen. Keskellä kuva-aiheena kirkko, jossa torni kelloineen, kylä, ihmisiä ym. Kuvaa kiertää kehässä 24 hukkua. Kulmissa planeettoja. Luukut avattu mutta pysyvät asennossaan. Hopeanväristä killettä liimattu pintaan.

**Materiaali:**

- [materiaalit](#) (3777) > [kasvikunnan materiaalit](#) (783) > [pahvi](#) (74)

**Valmistuspaikka:**

**Samaan aiheeseen liittyviä esineitä**

*joulu:*

- [kvttilänjalka](#)
- [pöytälinja:kaitalina](#)
- [rasia:peltipurkki](#)
- [joulukoriste:tonntu](#)
- [joulukoriste:pöytäkoriste](#)

*kalenterit:*

- [seinälautanen:almanakkalautanen](#)
- [kamera:pienkamera](#)
- [pyyheliina:keittiöpyyhke](#)
- [pyyheliina:keittiöpyyhke](#)
- [pilleripakkaus:lääkepakkaus](#)

**Sama materiaali**

*pahvi:*

- [savukerasia:savukepakkaus](#)
- [savukerasia:savukepakkaus](#)
- [käärä:liiananimahin:seurak...](#)

Done

start IS214 Windows Media Player Competitive\_Eval\_La... MuseoSuomi - Mozilla... 11:44 PM

## Endgame

- Small image shown with descriptive metadata
- Bottom menus allows for exploring broader categories related to current artifact
- Right menu presents other related artifacts

## San Francisco Public Library – Historical Photograph Collection

<http://sfpl.org/librarylocations/sfhistory/listofcollections.htm>

### Description:

The San Francisco Public Library historical photograph collection consists of approximately 250,000 digitized images from the 1850s to the present. Photographs include views of the city, buildings, neighborhoods, and personalities.

### Strengths:

Large number of photographs in the collection which can be browsed by subject, geographic location, or keyword.

### Screen Shots:



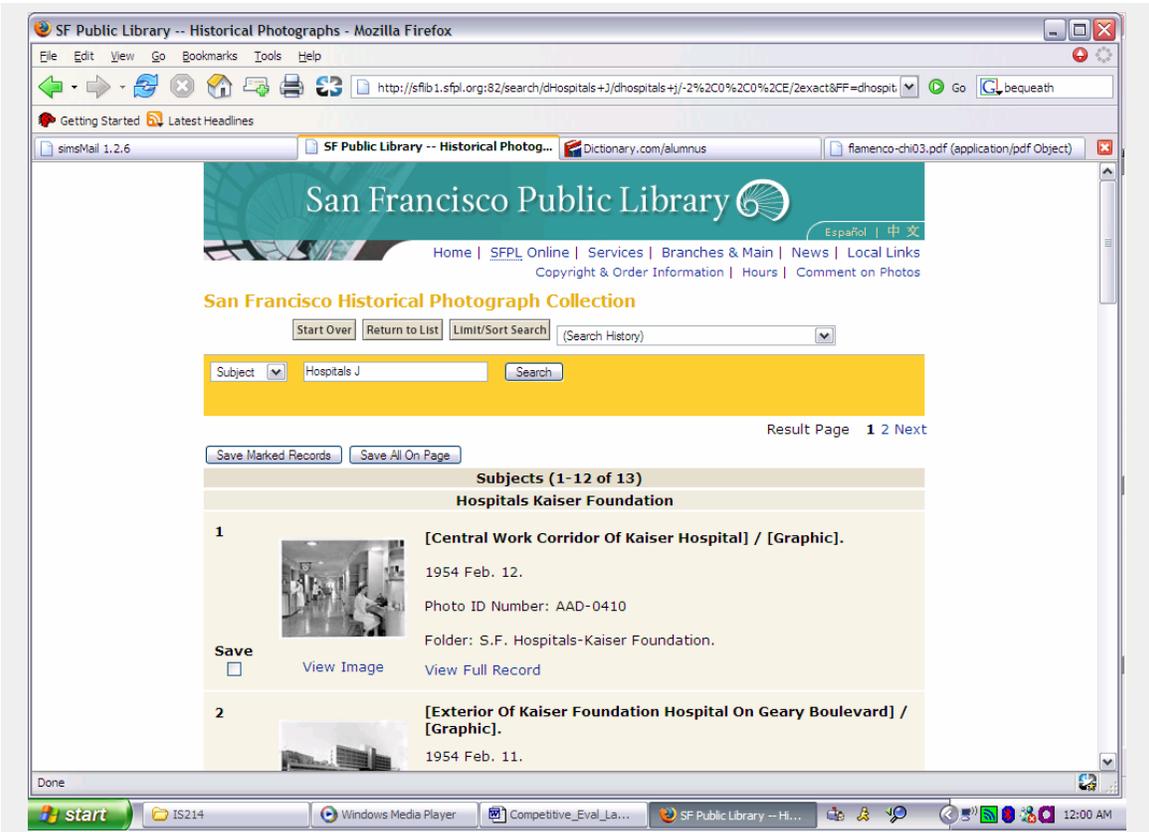
### Main

- Introduction provides info on collection contents
- Allows users to immediately search entire collection or browse specific collections, but some screen space wasted.



## Opening

- Unique “search by neighborhood function (brings up “clickable” map)
- Browsing categories by subject
- Style sheet consistent, but layout seems scattered



## Midgame

- Subcategories selection presents image list; view by image or description option
- Sort results/search within feature added
- Save function added to list; allows for saving multiple images

San Francisco Public Library

Home | SFPL Online | Services | Branches & Main | News | Local Links  
 Copyright & Order Information | Hours | Comment on Photos

**San Francisco Historical Photograph Collection**

Start Over | Save Result | MARC Display | (Search History)

Subject: Fleishhacker Pool Businessmans Lu | System Sorted | Search

Result: Previous | Next

Photo id# AAA-4844

Title **[Fleishhacker Pool, Mutual Business Club luncheon, May 21, 1936] [graphic].**



View Image

Date	1936 May 21.
Description	1 photoprint : b&w; 6 x 9 in.
Location	Folder: S.F. Fleishhacker Pool-Businessman's Lunch.
Reproduction rights	Permission to use this image must be obtained from the San Francisco History Center, San Francisco Public Library.
Notes	On back: Virginia and Patricia Roberts serve luncheon in pool.
Summary	Men eating lunch from floating trays.
Subject	Fleishhacker Pool -- Businessman's Lunch. San Francisco (Calif.) -- Photographs.
Series	San Francisco Public Library Historical Photograph Collection
Source	San Francisco News-Call Bulletin.

## Endgame

- Small image presented with data from image record; categorization shown
- Previous/next record toggle
- Start over function available
- MARC record display available

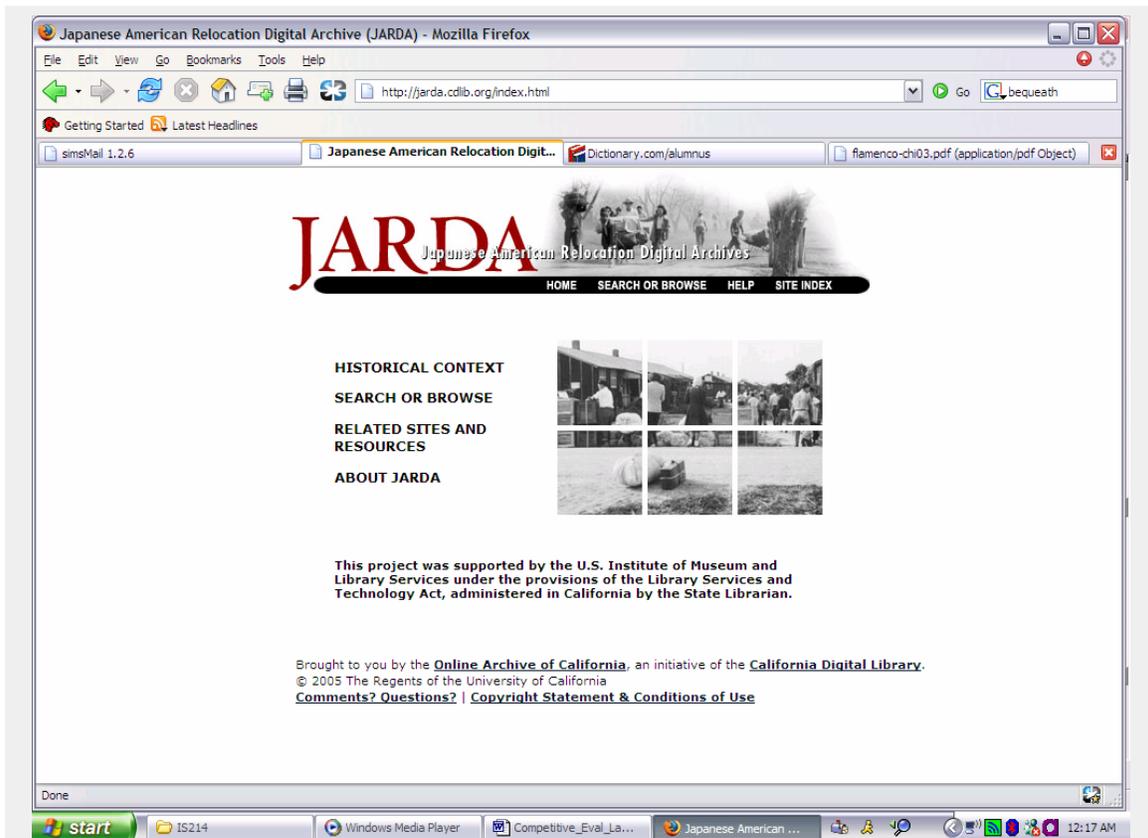
## Japanese American Relocation Digital Archive (JARDA)

<http://jarda.cdlib.org/index.html>

### Description:

The Japanese American Relocation Digital Archive serves as a gateway to holdings of numerous California archives, libraries, and museums. The collection includes over 10,000 images and texts which can be browsed or searched via keyword.

### Screen Shots:



### Home

- Provides info on contents
- Combines search/browse selection in one menu choice
- No immediate search function



## Opening

- Allows users to search within images/texts via keyword or browse subject listings
- No subcategories shown at this level
- Limited functionality

Search Results - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://ark.cdlib.org/?xslt=jarda-image-sr&relation=jarda&type=image&search=minidoka

Getting Started Latest Headlines Untitled Document 404 Not Found

Metadata for Museums SF Public Library -- Historical Pho... HCLIL Physical Interfaces Project... Search Results U.S.A History -- Image Archives - ...

# JARDA

Japanese American Relocation Digital Archives

HOME SEARCH OR BROWSE HELP SITE INDEX

Your search for **minidoka** in *Images* found 323 items

Displaying 1 - 20 of 323 images

Go to page: 1 [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) [Next page](#)

- 

**Title:** In the living room of their New York City apartment, Mr. and Mrs. Misao Tajitsu, Issei from the Minidoka Relocation Center, are entertaining Shuji Sugawara, Issei, and his son Albe...

**Owning Institution:** The Bancroft Library. University of California, Berkeley.

[View details...](#)
- 

**Title:** Mr. and Mrs. Misao Tajitsu, Issei from the Minidoka Relocation Center, are chatting in front of their New York City apartment house with a neighbor, Mrs. Tomiko Tsukamoto, Issei fr...

**Owning Institution:** The Bancroft Library. University of California, Berkeley.

http://ark.cdlib.org/ark:/13030/ft487005tv/hi-res

start Search Results - ... Competitive\_Eval... testscript - Micro... prefuse 9:37 PM

## Midgame

- Results listed on page (with numerous pages in top right menu)
- New search function at bottom of page
- No sort function
- Layout changes in all pages

Search Results - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://ark.cdlib.org/?xslit=jarda-image-metadata;identifier=http://ark.cdlib.org/ark:/13030/ft487005tw

Getting Started Latest Headlines Untitled Document 404 Not Found

Metadata for Museums SF Public Library -- Historical Pho... HCIL Physical Interfaces Project ... Search Results U.S.A History - Image Archives - ...




**Title:** In the living room of their New York City apartment, Mr. and Mrs. Misao Tajitsu, Issei from the Minidoka Relocation Center, are entertaining Shuji Sugawara, Issei, and his son Albert, newly arrived resettlers from Minidoka. Mr. Tajitsu is seated at the extreme left. The only other member of the family at home when this photograph was taken was their 2-1/2 year old son Ronald Setsuo. Kazuko, 22, and Utako, 17, were vacationing at a YWCA camp; and Yoneko, 19, was at Keuka College in upstate New York, where she is a cadet nurse at Geneva Hospital. A fourth daughter, Teruko, 20, was married recently in New York City to Andrew Morimoto, also formerly of Minidoka. Before evacuation from Seattle, Wash., in May 1942, Mr. Tajitsu had been a wholesale grocery salesman. At Minidoka he was an interviewer in the employment department and executive secretary of the Federated Christian Church. Mr. Tajitsu has been employed in the packing and shipping department of the National YMCA Press in New York City since early last spring. Photographer: Iwasaki, Hikaru New York, New York. 8/?/44

**From:** War Relocation Authority Photographs of Japanese-American Evacuation and Resettlement

**Subjects:**

**Owning Institution:**  
The Bancroft Library. University of California, Berkeley.

**Suggested Citation:**  
[Identification of Item]. Available from the Online Archive of California;  
<http://ark.cdlib.org/ark:/13030/ft487005tw>.

Done

start Search Results - ... Competitive\_Eval... testscript - Micro... prefuse 9:37 PM

## Endgame

- Small image provided with descriptive content
- No ability to navigate to similar images through list of descriptive metadata
- If larger photo option selected, descriptive content not available

## ***International Children's Digital Library***

<http://www.icdlbooks.org/index.shtml> (main)

<http://www.icdlbooks.org/servlet/Metadata> (metadata entry)

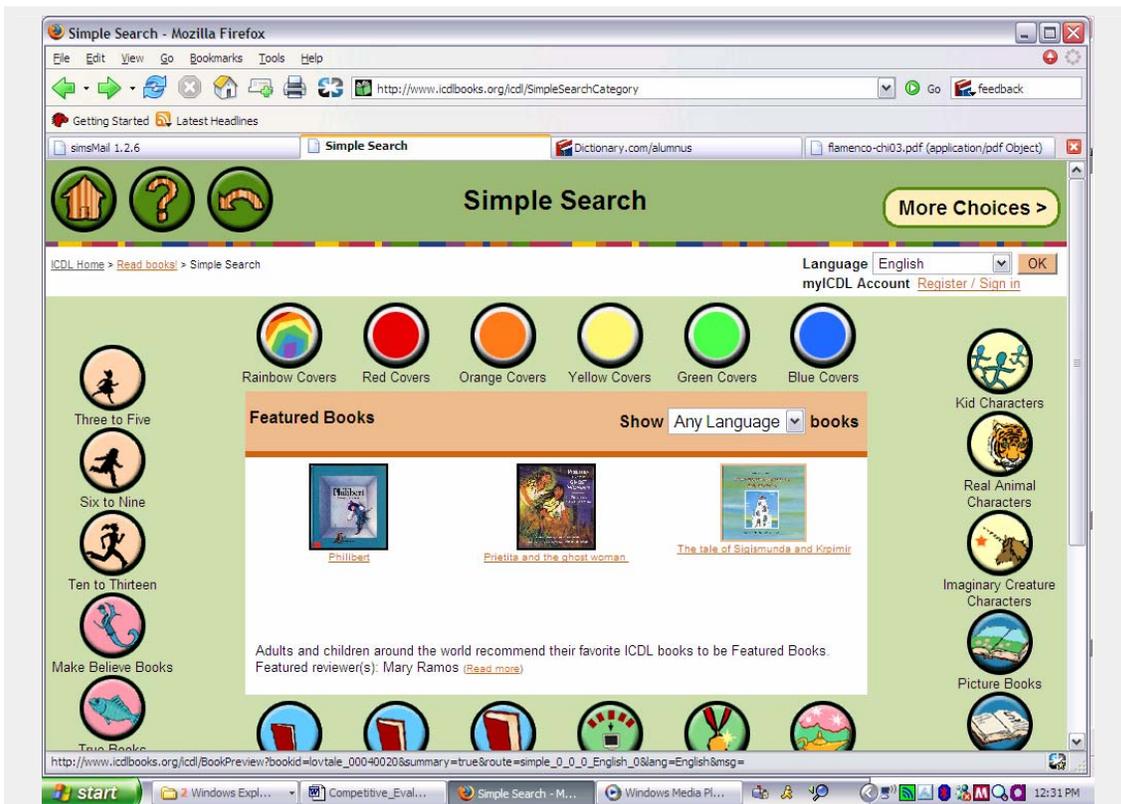
### Description:

*The International Children's Digital Library currently includes 829 books in 32 languages. Librarians, teachers, authors, illustrators, publishers, and children from all over the world suggest books they think should be considered for the collection. Suggestions are evaluated against predefined criteria and either accepted or declined.*

### Strengths:

*The UI offers geographic and simple search tools which incorporate visual graphics to aid in category/subcategory selection. Users can create queries by selecting a category for selection. Additional categories can be added/removed in order to customize query to user needs.*

## Screen Shots:



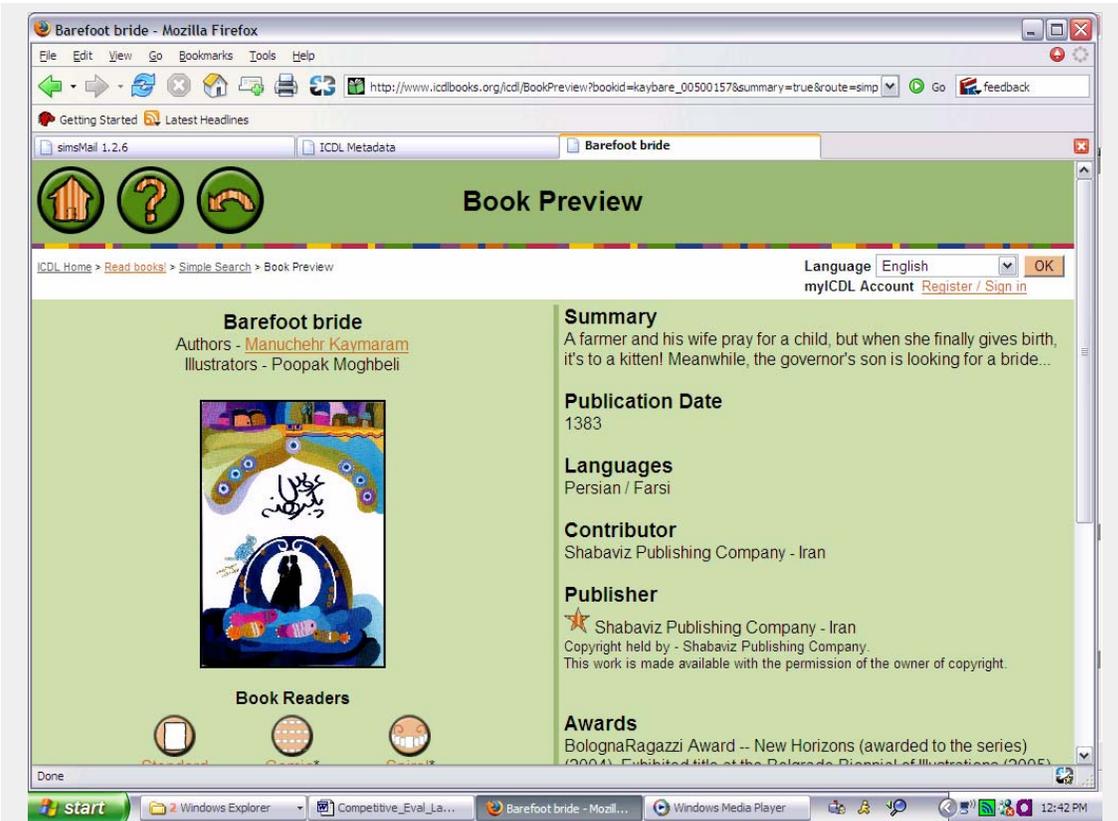
## Opening

- Graphical UI; users select among main categories
- Choices kept to visible area on screen



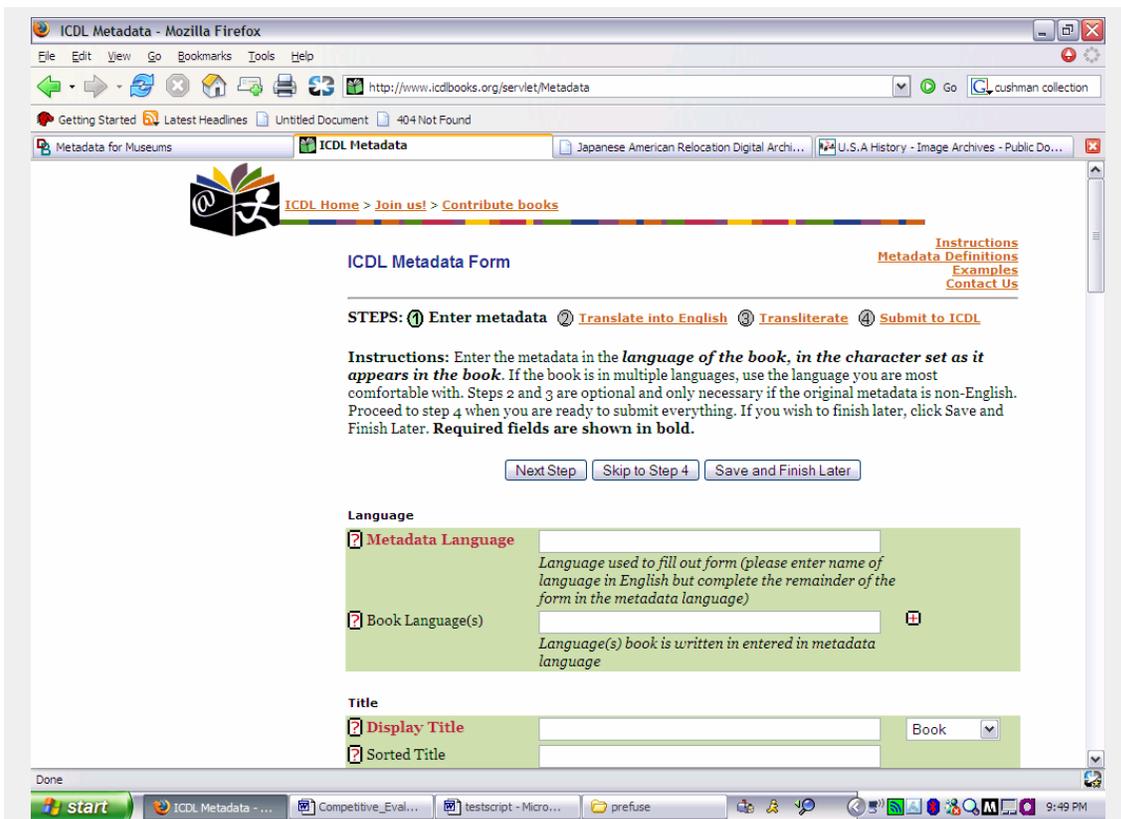
## Midgame

- Users select categories to build (narrow) query
- Query results presented in mid-screen with document title



## Endgame

- Selected book presented with cover image
- Document description shown on right
- Breadcrumb trail allows user to return to previous query results



## Metadata Entry

- Book suggestions require descriptions of content; metadata entry screen provided
- Save function allows user to begin & save for later completion.
- Supports multiple languages

## **Flamenco Search Interface**

<http://bailando.sims.berkeley.edu/flamenco.html> (main)

<http://orange.sims.berkeley.edu/cgi-bin/flamenco/arts/Flamenco> (fine arts search)

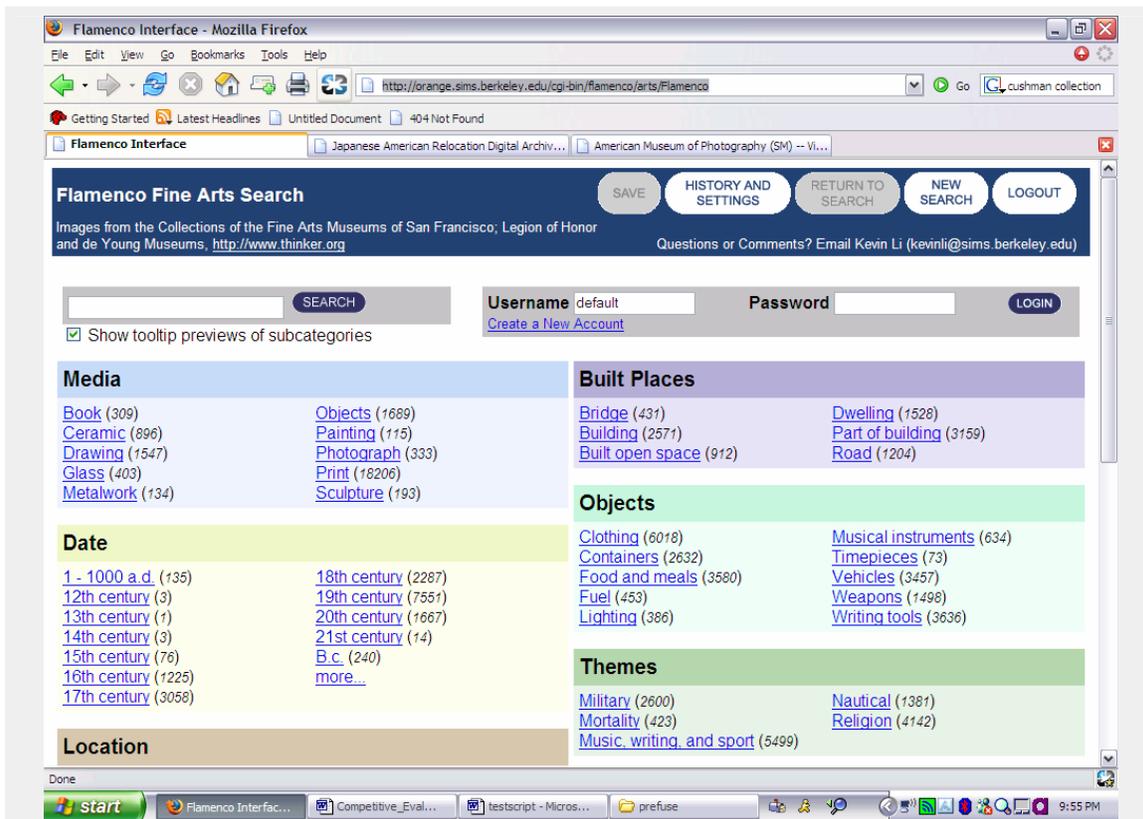
### Description:

*The Flamenco search interface was designed to assist users in the navigation of large information spaces in a flexible manner without feeling lost. In the UI, faceted metadata is exposed to the user so that it can be used to expand or refine a search. Currently, two collections are searchable using the interface – the Fine Arts Museum of San Francisco and the UC Berkeley Architecture Visual Resources Library.*

### Strengths:

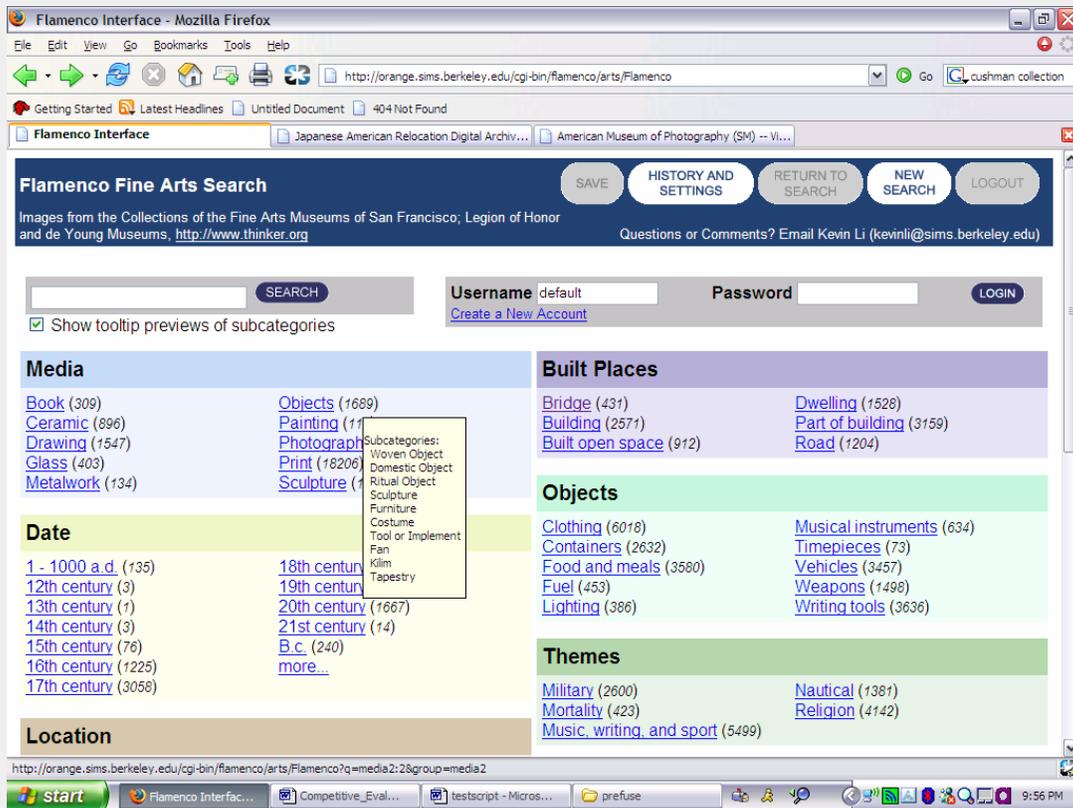
*Powerful user interface. Availability of descriptive metadata is a valuable resource which aids users in browsing through content and finding useful information. The layout is relatively simple, though a large amount of data is presented to the user. Along with the Cushman collection, this interface is considered one of our two “best examples.”*

## Screen Shots:



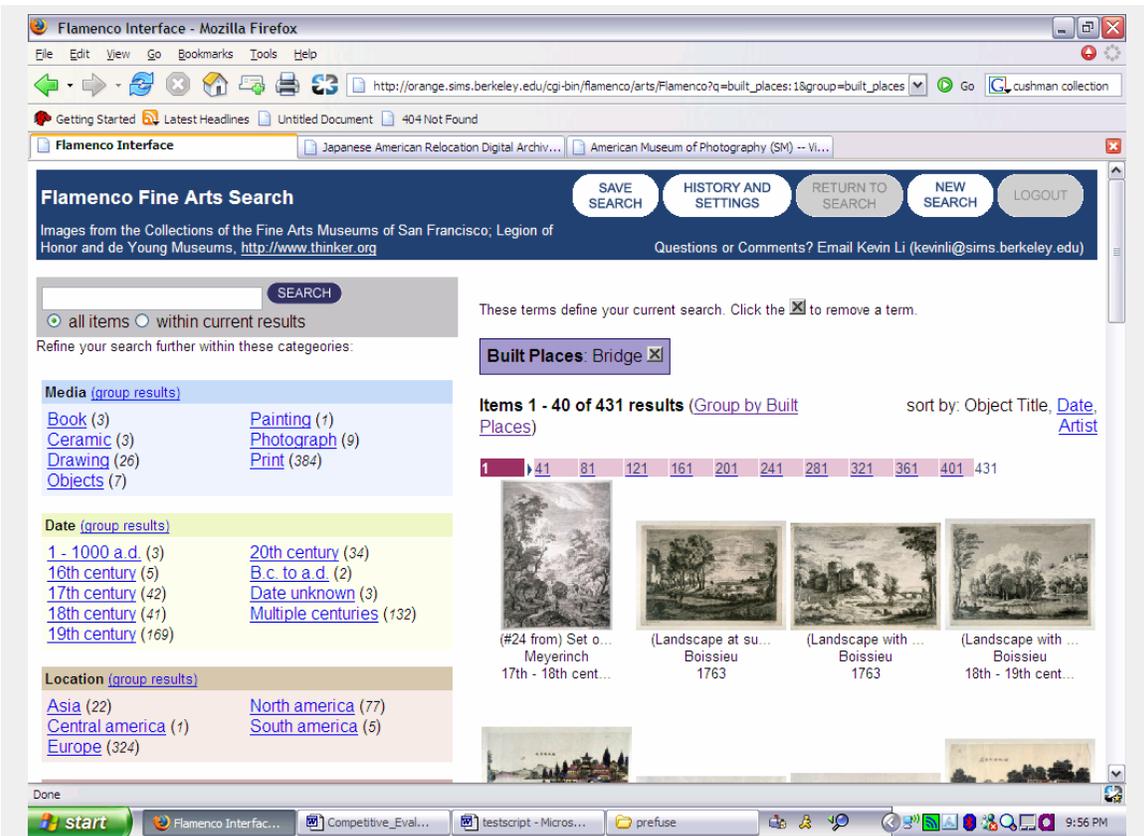
## Opening

- Main facet categories are presented along with subcategories; large data set remains uncluttered
- Number of available images are shown in subcategories
- Keyword search available



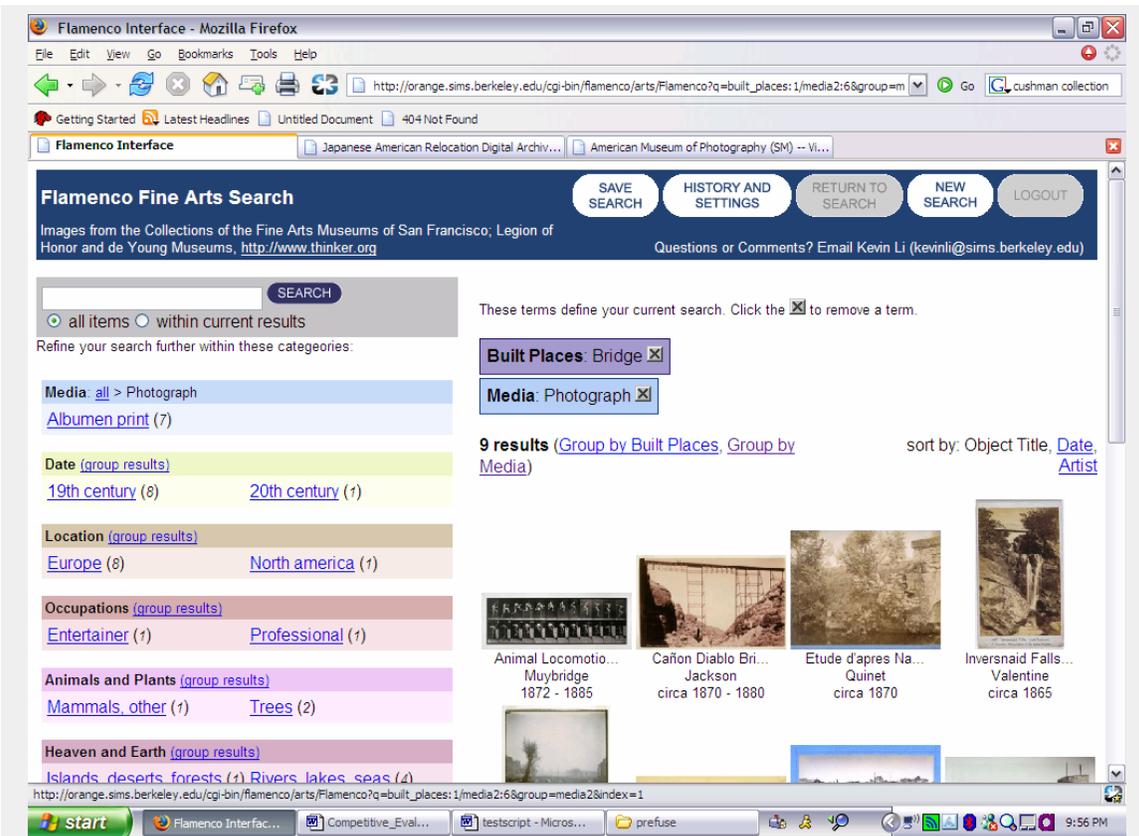
## Opening (cont'd)

- Hover tool tip appears to provide info on category contents
- Login screen available for registered users



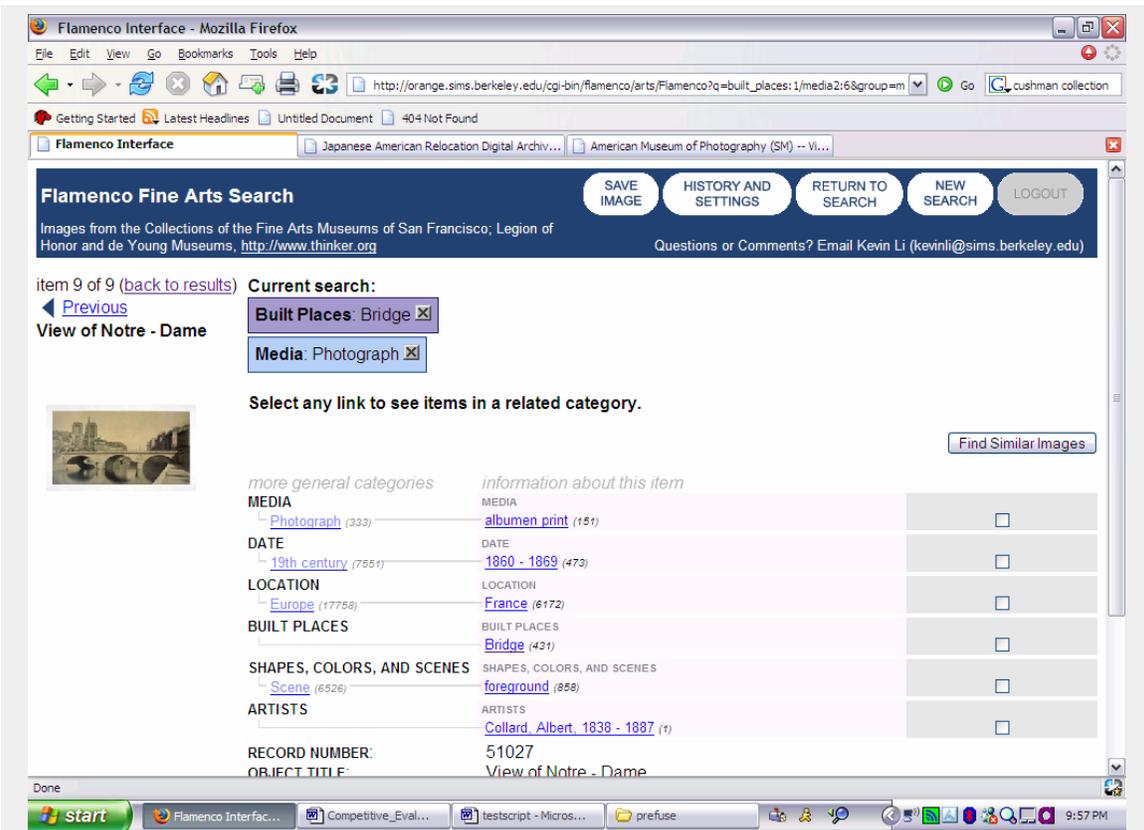
## Midgame

- Submenu selection displays images
- Select submenu shown; choice to remove; number of selected images shown
- Keyword search available; search within or new
- Group by and sort by functions available



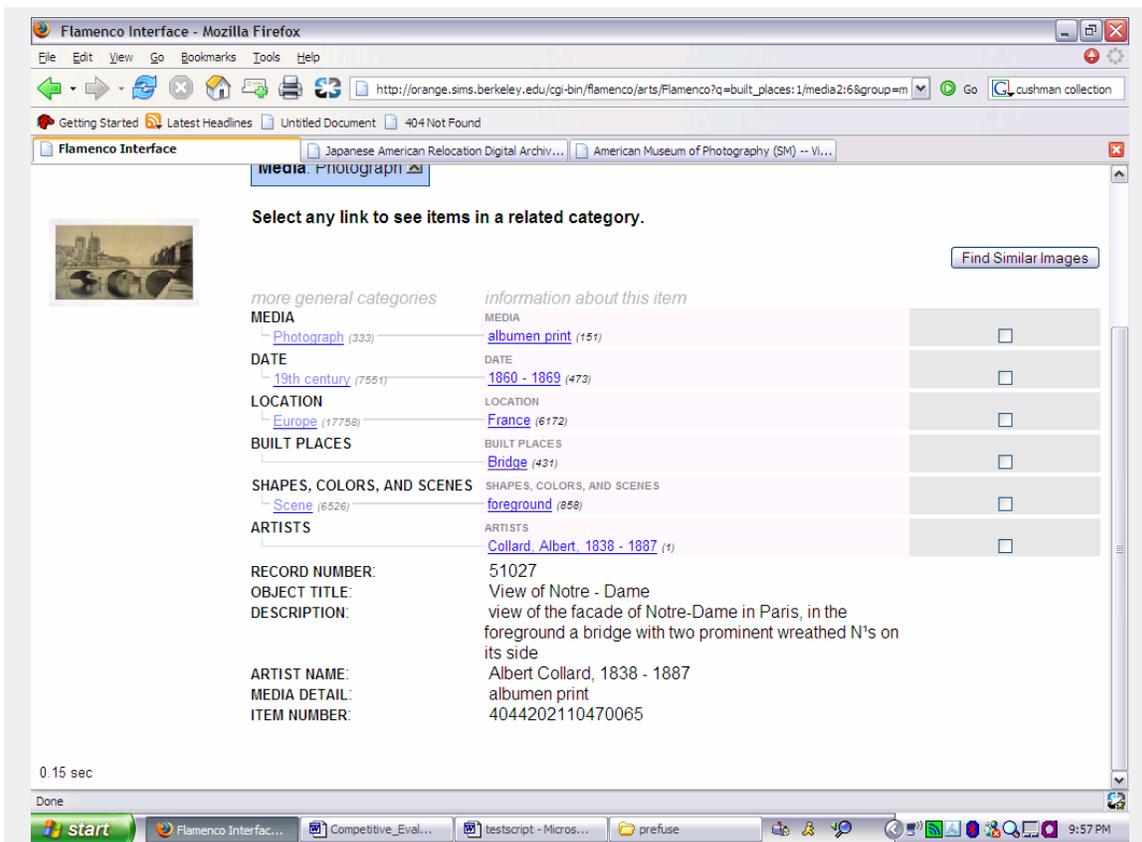
## Midgame (cont'd)

- Further submenu selection adds to list of selected menus
- Left-hand submenus further narrow; number of images in categories shown
- New search button always available
- Layout remains consistent



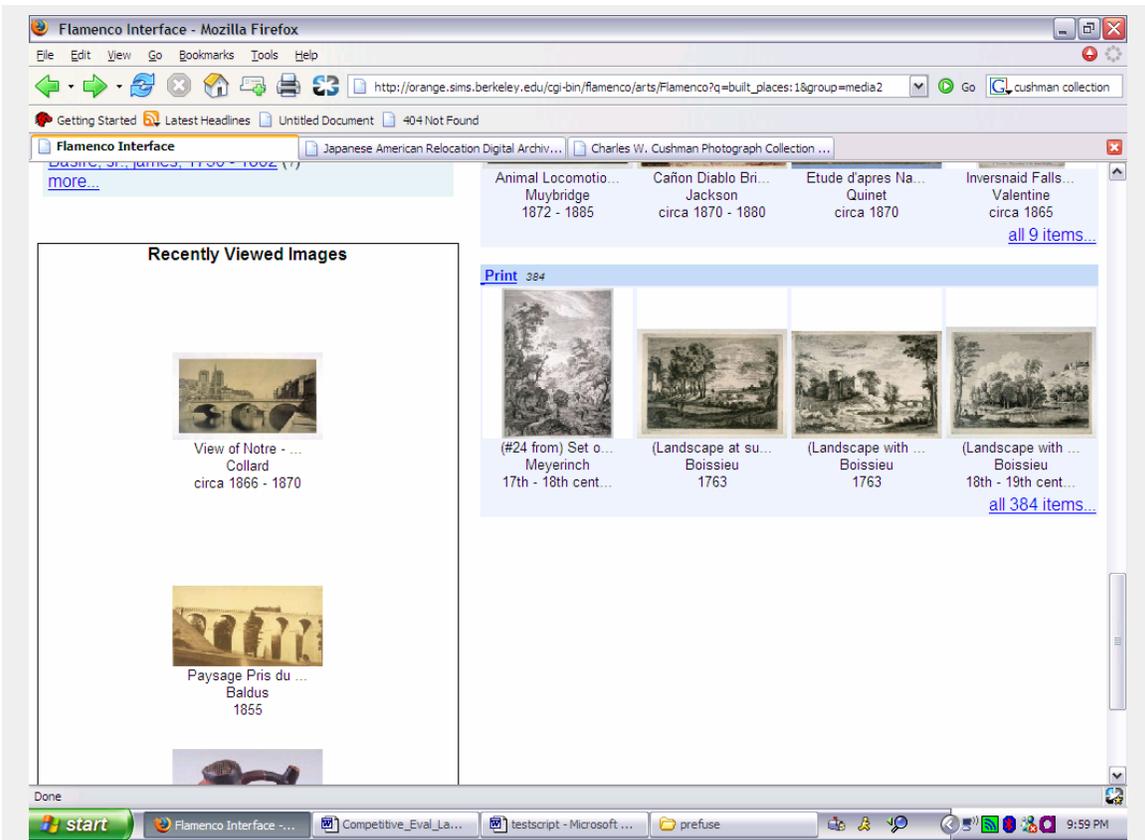
## Endgame

- Small thumbnail shown along with descriptive metadata
- Ability to select broader categories; search individual categories
- Right menu allows user to choose combination of categories



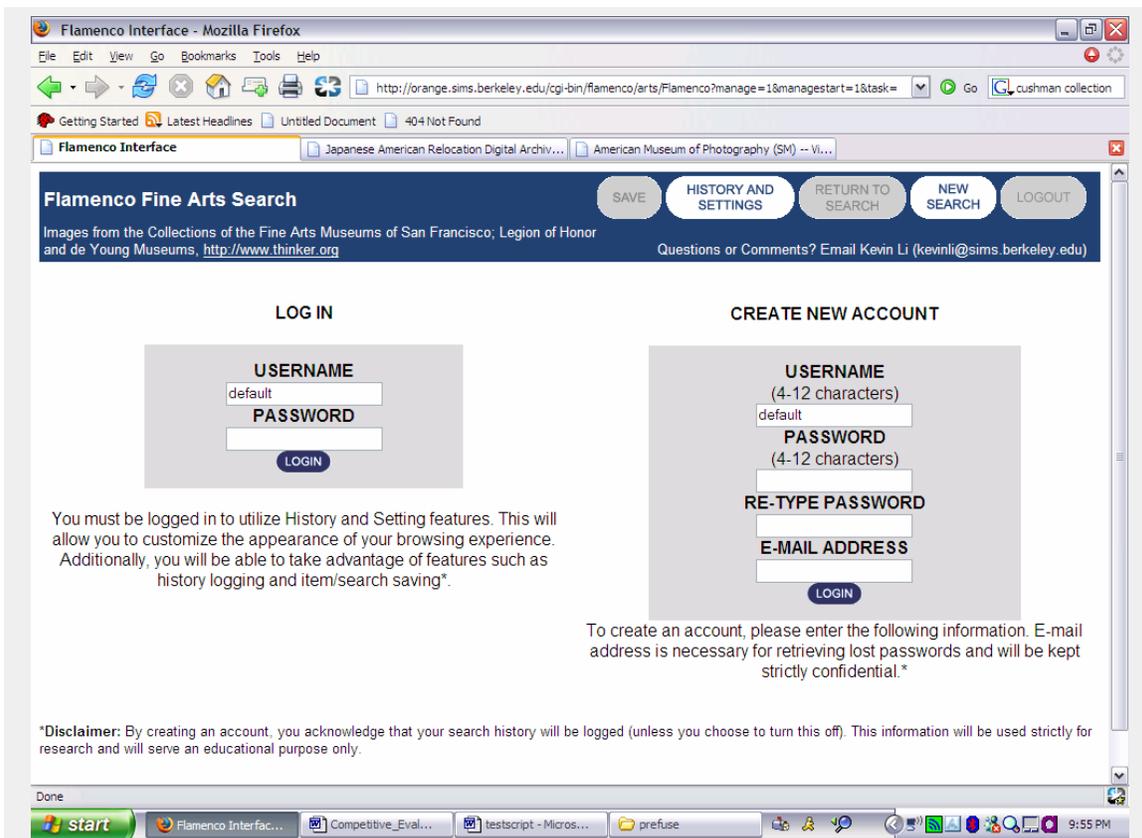
## Endgame (cont'd)

- Descriptive content shown at bottom of screen
- Menu at top of screen remains consistent (shown in previous screen shot)



## Recently Viewed Images

- During navigation, recent images collected in bin for comparison/use
- Thumbnail images shown with short description



## Login/Accounts

- Submenu of opening login
- Allows users to create new accounts
- UI simple; not cluttered
- Look remains consistent with rest of UI

### VIII. Heuristic Evaluation

With limited availability of team members, only one heuristic evaluation was conducted on our paper prototype. As the initial interactive prototype is completed, additional heuristic evaluations will be undertaken in hopes that all UI deficiencies can be identified and corrected prior to release.<sup>4</sup>

Heuristic Violation (problem & cause)	Solution
1. [H1 Visibility] (Severity 2)	
When choosing a selection in the UI, it does not always show what has been selected (i.e. becoming bold/different color).	During implementation, ensure selection feedback is a part of prototype.
2. [H1 Visibility] (Severity 2)	
Some screens do not have breadcrumb trail that shows current location in browse menus.	Ensure breadcrumbs are visible on all screens.
3. [H4 User Control] (Severity 2)	
Tab menus for Home/Search/Browse/Site Guide not available on search screens (basic and advanced)	Include tab menus on all screens to allow users ability to start over.
4. [H4 Consistency] (Severity 3)	
Some wording on endgame screens (i.e. ID) could be spelled out to eliminate any potential confusion.	Look at in testing. Plan on spelling out abbreviated names.

<sup>4</sup> For our heuristic evaluation, we have used Jakob Nielsen's 10 heuristics for UI design – see Appendix H.

5. [H4 Consistency] (Severity 3)	
Admin screens do not have same look as search/browse screens. More complex functionality may prevent easy fix, but worth looking at.	Analyze options for making admin screens look/feel the same as others.
6. [H4 Consistency] (Severity 3)	
Initial screens do not have the same menu options in the upper right portion of the screen (i.e. admin/contacts/faq/help)	Include on initial screens for consistency.
7. [H4 Match to real world] (Severity 3)	
Terminology in some categories is difficult to understand. Due in part to USCG-unique terminology. Might be able to include examples to make more clear.	Conduct card-sorting where needed. Include more widely know words or parenthetical examples to clarify.

## ***IX. Database Development***

This database develop portion of our project was focused on developing a relational database to serve as the foundation of a web-based historical archive. With a large number of artifacts in the Coast Guard’s historical collection, the database was designed to accommodate varying types of data.

In the historian’s office, materials are typically stored in large filing cabinets and organized according to a single topic.



In order to access the artifacts, a person must submit a written request to the historian's office or alternatively come to the Washington, D.C. office to search through the collection in person.

When artifacts are added to the collection, they either come from an individual donor/donor group or a Coast Guard unit. The historian's office reviews submissions to determine if they will be held in the archive or alternatively submitted to the National Archives. If entered into the Coast Guard's historical archive, the historian's staff identifies the "best" location to file an artifact. Cataloging is based on the primary content of each item and there is generally no cross referencing of materials.



A database of archived materials will allow the historian's office to inventory their entire collection and create a searchable index. In doing so, the staff will know exactly what the collection contains and where individual items are stored (or on display). Using descriptive metadata, each artifact can be cataloged so that it is retrievable according to all of its content. Cross referencing will allow searchers to find materials that may have previously gone un-located during manual searches.

Browsing Features: In order to creating an experience which is similar to walking a library's shelves, we have adopted a browsing approach which uses faceted (hierarchal) metadata as a means to navigate (down) through the collection. This approach allows users to view a selected category (i.e. based on subject) while simultaneously using another facet to further narrow search results. Of the collections available online, there are several interfaces that use this approach. For comparison, three are listed below.

- The Flamenco Search Interface Project (<http://bailando.sims.berkeley.edu/flamenco.html>)
- MuseumFinland (<http://museosuomi.cs.helsinki.fi/>)
- Indiana University's Cushman Collection (<http://webapp1.dlib.indiana.edu/cushman/index.jsp>)

Database design: During the initial stages of our database development effort, we spent a great deal of time in the design process. After conducting interviews with personnel in the historian's office, we were left with a good idea of their user needs and current processes. With an understanding of the current archiving, storage, and documentation processes, we began database design based on the idea that the system would contain information on all of the different types of materials managed by the historian's office – whether or not they were physically stored in Washington, D.C. This includes artwork, historic documents, oral histories, photographs, video, and physical artifacts.

Technical Information: The design architecture for the Waypoints database includes a MySQL relational database and PHP/HTML for the user interface. The database logical design was implemented in MySQL 4.1 and MySQL 3.23. Once loaded to the SIMS group workspace, maintenance was conducted using phpMyAdmin and MySQL command line interfaces.

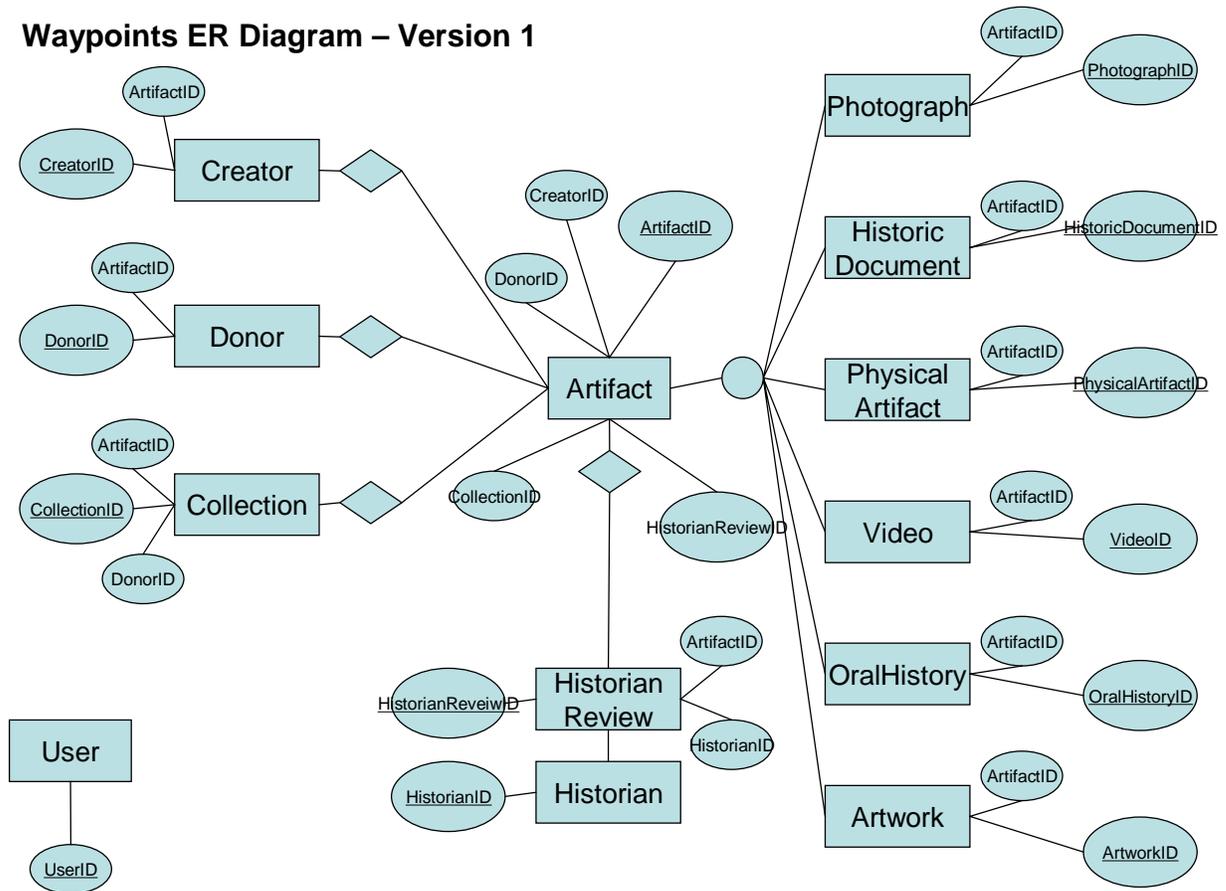
Challenges: With little digital data available for this concept demonstration, our project required that a small set of analog photographs be converted to digital format. In October 2005, our request for approximately 200 photographs (ranging in topic) was approved by the Coast Guard historian's office and duplicate photographs were mailed from Washington, D.C. Faced with a decision to have the photographs professionally digitized or to convert them ourselves, we chose the most-cost effective solution of scanning the materials in-house. Armed with an Epson scanner, individual photographs were scanned at 300dpi while the descriptive content was entered into an Excel spreadsheet. Once complete, the spreadsheet was converted to a comma-delimited file for loading into the database.

Before the user interface could be developed, faceted metadata had to be added to each individual image. Though this relatively simple process was again made less time consuming through the use of loading scripts, it took quite a bit of time to create the files and ensure the relationships were correctly associated.

## X. Entity Relationship (ER) Diagrams

Our initial entity relationship (ER) diagram includes the tables which we felt were most important to our design. These 13 tables and the logic behind their creation are listed in the paragraphs below.

**Waypoints ER Diagram – Version 1**



**The Artifact Table:** Database design is centered on the concept that individual artifacts combine to create a historical archive. The artifact is the building block of the larger collection and as such became the central table in our design. Much like books on a bookshelf, artifacts have numerous descriptive properties such as creator, title, and a short description. Therefore, the artifact table contains these and many additional attributes which collectively describe a unique article.

**The Creator Table:** Realizing that an individual might be the creator for many artifacts in the collection we decided to implement a “creator” table which could be associated with many artifacts in the collection. This addition negated the need to have a person’s name in the “artifact” table numerous times and allowed us the opportunity to generate queries to identify the artifacts in the collection that a particular person created.

The Donor Table: Much like a creator, a donor or group of donors can be responsible for contributing materials to the collection. As such, we built a “donor” table which has a one-to-many relationship with the artifact table. The attributes in this table were created in order to duplicate the information found in the “Deed of Gift” form used by the historian’s office.

Historian and Historian Review: Not knowing how the system might be used in the future, we decided to include tables which allow system administrators to document who last reviewed a record in the database. The “historian” table is used solely to identify the individuals which review content for accuracy. And, the “historianreview” table associates a historian with one or many artifacts which they have reviewed along with a review date, comments, etc.

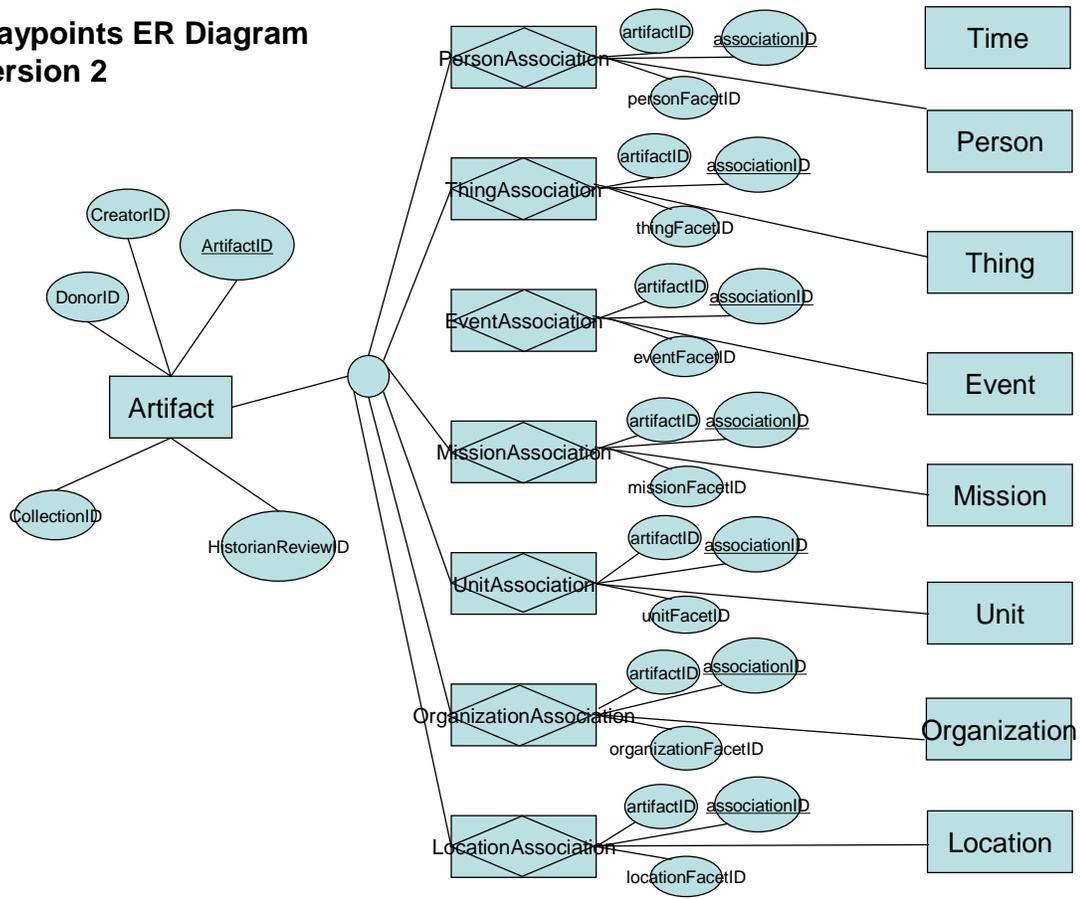
The Collection Table: Much like creators and donors which have a one-to-many relationship with artifact, a “collection” table was created in order to define the many-to-one relationship where a group of artifacts constitute a unique collection. In cases where a group of artifacts is donated to the archive (i.e. a scrapbook, personal photograph collection), it is valuable (and interesting) to be able to identify these materials as members of their own group.

The User Table: The “user” table was created so that administrative user interfaces could be restricted to those users allowed by the database.

Artwork, Historic Document, Oral history, Photograph, Video, and Physical Artifact: These six tables contain unique attributes not common to all artifacts. Originally, we discussed focusing on one type of artifact (e.g. photographs) or combining the different properties found in these tables with the artifact table (while allowing them to contain null values if they didn’t apply). However, as we worked through our initial design – we wanted to maintain the ability to document all artifact types while keeping the design appropriately normalized. As such, we decided to create these six sub-class tables – leaving the unique attributes in each table.

With our basic framework in place, we had a system that allowed us to inventory our data. However, the structure did not support the faceted browsing interface which we hoped to implement. In our second ER diagram, we included the tables which would allow us to implement our browsing interface.

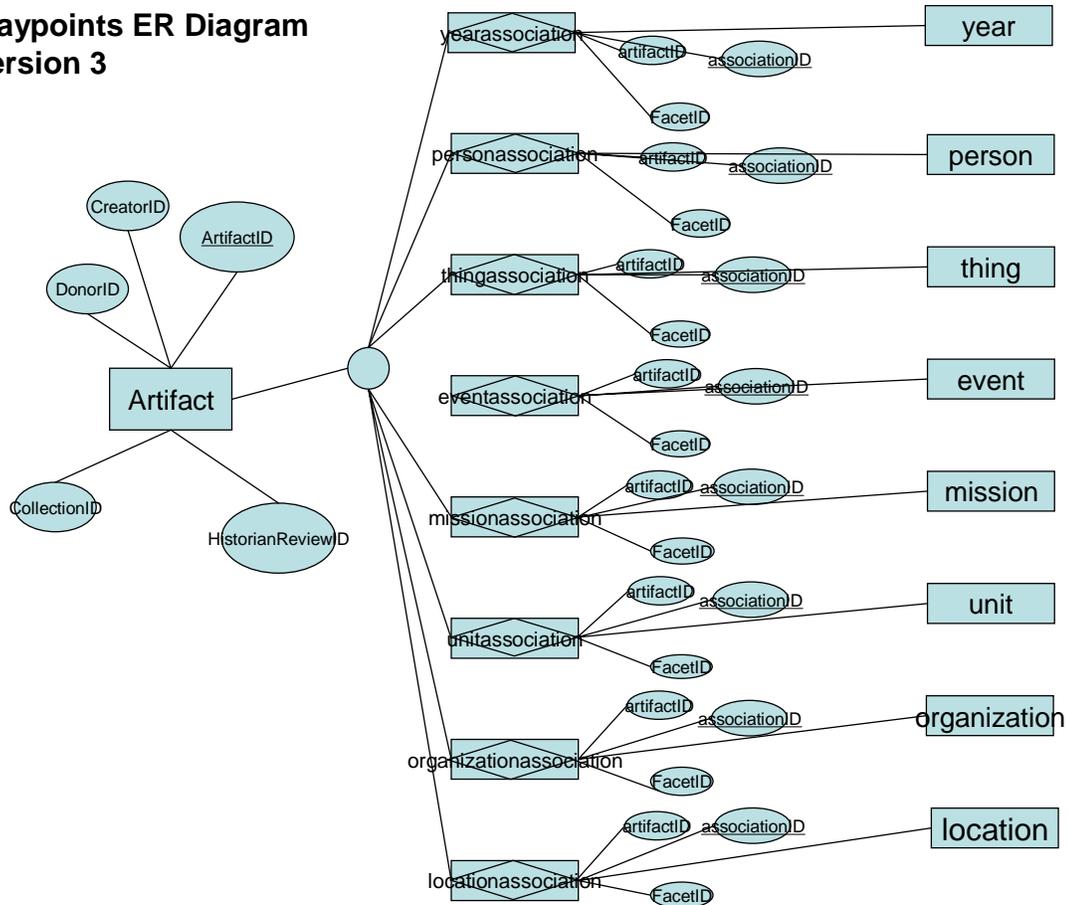
## Waypoints ER Diagram Version 2



With a many-to-many relationship between artifacts and facets, we decided to create two one-to-many relationships in order to achieve the same end result. The resulting “association” tables serve as the bridge between the artifact table and each facet – each artifact having many associations and many associations referencing individual facets. Though the only artifacts made available to our team were photographs, the browsing hierarchy should accommodate any type of descriptive metadata as long as the vocabulary in the faceted ontology is evolved as artifacts are added to the collection.

The third version of our ER diagram reflects our current database design. The overall design remained the same; however, the user table was dropped since the functionality of usernames/passwords was not yet implemented. Other changes include:

## Waypoints ER Diagram Version 3



- The “time” facet table was renamed to year in order to accurately reflect the data being kept in the table. Additionally, an association table was added for the new “year” table so that an artifact could be described using several individual years (i.e. to describe the start and end dates for a cutters’ service).
- The ParentRecord attribute in each facet table was dropped and a ParentID attribute was added. Originally, the associations between facets were referenced by name, but once the table was populated the new ParentID feature allowed for the referencing of the parents’ FacetID number.
- The attributes in the facet and association tables were consistently named so that reusable php scripts could be used for UI implementation.

## ***XI. Data Dictionary Development***

Throughout the development process, our data dictionary evolved along with the database table structure. Though remaining relatively consistent, several attribute data types were modified and data fields lengthened. Changes include:

- LongDescription was changed from a VARCHAR to TEXT. Similar to a BLOB, the MySQL TEXT field allows for full text searching and is long enough to accommodate the long descriptions found in our data set.
- The image and thumbnail fields were changed from binary (image) to VARCHAR(100). This change was based on our decision to use URL references in our database instead of attempting to store images in the database.
- ArtifactType was changed from VARCHAR to ENUM with values that correspond to the six sub-class tables for artifact.
- Several VARCHAR fields were expanded from a length of 20 to 50 or 100. As we loaded data into the database using scripts, we found that some of the fields were truncated and needed to be lengthened.
- As we began to develop our user interface, search fields such as ArtifactName, ShortDescription, and LongDescription were indexed.

Data dictionaries for our three project milestones can be found in appendices M through O.

## XII. Forms & Code

### Introduction Page

Description: The user interface for the Waypoints system is comprised of browsing and search interfaces. The introduction page for the collection allows users to select from the available artifact categories. By selecting a category, the result set is filtered to that particular artifact type. If one wishes to browse the entire collection, selecting “Browse” brings up an unfiltered list of categories.

To be developed: The “Collections” and “Site Guide” menus are currently unavailable; generating random images from collection and presenting those for each category.

**Waypoints**  
A Digital Archive of U.S. Coast Guard History

Home Search Browse Collections Site Guide

Artwork Historic Documents Oral Histories Video Physical Artifacts Photographs

The U.S. Coast Guard’s historian office maintains a collection of historical materials that complements, and to some degree, duplicates the holdings in the National Archives. The collection consists of approximately 200,000 unique and accessible photographs and a much smaller number of historic documents, oral histories, case files, and video. We invite you to explore the collection using the digital library of archived materials.

TEAM COAST GUARD  
NVMC  
RESCUE 71  
U.S. COAST GUARD

### Code:

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">  
<HTML><HEAD><TITLE>U.S. Coast Guard | Waypoints Digital Archive</TITLE>  
<META http-equiv=Content-Type content="text/html; charset=windows-1252">  
<LINK href="images_app/stylessheet.css" type=text/css rel=stylesheet>
```

```
<META content="MSHTML 6.00.2900.2769" name=GENERATOR>
```

```

<style type="text/css">
<!--
.style1 {font-family: Arial, Helvetica, sans-serif}
-->
</style>
</HEAD>
<BODY leftMargin=0 topMargin=0 marginheight="0" marginwidth="0">

<!-- Start Border Table -->

<TABLE align="center" border="1" borderColor="#003366" cellSpacing=0 cellPadding=0
width=800 height="100%">
  <TBODY>
    <TR>
      <TD bgColor=#ffffff><!-- Start Main Table -->
        <TABLE align="center" border="1" borderColor="#336699" cellSpacing="0" cellPadding="0"
height="100%" width="800">
          <!-- Start Header Row -->
          <TBODY>
            <TR>
              <TD colspan="5" height="155">
                <!-- Start Header Table -->
                <TABLE border="0" bordercolor="#ffffff" cellSpacing="0" cellPadding="0" width="100%">
                  <TBODY>
                    <TR>
                      <TD bgColor="#003366" height="165"><br><font size="+3"
color="#FFFFFF"><i>Waypoints</i></font>
<br><font size="+1" color="#FFFFFF">A Digital Archive of U.S. Coast Guard
History</font></TD>
                    </TR>
                  </TBODY>
                </TABLE>
                <!-- End Header Table -->
                <!-- Start Main Nav -->
                <DIV align="center">
<table border="0" bgcolor="#003366" cellspacing="3" cellpadding="3">
  <tr bgcolor="#336699">
    <td width="389" align="CENTER" valign="MIDDLE" id="mainnav">&nbsp;</td>
    <td width="70" align="CENTER" valign="MIDDLE" id="mainnav"><a
id="mainnav" href="intro.php">Home</a></td>
    <td width="70" align="CENTER" valign="MIDDLE" id="mainnav"><a
id="mainnav" href="search.php">Search</a></td>
    <td width="70" align="CENTER" valign="MIDDLE" id="mainnav"><a
id="mainnav" href="facetList.php">Browse</a></td>
    <td width="70" align="CENTER" valign="MIDDLE"
id="mainnav">Collections</td>
    <td width="70" align="CENTER" valign="MIDDLE" id="mainnav">Site Guide</td>
  </tr></table>
                </DIV></TD></TR>
                <!-- End Main Nav -->
            </TR><!-- Start Left Nav -->
            <TD vAlign="top">
<table width="100%" border="0" cellspacing="3" cellpadding="3">
<table width="100%" border="0" cellspacing="2">

```

```

<tr>
  <th valign="top" class="style1" scope="col">&nbsp;<div align="center"><br clear=left>Artwork</th>
  <th scope="col" class="style1" valign="bottom">&nbsp;<br clear=left>Historic<br/>Documents</th>
  <th scope="col" class="style1" valign="top">&nbsp;<br clear=left>Oral<br/>Histories</th>
  <th scope="col" class="style1" valign="bottom">&nbsp;<br clear=left>Video</th>
  <th scope="col" class="style1" valign="top">&nbsp;<br clear=left>Physical<br/>Artifacts</th>
  <th scope="col" class="style1" valign="middle">&nbsp;<a
href="http://groups.sims.berkeley.edu/waypoint/facetList.php"><br
clear=left>Photographs</a></th>
</tr>
</table>

```

```

<!--<div align="center"><br clear=left>test
  
  
  <a href="http://groups.sims.berkeley.edu/waypoint/facetList.php"></a>
  
  
</div> -->
<p align="center">The U.S. Coast Guard&acute;s historian office maintains a collection of
historical materials that complements, and to some degree, duplicates the holdings in the
National Archives. The collection consists of approximately 200,000 unique and accessible
photographs and a much smaller number of historic documents, oral histories, case files, and
video. We invite you to explore the collection using the digital library of archived materials.</p>
</table>

```

```

<!-- Footer -->
<!-- ***** _ _
></TD>

```

```

</TR><!-- Start Footer -->
<TR bgColor=#43607d>
  <TD vAlign=top colSpan=5 height=15>
    <TABLE cellSpacing=0 cellPadding=0 width="100%" border=0>
      <TBODY>
        <TR>
          <TD align=middle bgColor=#43607d height=80><A
href="http://www.coastguardracing.com/"><IMG
alt="Coast Guard Racing"
src="images_app/Racinglogo_small.jpg"
border=0></A></TD>
          <TD align=middle bgColor=#43607d><A
href="http://www.gocoastguard.com/"><IMG
alt="Coast Guard Jobs"
src="images_app/shieldwtext_small.jpg"
border=0></A></TD>
          <TD align=middle bgColor=#43607d><A
href="http://www.uscg.mil/deepwater/"><IMG alt=Deepwater
src="images_app/Tdeeplogo_small.jpg"

```

```

border=0></A></TD>
<TD align=middle bgColor=#43607d><A
href="http://www.nvmc.uscg.gov/"><IMG
alt="National Vessel Movement Center"
src="images_app/nvmc_small.jpg"
border=0></A></TD>
<TD align=middle bgColor=#43607d><A
href="http://www.uscg.mil/rescue21/home/index.htm"><IMG
alt="Rescue 21"
src="images_app/R21_Logo_small.jpg"
border=0></A></TD>
<TD align=middle bgColor=#43607d><A
href="http://www.uscg.mil/hq/g-m/mp/mtsa.shtml"><IMG
alt="MTSA Help Desk"
src="images_app/mtsalogo_small.jpg"
border=0></A> </TD>
<TD align=middle bgColor=#43607d><A
onclick="return dot_exit()" href="http://www.cgfdn.org/"><IMG
alt="Coast Guard Foundation"
src="images_app/Foundation_small.jpg"
border=0></A> </TD>
<TD align=middle bgColor=#43607d><A
onclick="return dot_exit()" href="http://www.cgmahq.org/"><IMG
alt="USCG Mutual Assistance"
src="images_app/cgmalogo24_small.jpg"
border=0></A> </TD>
<TD align=middle bgColor=#43607d><A
href="http://www.60wwii.mil/Presentation/common/index.cfm?CFID=1363209&CFTOKEN=3
1298263&jsessionid=7a30b6f45da2$FB$C0$1"><IMG
alt="60th Anniversary WWII"
src="images_app/wwiiLogo_small.jpg"
border=0></A></TD></TR></TBODY></TABLE><!-- End Footer --
></TD></TR></TBODY></TABLE><!-- End Main Table --></TD></TR></TBODY></TABLE><!--
End Border Table --><!-- ***** --
></BODY></HTML>

```

## Browse Page

Description: The main browse page presents a list of top-level facets along with their first layer children in the browseable hierarchy. As a selection is made, a list of photographs matching your selection is presented on the screen.

To be developed: Layout modification; search option; check boxes to allow searching of multiple categories (i.e. simultaneously selecting artwork and photographs).



**Waypoints**  
A Digital Archive of U.S. Coast Guard History

Home Search Browse Collections Site Guide

Home > Browse

- Event** (59)
  - Law Enforcement (16)
  - Search and Rescue (10)
  - Pollution Response (3)
  - OPSAIL (2)
  - Vietnam (20)
  - WWII (7)
  - Deep Freeze (1)
- Location** (192)
  - Unknown (89)
  - Atlantic Ocean (17)
  - Pacific Ocean (20)
  - Europe (1)
  - Puerto Rico (3)
  - United States (70)
  - South Vietnam (19)
- Mission** (68)
  - Law Enforcement (16)
  - Search and Rescue (26)
  - National Defense (20)
  - Pollution Response (3)
  - Aids to Navigation (3)
  - Ice Breaking (6)
- Organization** (187)
  - U.S. Lighthouse Service (1)
  - U.S. Life Saving Service (1)
  - U.S. Coast Guard (182)
  - U.S. Revenue Cutter Service (3)
- Person** (10)
  - Historic Figures (6)
  - Commandants (3)
  - Lightkeepers (1)
- Thing** (174)
  - Aircraft (56)
  - Boats (1)
  - Cutters (2)
  - Rates (1)
  - Weaponry (1)
  - Medals/Awards (1)
- Unit** (19)
  - Air Stations (12)
  - Districts (2)
  - Stations (7)
- Year** (192)
  - Unknown (86)
  - 1800-1899 (2)
  - 1900-1999 (104)

Code (minus header/footer as shown in introduction page):

```
<table width="100%" border="0" cellspacing="3" cellpadding="3">
<tr>
<td align="left" valign="top">

<?

@ $db = mysql_pconnect("localhost", "waypoint", "uscg");
if (!$db) {
    echo "<p class='bodyText'>Error: Could not connect to database.</p>";
    exit;
}
```

```

mysql_select_db ("waypoint");

// array of Top Facets
$allTopFacets = array("event", "location", "mission", "organization", "person", "thing", "unit",
"year");

// keep track of facet children
$facetIDTree = array();
$facetNameTree = array();

// put top level facets into an array
function getTopLevelFacets ($topFacet) {
    global $facetIDTree;
    global $facetNameTree;

    $getFacets = "SELECT FacetID, FacetName, TopLevelFlag FROM $topFacet WHERE
TopLevelFlag = 1";
    $facets = mysql_query($getFacets);

    if ($facets) {
        while ($r = mysql_fetch_array($facets)) {
            $fID = $r["FacetID"];
            $fName = $r["FacetName"];

            array_push($facetIDTree, $fID);
            array_push($facetNameTree, $fName);
        }
    }
}

// get associated artifact counts
function getArtifactCount() {
    global $topFacet;
    global $topFacetAssoc;
    global $selectedFacetID;
    global $facetIDTree;
    global $facetNameTree;

    // display total count of artifacts associated with Top Facet
    $getTotalCount = "SELECT count(distinct ArtifactID) FROM $topFacetAssoc";
    $totalCount = mysql_query($getTotalCount);

    if ($totalCount) {
        while ($r = mysql_fetch_array($totalCount)) {
            $aCount = $r[0];
            $capTopFacet = ucfirst($topFacet);

            echo "<br><b><a
href=\"browse.php?topFacet=$topFacet\">$capTopFacet</a></b> ($aCount)<br>";
        }
    }

    // display next level of associated artifact counts
    $facetCount = count($facetIDTree);

    for ($i = 0; $i < $facetCount; $i++) {

```

```

        $getCount = "SELECT count(distinct ArtifactID) FROM $topFacetAssoc WHERE
FacetID = $facetIDTree[$i]";
        $count = mysql_query($getCount);

        if ($count) {
            while ($r = mysql_fetch_array($count)) {
                $aCount = $r[0];

                if ($aCount != "0") {
                    echo "<a
href=\"browse.php?topFacet=$topFacet&id=$facetIDTree[$i]\">$facetNameTree[$i]</a>
($aCount)<br>";
                }
            }
        } else {
            echo "No artifacts for $facetIDTree[$i]: $facetNameTree[$i] facet.<br>";
        }
    }

    // empty arrays before starting next topFacet
    $facetIDTree = array();
    $facetNameTree = array();
}

// print breadcrumb
echo "<a href=\"intro.php\">Home</a> &gt; <b>Browse</b>";

// display facet list links and counts
echo "<table cellpadding=\"10\" cellspacing=\"5\" border=\"0\"><tr><td align=\"left\"
valign=\"top\">";

for ($i = 0; $i <= "7"; $i++) {
    $topFacet = $allTopFacets[$i];
    $topFacetAssoc = "$topFacet" . "association";
    $selectedFacetID = "1";

    if ($i == "4") {
        echo "</td><td align=\"left\" valign=\"top\">";
    }

    getTopLevelFacets($topFacet);
    getArtifactCount();
}

echo "</td></tr></table>";

?>

</table>

```

## Mid-Level Browse Page

Description: Here a mid-level (midgame) browse page shows a list of thumbnails representing the users previous selection. The artifact name and short description are presented with the thumbnail.

To be developed: Sort by; pagination; search within option; change display (text only, thumbnail only, or both); left menu navigation (showing metadata choices in current data set).



# Waypoints

A Digital Archive of U.S. Coast Guard History

[Home](#) [Search](#) [Browse](#) [Collections](#) [Site Guide](#)

[Home](#) > [Browse](#) > [Person](#) > **Historic Figures**



[Maxie Berry](#)  
BMC Maxie M. Berry patrolling ocean front.



[Maxie Berry](#)  
BMC Maxie M. Berry, Officer in Charge.



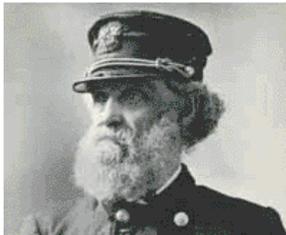
[Legion of Merit](#)  
Legion of Merit awarded to CWO Rudolph T. Schlesinger, Jr.



[John B. Coathouse](#)



[Elmer Stone](#)



Code (minus header/footer as shown in introduction page):

```
<table width="100%" border="0" cellspacing="3" cellpadding="3">
<tr>
<td align="left" valign="top">
<!-- start content area-->
<?

@ $db = mysql_pconnect("localhost", "waypoint", "uscg");
if (!$db) {
```

```

        echo "<p class=\"bodyText\">Error: Count not connect to database.</p>";
        exit;
    }
mysql_select_db ("waypoint");

// populate variables with values from URI
$topFacet = $_GET['topFacet'];
$topFacetAssoc = "$topFacet" . "association";
$selectedFacetID = $_GET['id'];

// keep track of facet children
$facetTree = array();

// keep track of facet parents for breadcrumb
$breadcrumb = array();

// dedupe artifacts
$aStack = array();

// put selected facet and its tree of children into an array
function getFacetTree ($facetID) {
    global $topFacet;
    global $facetTree;

    array_push($facetTree, $facetID);

    $getFacets = "SELECT FacetID, FacetName, ParentID, LeafFlag FROM $topFacet
WHERE ParentID = $facetID";
    $facets = mysql_query($getFacets);

    if ($facets) {
        while ($r = mysql_fetch_array($facets)) {
            $fID = $r["FacetID"];
            getFacetTree($fID);
        }
    }
}

// put selected facet and its parents in array for breadcrumb
function getBreadcrumb($facetID) {
    global $topFacet;
    global $selectedFacetID;
    global $breadcrumb;

    $getParents = "SELECT FacetID, FacetName, ParentID FROM $topFacet WHERE
FacetID = $facetID";
    $parents = mysql_query($getParents);

    if ($parents) {
        while ($r = mysql_fetch_array($parents)) {
            $fID = $r["FacetID"];
            $fName = $r["FacetName"];
            $pID = $r["ParentID"];

            if ($fID != $selectedFacetID) {
                $breadcrumbFacet = " &gt; <a
href=\"browse.php?topFacet=$topFacet&id=$fID\">$fName</a>";

```

```

    } else {
        $breadcrumbFacet = " &gt; <b>${fName}</b>";
    }

    array_push($breadcrumb, $breadcrumbFacet);

    if ($pID != "0") {
        getBreadcrumb($pID);
    } else {
        // when all facets are in array, print out breadcrumb
        $facetCount = count($breadcrumb);

        for ($i = 0; $i <= $facetCount; $i++) {
            // start things off with Home and browse links
            if ($i == "0") {
                echo "<a href=\"intro.php\">Home</a> &gt; <a
href=\"facetList.php\">Browse</a>";
            }

            // print each parent facet
            $myFacet = array_pop($breadcrumb);
            echo $myFacet;

            // close the cell and row when done
            if ($i == $facetCount) {
                //echo "</td></tr></table>";
            }
        }
    }
}

}

}

}

// error msg if topFacet not passed in URL
if ($topFacet == "") {
    echo "Top facet not selected.<br>";
}

// getFacetTree before getting the associated artifacts
if ($selectedFacetID) {
    getFacetTree($selectedFacetID);
} else {
    // if no selected Facet, set it first
    $selectedFacetID = "1";
    getFacetTree($selectedFacetID);
}

// print breadcrumb
getBreadcrumb($selectedFacetID);

// display artifacts associated with the facet tree
$facetCount = count($facetTree);
$c = "1"; // row tracker (3 artifacts per row)
$a; // artifact tracker

```

```

echo "<table cellpadding=\"10\" cellspacing=\"5\" border=\"0\">";
for ($i = 0; $i < $facetCount; $i++) {
    $getArtifacts = "SELECT ArtifactID FROM $topFacetAssoc WHERE FacetID =
$facetTree[$i]";
    $artifacts = mysql_query($getArtifacts);

    if ($artifacts) {
        // echo "Getting artifacts for facet #${facetTree[$i]}...<br>";

        while ($r = mysql_fetch_array($artifacts)) {
            $aID = $r["ArtifactID"];

            // if artifact hasn't been displayed yet, add it to array and get its info
            if (!in_array($aID, $aStack)) {
                global $a;
                global $c;
                $a++;

                array_push($aStack, $aID);

                // start new row depending on how many artifacts already
displayed

                if ($a == ($c + 3)) {
                    echo "<tr>";
                    $c = $a;
                }

                // print aStack array if testing
                // print_r($aStack);

                $getArtifactInfo = "SELECT ArtifactID, ArtifactName,
ShortDescription, Thumbnail FROM artifact WHERE ArtifactID = $aID";
                $artifactInfo = mysql_query($getArtifactInfo);

                if ($artifactInfo) {

                    while ($r = mysql_fetch_array($artifactInfo)) {
                        $aID = $r["ArtifactID"];
                        $aName = $r["ArtifactName"];
                        $aShortDesc = $r["ShortDescription"];

                        $aThumb = $r["Thumbnail"];

                        echo "<td align=\"center\" valign=\"top\"><a
href=\"artifact_detail.php?id=$aID\"><img src=\"${aThumb}\" border=\"0\"></a><br><a
href=\"artifact_detail.php?id=$aID\">$aName</a><br>$aShortDesc</td>";
                    }

                // end row depending on how many artifacts already displayed
                if ($a == ($c + 2)) {
                    echo "</tr>";
                }

            }

        }
    }
}

```

```
        } else {
            echo "No artifacts for facet #${facetTree[$i]}.";
        }
    }
    echo "</table>";
```

```
?>
```

```
</table>
```

## Ending Browse Page

**Description:** A final page in the browsing hierarchy shows a thumbnail image of the artifact along with descriptive content about the artifact. The user can choose to view a full size image (which appears in a new window) or to resume searching. Options are to begin a new browse using the tab menu, return to a previous screen using the breadcrumb trail, or choose a new category from with the available metadata list.

**To be developed:** Add numbers to available metadata list; display current metadata selection in left menu.



# Waypoints

A Digital Archive of U.S. Coast Guard History

Home Search Browse Collections Site Guide

Home > Browse > Person > Maxie Berry



[ View full image ]

**Short Description:**  
BMC Maxie M. Berry patrolling ocean front.

**Long Description:**  
BMC Maxie M. Berry, Officer in Charge of Pea Island Coast Guard Lifeboat Station, patrolling the lonely stretch of ocean front by truck equipped with oversize tires to plough through the deep sand.

**Creator Information:**  
No associated creator

**Donor Information:**  
No associated donor

**Collection Information:**  
No associated collection

**Historian Review:**  
No associated review

**ID:** 125  
**Name:** Maxie Berry  
**Type:** Photograph

**Creation Date:** Not recorded  
**Original Format:** Not recorded  
**Location Taken:** Not recorded

**Submission Date:** Not recorded  
**Storage Location:** Not recorded  
**Condition:** Good  
**For Release:** Yes

**Metadata:**  
[Event](#)  
[Location](#)  
    [United States](#)  
    [North Carolina](#)  
    [Pea Island](#)  
[Mission](#)  
[Organization](#)  
    [U.S. Coast Guard](#)  
[Person](#)  
    [Historic Figures](#)  
    [Maxie Berry, Sr.](#)  
[Thing](#)  
[Unit](#)  
    [Stations](#)  
[Year](#)  
    [Unknown](#)

Code (minus header/footer as shown in introduction page):

```
<table width="100%" border="0" cellspacing="3" cellpadding="3">
<tr>
<td align="left" valign="top">

<?>
```

```

@ $db = mysql_pconnect("localhost", "waypoint", "uscg");

if (!$db) {
    echo "<p class='bodyText'>Error: Could not connect to database.</p>";
    exit;
}
mysql_select_db ("waypoint");

// populate variable with values from URI
$selectedArtifactID = $_GET['id'];

$referer = $_SERVER["HTTP_REFERER"];
$stab = parse_url($referer);
$query = $stab["query"];
parse_str($query);
$selectedFacetID = $id;
// if no selected Facet, set it
if (!$selectedFacetID) {
    $selectedFacetID = "1";
}

$aName;

// error msg if artifact ID not passed in URL
if ($selectedArtifactID == "") {
    echo "Artifact not selected.";
}

// put selected facet and its parents in array for breadcrumb
function getBreadcrumb($facetID) {
    global $topFacet;
    global $selectedFacetID;
    global $aName;

    $breadcrumb = array();

    $getParents = "SELECT FacetID, FacetName, ParentID FROM $topFacet WHERE
FacetID = $facetID";
    $parents = mysql_query($getParents);

    if ($parents) {
        while ($r = mysql_fetch_array($parents)) {
            $fID = $r["FacetID"];
            $fName = $r["FacetName"];
            $pID = $r["ParentID"];

            $breadcrumbFacet = " &gt; <a
href='\"browse.php?topFacet=$topFacet&id=$fID\"'>$fName</a>";

            array_push($breadcrumb, $breadcrumbFacet);

            if ($pID != "0") {
                getBreadcrumb($pID);
            } else {
                // when all facets are in array, print out breadcrumb

```

```

        $facetCount = count($breadcrumb);

        for ($i = 0; $i <= $facetCount; $i++) {
            // start things off with Home and Browse links
            if ($i == "0") {
                echo "<a href=\"intro.php\">Home</a> &gt; <a
href=\"facetList.php\">Browse</a>";
            }

            // print each parent facet
            $myFacet = array_pop($breadcrumb);
            echo $myFacet;

            // end with artifact name
            if ($i = $facetCount) {
                echo " &gt; <b>$aName</b>";
            }
        }
    }
}

```

```

$query = "SELECT * FROM artifact WHERE ArtifactID = $selectedArtifactID";
$result = mysql_query($query);

```

```

if ($result) {
    while ($r = mysql_fetch_array($result)) {
        $aID = $r["ArtifactID"];
        $aName = $r["ArtifactName"];
        $aType = $r["ArtifactType"];
        $hReviewID = $r["HistorianReviewID"];
        $sDesc = $r["ShortDescription"];
        $lDesc = $r["LongDescription"];
        $sDate = $r["SubmissionDate"];
        $cDate = $r["CreationDate"];
        $sLoc = $r["StorageLocation"];
        $con = $r["Condition"];
        $image = $r["Image"];
        $thumb = $r["Thumbnail"];
        $release = $r["ForRelease"];

        $creatorID = $r["CreatorID"];
        $donorID = $r["DonorID"];
        $collectionID = $r["CollectionID"];

        if ($sDate == "0000-00-00" || $sDate == "") {
            $sDate = "Not recorded";
        }

        if ($cDate == "0000-00-00" || $cDate == "") {
            $cDate = "Not recorded";
        }

        if ($sLoc == "") {
            $sLoc = "Not recorded";
        }
    }
}

```

```

        if ($release == "1") {
            $release = "Yes";
        } else {
            $release = "No";
        }
    }

    $photoQuery = "SELECT * FROM photograph WHERE ArtifactID = $selectedArtifactID";
    $photoResult = mysql_query($photoQuery);

    if ($photoResult) {
        while ($r = mysql_fetch_array($photoResult)) {
            $oFormat = $r["OriginalFormat"];
            $locTaken = $r["LocationTaken"];
        }
    }
    if ($oFormat == "") {
        $oFormat = "Not recorded";
    }
    if ($locTaken == "") {
        $locTaken = "Not recorded";
    }

    // put the layout here
    // print breadcrumb
    getBreadcrumb($selectedFacetID);

    echo "<table cellpadding=\"10\" cellspacing=\"5\" border=\"0\">";

    // start right column
    echo "<!--start right column-->";
    echo "<tr><td align=\"left\" valign=\"top\" width=\"50%\">";
    echo "<a href=\"$image\"><img src=\"$thumb\" border=\"0\"></a><br>[ <a href=\"$image\" target=\"image\">View full image</a> ]<br>";

    echo "<br><b>Short Description:</b><br>$sDesc<br>";

    echo "<br><b>Long Description:</b><br>$lDesc<br>";

    echo "<br><b>Creator Information:</b><br>";
    //get creator info based on CreatorID
    if ($creatorID == "0") {
        echo "No associated creator<br>";
    } else {
        $creatorQuery = "SELECT * FROM creator WHERE CreatorID = $creatorID";
        $creatorResult = mysql_query($creatorQuery);

        if ($creatorResult) {
            while ($c = mysql_fetch_array($creatorResult)) {
                $tmp = $c["$creatorID"];
                echo "<b>ID:</b> $tmp<br>";
                $tmp = $c["FirstName"];
                echo "<b>Name:</b> $tmp ";
            }
        }
    }

```

```

        $tmp = ${c["MiddleInitialName"]};
        echo "$tmp ";
        $tmp = ${c["LastName"]};
echo "$tmp<br>";
        $tmp = ${c["Affiliation"]};
echo "<b>Affiliation:</b> $tmp<br>";
    }
}

echo "<br><b>Donor Information:</b><br>";
//get donor info based on DonorID
if ($donorID == "0") {
    echo "No associated donor<br>";
} else {
    $donorQuery = "SELECT * FROM donor WHERE DonorID = $donorID";
    $donorResult = mysql_query($donorQuery);

    if ($donorResult) {
        while ($c = mysql_fetch_array($donorResult)) {
            $tmp = ${c["$donorID"]};
            echo "<b>ID:</b> $tmp<br>";
            $tmp = ${c["DonorGroupName"]};
            echo "<b>Group Name:</b> $tmp<br>";
            $tmp = ${c["FirstName"]};
            echo "<b>Name:</b> $tmp ";
            $tmp = ${c["MiddleInitialName"]};
            echo "$tmp ";
            $tmp = ${c["LastName"]};
            echo "$tmp ";
            $tmp = ${c["SuffixName"]};
            echo "$tmp<br>";
            $tmp = ${c["Title"]};
            echo "<b>Title:</b> $tmp<br>";
            $tmp = ${c["Affiliation"]};
            echo "<b>Affiliation:</b> $tmp<br><br>";
            $tmp = ${c["AddressStreet"]};
            echo "$tmp<br>";
            $tmp = ${c["AddressCity"]};
            echo "$tmp, ";
            $tmp = ${c["AddressState"]};
            echo "$tmp ";
            $tmp = ${c["AddressZip"]};
            echo "$tmp<br>";
            $tmp = ${c["PhoneNumber"]};
            echo "$tmp<br>";
        }
    }

    echo "<br><b>Collection Information:</b><br>";
//get collection info based on CollectionID
if ($collectionID == "0") {
    echo "No associated collection<br>";
} else {
    $collectionQuery = "SELECT * FROM collection WHERE CollectionID =
$collectionID";

```

```

$collectionResult = mysql_query($collectionQuery);

if ($collectionResult) {
    while ($c = mysql_fetch_array($collectionResult)) {
        $tmp = $c["$collectionID"];
        echo "<b>ID:</b> $tmp<br>";
        $tmp = $c["CollectionName"];
        echo "<b>Name:</b> $tmp<br>";
    }
}

echo "<br><b>Historian Review:</b><br>";
//get historian review info based on HistorianReviewID
if ($hReviewID == "0") {
    echo "No associated review<br>";
} else {
    $reviewQuery = "SELECT * FROM historianreview WHERE HistorianReviewID
= $hReviewID";
    $reviewResult = mysql_query($reviewQuery);

    if ($reviewResult) {
        while ($c = mysql_fetch_array($reviewResult)) {
            $tmp = $c["$HistorianReviewID"];
            echo "<b>ID:</b> $tmp<br>";
            $tmp = $c["HistorianID"];
            echo "<b>Historian ID:</b> $tmp";
            $tmp = $c["ReviewDate"];
            echo "<b>Review Date:</b> $tmp<br>";
        }
    }

    echo "</td>";
    // end left column

    // start right column
    echo "<td align=\"left\" valign=\"top\" width=\"50%\">";
    echo "<b>ID:</b> $aID<br>";
    echo "<b>Name:</b> $aName<br>";
    echo "<b>Type:</b> $aType<br>";
    echo "<br>";
    echo "<b>Creation Date:</b> $cDate<br>";
    echo "<b>Original Format:</b> $oFormat<br>";
    echo "<b>Location Taken:</b> $locTaken<br>";
    echo "<br>";
    echo "<b>Submission Date:</b> $sDate<br>";
    echo "<b>Storage Location:</b> $sLoc<br>";
    echo "<b>Condition:</b> $con<br>";
    echo "<b>For Release:</b> $release<br>";

    echo "<br><b>Metadata:</b><br>";

    $allTopFacets = array("event", "location", "mission", "organization", "person", "thing",
"unit", "year");

```



## Search Page

Description: The basic search function returns a list of all available artifacts when the page is initially populated. From there, users can search via keyword and a result set is returned.

To be developed: Correct multiple keyword error; support Boolean queries; develop advanced search; return result set in same layout as browse screen.



<a href="#">41</a>	Hovercraft	Coast Guard hovercraft (Hover 01).
<a href="#">42</a>	Hovercraft	Coast Guard hovercraft (Hover 01).
<a href="#">141</a>	H-3 Overhead	H-3 helicopter hovering.
<a href="#">143</a>	HNS-1 Helicopter	HNS-1 helicopter hovering with stretcher attached.
<a href="#">151</a>	HH-52A Bottom	

Code (minus header/footer as shown in introduction page):

```
<table width="100%" border="0" cellspacing="3" cellpadding="3">
<br/>
<?php
```

```
//variables to connect to the DB
$host = 'localhost';
$user = 'waypoint';
$pw = 'uscg';
$db = 'waypoint';
```

```
//Connect to the DB and select Waypoint as the DB to use
$db = mysql_pconnect("localhost", "waypoint", "uscg");
```

```
if (!$db) {
    echo "<p class=\"bodyText\">Error: Cound not connect to database.</p>";
}
```

```

        exit;
    }

    mysql_select_db ("waypoint");

    //begin query

if(isset($_GET['searchentry']))
{
$search = $_GET['searchentry'];
}

$keywords = explode(" ", $search);

//query logic
//could use something like "SELECT ArtifactID, LongDescription FROM artifact where match
(LongDescription) against ($keywords); for full text search

$query = "SELECT ArtifactID, ArtifactName, ShortDescription, Thumbnail from artifact " .
"WHERE LongDescription like '%".$keywords[0]."%";

for ($i=1; $i<count($keywords); $i++) {
$query = $query." AND LIKE '%".$keywords[$i]."%";
}

$result = mysql_query($query) or die(mysql_error());

?>
<center>
<form method="GET" action="search.php"><br/>
<b>Search Term(s):</b> <input type="text" name="searchentry" size="20" />
<input type="submit" value="Search!" />

</form>

<table width="50%" style="border:1px solid #000000;"><br/>
<?php
while($row = mysql_fetch_array($result))
{
echo "<tr>";
echo "<td style='border-bottom: 1px solid #000000;'>";

echo "<b><a
href='http://groups.sims.berkeley.edu/waypoint/artifact_detail.php?id=$row[ArtifactID]'" . $row['Arti
factID']."'</a></b>";
echo "<p>". $row['ArtifactName']. "</p>";
echo "<p>". $row['ShortDescription']. "</p>";

//insert thumbnail image if possible

echo "</td>";
echo "</tr>";
}

?>
</table>

```

## Add Photograph Page

Description: The add new photograph page allows users to add a new (photograph) artifact to the database. At the same time, users can add a new creator, donor, etc.

To be developed: Populate pull down menus with existing creators, donors, etc.

Code (minus header/footer as shown in introduction page):

```
<TR><!-- Start Left Nav -->
  <TD rowSpan="2" vAlign="top" width="150" height="800">
    <TABLE bgColor="#f2f2f2" border="0" width="100%" height="100%" cellSpacing=0
cellPadding=0>
      <TBODY>
        <TR>
          <TD vAlign=top width=150>
            <TABLE borderColor="#336699" border="0" cellSpacing="0" cellPadding="0"
width="100%">
```

```

<TBODY>
<TR>
  <TD background="images_app/navbasebg.jpg" height=20><br></TD></TR>
<TR bgColor=#ffffff>
  <TD borderColor=#cccccc bgColor="#003366" height=21>
    <P align="left"><FONT
      face="Verdana, Arial, Helvetica, sans-serif"
      color=#ffffff size=2>&nbsp;<B>Add new:</B></FONT></P></TD></TR>
<TR>
  <TD>
    <DIV id="leftnavcontainer">
      <UL id="leftnavlist">
        <LI><A href="">&nbsp;&nbsp;&nbsp;Photograph</A>
        <LI><A href="">&nbsp;&nbsp;&nbsp;Historic Document</A>
        <LI><A href="">&nbsp;&nbsp;&nbsp;Physical Artifact</A>
          <LI><A href="">&nbsp;&nbsp;&nbsp;Oral History</A>
          <LI><A href="">&nbsp;&nbsp;&nbsp;Artwork</A>
        <LI><A href="">&nbsp;&nbsp;&nbsp;Video</A>
          <br>
          <LI><A href="">&nbsp;&nbsp;&nbsp;Creator</A>
          <LI><A href="">&nbsp;&nbsp;&nbsp;Donor</A>
          <LI><A href="">&nbsp;&nbsp;&nbsp;Collection</A>
          <LI><A href="">&nbsp;&nbsp;&nbsp;Historian</A></LI>
          <br><br>
        </UL></DIV></TD></TR>
<TR bgColor=#ffffff>
  <TD borderColor=#cccccc bgColor="#003366" height=21>
    <P align="left"><FONT
      face="Verdana, Arial, Helvetica, sans-serif"
      color=#ffffff size=2>&nbsp;<B>Edit:</B></FONT></P></TD></TR>
<TR>
  <TD>
    <br>
    &nbsp;&nbsp;&nbsp;Search on:<br>
    &nbsp;&nbsp;&nbsp;ID<br>
    &nbsp;&nbsp;&nbsp;<input type="Text" name="search"
value="" size="10"><br>
    &nbsp;&nbsp;&nbsp;or<br>
    &nbsp;&nbsp;&nbsp;Title keyword<br>
    &nbsp;&nbsp;&nbsp;<input type="Text" name="search"
value="" size="10">
    &nbsp;&nbsp;&nbsp;<input type="Submit" name="search"
value="Search">
    </TD></TR>
</TBODY></TABLE></TD></TR></TBODY></TABLE></TD><!-- End Left Nav -->
<!-- Start Fade Header -->
  <TD background="images_app/navbasebg.jpg" colSpan=4 height=20>&nbsp;&nbsp;&nbsp;</TD><!--
End Fade Header --></TR>
<TR><!-- Start Divider Image -->
  <TD><IMG height="100%" src="images_app/basebg1.jpg" width=2></TD><!-- End Divider
Image -->
  <TD vAlign=top width=500 bgColor=#ffffff>
    <!-- ***** -->
    <!-- Start Center Column -->
<!-- Start Center Table -->

```

```

<TABLE borderColor="#000000" cellSpacing=0 cellPadding=5 border="0" width="350">
<TBODY>

      <TR>
      <Th vAlign=top align=left colspan=2><h3>Add new photograph</h3></th>
      <form method="POST" action="add-photo.php">
      </tr>

<TR>
  <Td vAlign=top align=left bgcolor="#cccccc" colspan=2><b>Description</b></td></tr>

      <tr>
      <td align="LEFT" valign="MIDDLE" width="150" nowrap>Name</td>
      <td align="LEFT" valign="MIDDLE" width="300" nowrap><input
type="Text" name="artifactname" value="" size="30"></td>
      </tr>
      <tr>
      <td align="LEFT" valign="TOP">Short Description</td>
      <td align="LEFT" valign="MIDDLE"><textarea name="shortdescription"
cols="25" rows="3" wrap="VIRTUAL"></textarea></td>
      </tr>
      <tr>
      <td align="LEFT" valign="TOP">Long Description</td>
      <td align="LEFT" valign="MIDDLE"><textarea name="longdescription"
cols="25" rows="8" wrap="VIRTUAL"></textarea></td>
      </tr>
      <tr>
      <td align="LEFT" valign="MIDDLE">Storage Location</td>
      <td align="LEFT" valign="MIDDLE"><input type="Text"
name="storagelocation" value="" size="30"></td>
      </tr>
      <tr>
      <td align="LEFT" valign="MIDDLE">Condition</td>
      <td align="LEFT" valign="MIDDLE"><input type="Text" name="condition"
value="" size="30"></td>
      </tr>
      <tr>
      <td align="LEFT" valign="MIDDLE">Image</td>
      <td align="LEFT" valign="MIDDLE"><input type="Text" name="image"
value="" size="20"> <input type="Browse" name="image" value="Browse"></td>
      </tr>
      <tr>
      <td align="LEFT" valign="MIDDLE">Thumbnail</td>
      <td align="LEFT" valign="MIDDLE"><input type="Text"
name="thumbnail" value="" size="20"> <input type="Browse" name="image"
value="Browse"></td>
      </tr>
      <tr>
      <td align="LEFT" valign="MIDDLE">For Release</td>
      <td align="LEFT" valign="MIDDLE"><input type="Checkbox"
name="forrelease" value=""></td>
      </tr>
      <tr>
      <td align="LEFT" valign="MIDDLE">OriginalFormat</td>
      <td align="LEFT" valign="MIDDLE">
      <select name="originalformat"><option value="">Select...</option>
      <option value="Digital">Digital</option>
      <option value="Slide">Slide</option>

```

```

                                <option value="35mm">35mm</option>
                                <option value="Analog">Analog</option></select></td>
</tr>
<tr>
<td align="LEFT" valign="MIDDLE">Location Taken</td>
<td align="LEFT" valign="MIDDLE"><input type="Text"
name="locationtaken" value="" size="30"></td>
</tr>

<tr>
<Td valign=top align=left bgcolor="#cccccc" colspan=2><b>Creator
Information</b></td></tr>

<tr>
<td align="LEFT" valign="MIDDLE" width="300" nowrap>
By previous creator</td>
<td align="LEFT" valign="MIDDLE" width="300" nowrap><select
name="creatorid"><option value="">Select name...</option>
<option value=""></option>
<option value=""></option>
<option value=""></option>
<option value=""></option></select></td>
</tr>
<tr>
<td valign="top" align="center" colspan="2"><hr size="1" width="100%"></td>
</tr>

<tr>
<td align="LEFT" valign="TOP" width="300" nowrap>
By new creator</td>
<td align="LEFT" valign="MIDDLE" width="150" nowrap>
First Name<br><input type="Text" name="creator_fname"
value="" size="30"><br>
Middle Initial<br> <input type="Text" name="creator_midinitial"
value="" size="2"><br>
Last Name<br> <input type="Text" name="creator_lname"
value="" size="10"><br>
Suffix<br> <input type="Text" name="creator_suffix" value=""
size="2"> <br>
Affiliation<br> <input type="Text" name="creator_affiliation"
value="" size="30"></td>
</tr>

<tr>
<td valign="top" align="center" colspan="2"><hr size="1" width="100%"></td>
</tr>
<tr>
<td align="LEFT" valign="MIDDLE">Creation Date</td>
<td align="LEFT" valign="MIDDLE"><input type="Text"
name="creationdate" value="" size="10"></td>
</tr>

<tr>
<td valign=top align=left bgcolor="#cccccc" colspan=2><b>Donor
Information</b></td></tr>

```

```

        <tr>
        <td align="LEFT" valign="MIDDLE" width="150" nowrap>
        From previous donor</td>
        <td align="LEFT" valign="MIDDLE" width="300" nowrap><select
name="donorid"><option value="">Select name...</option>
        <option value=""></option>
        <option value=""></option>
        <option value=""></option>
        <option value=""></option></select></td>
        </tr>
        <tr>
        <td valign="top" colspan="2"><hr size="1" width="100%"></td>
        </tr>
        <tr>
        <td align="LEFT" valign="TOP" width="150" nowrap>
        From new donor</td>
        <td align="LEFT" valign="TOP" width="150" nowrap>
        First Name<br><input type="Text" name="donor_fname"
value="" size="30"><br>
        Middle Initial<br> <input type="Text" name="donor_midinitial"
value="" size="2"><br>
        Last Name<br><input type="Text" name="donor_lname"
value="" size="30"><br>
        Suffix<br><input type="Text" name="donor_suffix" value=""
size="2">
        <br><br>
        Title<br><input type="Text" name="donor_title" value=""
size="30"><br>
        Group Name<br><input type="Text" name="donor_groupname"
value="" size="30"><br>
        Affiliation<br><input type="Text" name="donor_affiliation"
value="" size="30">
        <br><br>
        Street<br><input type="Text" name="donor_street" value=""
size="30"><br>
        City<br><input type="Text" name="donor_city" value=""
size="30"><br>
        State <select name="donor_state"><option
value="">Select...</option>
        <option value="CA">CA</option>
        <option value=""></option>
        <option value=""></option>
        <option value=""></option>
        </select><br>
        Zip<br> <input type="Text" name="donor_zip" value=""
size="10"><br>
        Phone Number<br><input type="Text" name="donor_phone"
value="" size="12"><br>
        </td>
        </tr>
        <tr>
        <td align="left" colspan="2" bgcolor="#cccccc"><b>Collection
Information</b></td></tr>

```

```

existing collection</td>
collection...</option>
<td align="LEFT" valign="MIDDLE" width="150" nowrap>From
<td align="LEFT" valign="MIDDLE" width="300" nowrap>
<select name="collectionid"><option value="">Select
<option value=""></option>
<option value=""></option>
<option value=""></option>
<option value=""></option>
</select></td>
</tr>
<tr>
<td valign="top" colspan="2"><hr size="1" width="100%"></td>
</tr>
<tr>
<td align="LEFT" valign="TOP" width="150" nowrap>
From new collection</td>
<td align="LEFT" valign="MIDDLE" width="150" nowrap>
Collection Name<br><input type="Text"
name="collection_name" value="" size="30">
</td>
</tr>
<tr>
<Td vAlign=top align=left bgcolor="#cccccc" colspan=2><b>Historian
Review</b></td></tr>
<tr>
nowrap>Historian</td>
<td align="LEFT" valign="MIDDLE" width="150"
<td align="LEFT" valign="MIDDLE" width="300" nowrap>
<select name="historianid"><option>Select name...</option>
<option value=""></option>
<option value=""></option>
<option value=""></option>
<option value=""></option>
</select></td>
</tr>
<tr>
<td align="LEFT" valign="TOP">Comments</td>
<td align="LEFT" valign="MIDDLE">
<textarea name="historian_comments" cols="25" rows="8"
wrap="VIRTUAL"></textarea></td>
</tr>
<tr>
clear=all><input type="Submit" value="Save and Add Metadata"></td>
</tr>
</form>
</TD></TR>
<TR>
<TD align=middle width="99%">
</TD></TR></TBODY></TABLE>

```

## SQL Query

Description: During development, we have used a database SQL query box to run queries against the database.

SQL:

Submit

Code:

```
<?
if ($HTTP_GET_VARS['Submit']) {

    @ $db = mysql_pconnect("localhost", "waypoint", "uscg");
    if (!$db) {
        echo "<p class='bodyText'>Error: Cound not connect to database.</p>";
        exit;
    }
    mysql_select_db ("waypoint");
    $query = stripslashes($HTTP_GET_VARS['query']);

    echo "<p>Query: ".$query."</p>";
    $result = mysql_query ($query);
    $num_results = mysql_num_rows($result);

    $newfile = "";

    echo "<pre>";

        for ($i=0; $i<$num_results; $i++) {
            $row = mysql_fetch_row($result);
            for ($j=0; $j<count($row); $j++) {
                $newfile = $newfile.stripslashes($row[$j]).",";
                echo ""'.stripslashes($row[$j]).'";
            }
            $newfile = $newfile."\\n\\n";
            echo "\\n";
        }

    #file_put_contents ( $HTTP_GET_VARS['filename'], $newfile);

    echo "</pre>";
```

```
echo "<p>Done!";

} else {
?>
<html>
<head>
<title>SQL Query</title>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
</head>

<body bgcolor="#FFFFFF" text="#000000">
<form name="form1" method="get" action="sql.php">
<p>
SQL:<br>
    <TEXTAREA NAME="query" ROWS="8" COLS="40"></TEXTAREA>
</p>
<!-- <p>
Filename: <INPUT TYPE="text" NAME="filename">
</p> -->
<p>
<input type="submit" name="Submit" value="Submit">
</p>
</form>
</body>
</html>
```

## PHP Load Page

Description: Lacking a user interface, we used a php load script to populate the facet association tables in the database using comma delimited text files.

### Code:

```
<?
//connect to waypoint database

$db = mysql_pconnect("localhost", "waypoint", "uscg");
if (!$db) {
    echo "<p class='bodyText'>Error: Could not connect to database.</p>";
    exit;
}
mysql_select_db ("waypoint");

$fcontents = file ('./location_associations.csv');
# expects the csv file to be in the same dir as this script

for($i=0; $i<sizeof($fcontents); $i++) {
    $line = trim($fcontents[$i]);
    $arr = explode(",", $line);
    #if your data is comma separated
    # instead of tab separated,
    # change the '\t' above to ','

    $sql = "insert into locationassociation values (" .
        implode("','", $arr) . ")";
    mysql_query($sql);
    echo $sql . "<br>\n";
    if(mysql_error()) {
        echo mysql_error() . "<br>\n";
    }
}
?>
```

## Edit Photograph Page

Description: Our edit artifact record screen contains the logic to return and edit values in the database.

To be developed: Form UI for data query and submission.

### Code:

```
<?php
//Set variables to hold the values entered into the form. Change name of form and field names
accordingly
/* commented these out until hooked up to form. using test variables below.
$editArtifactID = $_POST['artifactidtoedit'];

$name = $_POST['artifactname'];
$shortDescription = $_POST['shortdescription'];
$longDescription = $_POST['longdescription'];
$storage = $_POST['storagelocation.value'];
$condition = $_POST['condition'];
$image = $_POST['image'];
$thumbnail = $_POST['thumbnail'];
$forrelease = $_POST['forrelease']; //grab check box value (if checked -> value = '1')
$originalformat = $_POST['originalformat'];
$locationtaken = $_POST['locationtaken'];
//if form.option.value = default -> grab values from form.frstname.value, form.middleinitial.value,
form.lastname.value, form.suffix.value, form.affiliation,value
$firstname = $_POST['firstname'];
$middleinitial = $_POST['middleinitial'];
$lastname = $_POST['lastname'];
$suffix = $_POST['suffix'];
$affiliation = $_POST['affiliation'];
*/

//test variables
$editArtifactID = '222';

$name = 'testname';
$shortDescription = 'testshort';
$longDescription = 'testlong';
$storage = 'test';
$condition = 'good';
$image = 'http://groups.sims.berkeley.edu/waypoint/images/test.jpg';
$thumbnail = 'http://groups.sims.berkeley.edu/waypoint/thumbs/test.jpg';
$forrelease = '1'; //grab check box value (if checked -> value = '1')
$originalformat = '35mm';
$locationtaken = 'scotland';
//if form.option.value = default -> grab values from form.frstname.value, form.middleinitial.value,
form.lastname.value, form.suffix.value, form.affiliation,value
//set up little function below.
$firstname = 'testfirst';
$middleinitial = 'testmid';
$lastname = 'testlast';
$suffix = "";
$affiliation = "";
/*
```

```

if (!get_magic_quotes_gpc()) {
    $name = addslashes($name);
    $shortDescription = addslashes($shortDescription);
    $longDescription = addslashes($longDescription);
    $storage = addslashes($storage);
    $condition = addslashes($condition);
    $image = addslashes($image);
    $thumbnail = addslashes($thumbnail);
    $forrelease = addslashes($forrelease);
    $originalformat = addslashes($originalformat);
    $locationtaken = addslashes($locationtaken);
    $firstname = addslashes($firstname);
    $middleinitial = addslashes($middleinitial);
    $lastname = addslashes($lastname);
    $suffix = addslashes($suffix);
    $affiliation = addslashes($affiliation);
}
*/

//Create statements to insert into artifact, photograph, creator tables. Pass in variables defined
above.
//Need to get the autogenerated artifactID, but then need to retrieve it to populate the artifactID
fields in the photograph and creator tables.
//To edit a record, grab artifactID from form, use the artifactID query to find the record to edit and
populate the form fields with what the form returns
//Then when edits finished, set values for record.

//Connect to the DB and select Waypoint as the DB to use
$db = mysql_pconnect("localhost", "waypoint", "uscg");

if (!$db) {
    echo "<p class=\"bodyText\">Error: Cound not connect to database.</p>";
    exit;
}
mysql_select_db ("waypoint");

//sql statement to add the record to the artifact table.
$getRecordToEdit = "SELECT artifact.ArtifactID, ArtifactName, ShortDescription,
LongDescription, StorageLocation, Condition, Image, Thumbnail, ForRelease,
OriginalFormat, LocationTaken, FirstName, MiddleInitialName, LastName, SuffixName, Affiliation
from artifact, creator, photograph where artifact.ArtifactID = $editArtifactID and artifact.ArtifactID =
creator.ArtifactID and artifact.ArtifactID = photograph.ArtifactID";

$resultGetRecordToEdit = mysql_query($getRecordToEdit);

//set variables = to the results
if($row=mysql_fetch_array($resultGetRecordToEdit)){

if ($row[ArtifactID]) {
    $name = "$row[ArtifactID]";
}
else {
    $name = "n/a";
}
if($row[ShortDescription]) {
    $shortDescription = "$row[ShortDescription]";
}
}

```

```

else {
    $shortDescription = "n/a";
}
if($row[LongDescription]) {
    $longDescription = "$row[LongDescription]";
}
else {
    $longDescription = "n/a";
}
if($row[StorageLocation]) {
    $storage = "$row[StorageLocation]";
}
else {
    $storage = "n/a";
}
if($row[Condition]) {
    $condition = "$row[Condition]";
}
else {
    $condition = "n/a";
}
if($row[Image]) {
    $image = "$row[Image]";
}
else {
    $image = "n/a";
}
if($row[Thumbnail]) {
    $thumbnail = "$row[Thumbnail]";
}
else {
    $thumbnail = "n/a";
}
if ($row[ForRelease]) {
    $forrelease = "$row[ForRelease]"; //grab check box value (if checked -> value = '1')
}
else {
    $forrelease = "n/a";
}
if($row[OriginalFormat]) {
    $originalformat = "$row[OriginalFormat]";
}
else {
    $originalformat = "n/a";
}
if($row[LocationTaken]) {
    $locationtaken = "$row[LocationTaken]";
}
else {
    $locationtaken = "n/a";
}
//if form.option.value = default -> grab values from form.frstname.value, form.middleinitial.value,
form.lastname.value, form.suffix.value, form.affiliation,value
if($row[FirstName]) {
    $firstname = "$row[FirstName]";
}
else {

```

```

        $firstname = "n/a";
    }
    if($row[MiddleInitialName]) {
        $middleinitial = "$row[MiddleInitialName]";
    }
    else {
        $middleinitial = "n/a";
    }
    if($row[LastName]) {
        $lastname = "$row[LastName]";
    }
    else {
        $lastname = "n/a";
    }
    if ($row[SuffixName]) {
        $suffix = "$row[SuffixName]";
    }
    else {
        $suffix = "n/a";
    }
    if($row[Affiliation]) {
        $affiliation = "$row[Affiliation]";
    }
    else{
        $affiliation = "n/a";
    }
    echo "<html>";
    echo " <head>";
    echo "<title>Edit a Photo</title>";
    echo "</head>";
    echo " <body>";
    echo "<h1>Edit a Photo</h1>";

```

//if edit value = any value then show this form or if script called and put this form in another page  
//submit button on form will show call the add-photo.php script no matter what.

//question is whether this is a separate identical page that gets called if user hits edit button.

```

echo "<form action='edit-artifact.php' method='post'>";
echo " <table>";
echo "          <tr>";
echo "          <td colspan='2'>Description";
echo "          </td>";
echo "          </tr>";
echo "          <tr>";
echo "          <td>Name</td>";
echo "          <td><input type='text' name='artifactname' value=$name
maxlength='100' size='100'/></td>";
echo "          <tr>";
echo "          <tr>";
echo "          <td>Short Description</td>";
echo "          <td><input type='text' name='shortdescription'
value=$shortDescription maxlength='150' size='100'/></td>";
echo "          <tr>";
echo "          <tr>";
echo "          <td>Long Description</td>";
echo "          <td><input type='text' name='longdescription'
value=$longDescription maxlength='100' size='100'/></td>";
echo "          <tr>";

```

```

echo "                <tr>";
echo "                <td>Storage</td>";
echo "                <td><input type='text' name='storagelocation'
value=$storage maxlength='100' size='100'/></td>";
echo "                <tr>";
echo "                <tr>";
echo "                <td>Condition</td>";
echo "                <td><input type='text' name='condition' value=$condition
maxlength='100' size='100'/></td>";
echo "                <tr>";
echo "                <tr>";
echo "                <td>Image</td>";
echo "                <td><input type='text' name='image' value=$image
maxlength='100' size='100'/></td>";
echo "                <tr>";
echo "                <tr>";
echo "                <td>Thumbnail</td>";
echo "                <td><input type='text' name='thumbnail'
value=$thumbnail maxlength='100' size='100'/></td>";
echo "                <tr>";
echo "                <tr>";
echo "                <td>ForRelease</td>";
echo "                <td><input type='text' name='forrelease'
value=$forrelease maxlength='100' size='100'/></td>";
echo "                <tr>";
echo "                <tr>";
echo "                <td>Original Format</td>";
echo "                <td><input type='text' name='originalformat'
value=$originalformat maxlength='100' size='100'/></td>";
echo "                <tr>";
echo "                <tr>";
echo "                <td>Location Taken</td>";
echo "                <td><input type='text' name='locationtaken'
value=$locationtaken maxlength='100' size='100'/></td>";
echo "                <tr>";
echo "                <tr>";
echo "                <td colspan='2'>Creator Information";
echo "                </td>";
echo "                </tr>";
echo "                <tr>";
echo "                <td>First Name</td>";
echo "                <td><input type='text' name='firstname'
value=$firstname maxlength='100' size='100'/></td>";
echo "                <tr>";
echo "                <tr>";
echo "                <td>Middle Name/Initial</td>";
echo "                <td><input type='text' name='middleinitial'
value=$middleinitial maxlength='100' size='100'/></td>";
echo "                <tr>";
echo "                <tr>";
echo "                <td>Last Name</td>";
echo "                <td><input type='text' name='lastname' value=$lastname
maxlength='100' size='100'/></td>";
echo "                <tr>";
echo "                <tr>";
echo "                <td>Suffix</td>";

```

```

echo "                                <td><input type='text' name='suffix' value=$suffix
maxlength='100' size='100'/></td>";
echo "                                <tr>";
echo "                                <tr>";
echo "                                <td>Affiliation</td>";
echo "                                <td><input type='text' name='affiliation' value=$affiliation
maxlength='100' size='100'/></td>";
echo "                                <tr>";
echo "                                </table>";
echo "                                </form>";
echo " </body>";
echo "</html>";

```

```

}

```

```

//sql statement to add the record to the artifact table.

```

```

$addRecordToArtifact = "insert into artifact (ArtifactName, ShortDescription, LongDescription,
StorageLocation, Condition, Image, Thumbnail, ForRelease)
values (".$name.", ".$shortDescription.", ".$longDescription.", ".$storage.", ".$condition.",
".$image.", ".$thumbnail.", ".$forrelease.")";

```

```

//sql statement to query last record added and return artifactID -> set it equal to a variable

```

```

//need to figure out syntax of how to get variable to look like what is in DB

```

```

$getRecordJustAdded = "SELECT ArtifactID, ArtifactName from artifact where ArtifactID =
LAST_INSERT_ID()";

```

```

$resultArtifactAdded = mysql_query($addRecordToArtifact);

```

```

if ($resultArtifactAdded)

```

```

{

```

```

    echo $db->affected_rows."<p>artifact added.</p>";

```

```

    $resultsArtifactAdded = mysql_query($getRecordJustAdded);

```

```

    while ($resultset = mysql_fetch_array($resultsArtifactAdded)) {

```

```

        //echo $resultset[ArtifactID];

```

```

        $artifactID = $resultset[ArtifactID];

```

```

        echo $artifactID;

```

```

        //sql statement to add information to the photograph table.

```

```

        $addRecordToPhotograph = "insert into photograph (ArtifactID, OriginalFormat,
LocationTaken) values ($artifactID, ".$originalformat.", ".$locationtaken.")";

```

```

        $resultPhotoAdded = mysql_query($addRecordToPhotograph);

```

```

        if ($resultPhotoAdded) {

```

```

            echo $db->affected_rows."<p>photo added.</p>";

```

```

        }

```

```

        else {

```

```

            echo "<p>the photo was not added</p>";

```

```

        }

```

```

        //sql statement to add information to the creator table

```

```

        $addRecordToCreatorNew = "insert into creator (ArtifactID, FirstName,
MiddleInitialName, LastName, SuffixName, Affiliation)

```

```

values ($artifactID, ".$firstname.", ".$middleinitial.", ".$lastname.", ".$suffix.",
".$affiliation.")";

```

```

        $resultCreatorAdded = mysql_query($addRecordToCreatorNew);

```

```

        if ($resultCreatorAdded) {

```

```
        echo $db->affected_rows."<p>creator added.</p>";
    }
    else {
        echo "<p>the creator was not added</p>";
    }
}
}
else {
    echo "<p>the record was not added</p>";
}
mysql_close();

?>
```

### ***XIII. Continued Development***

In addition to the changes noted to individual screens in the forms section, additional usability testing will be completed once the interactive prototype is complete. With the desired features implemented, usability testing will resume with a minimum of 2-3 iterations of think aloud testing. Additionally, we recommend the following be considered for system development and study.

- Development of a fixed faceted browsing hierarchy which allows system administrators to describe the entire contents of the historical collection. This controlled vocabulary would then serve as the means for describing all of the collections' contents.
- Development of alternative interfaces for adding metadata to artifacts. Though the existing UI has the functionality to add data to the system, it is not intuitive and would likely result in incorrect data being added to the system.

### ***XIV. Design Recommendations***

Using results from our usability analysis, development of an interactive prototype should continue while taking into consideration the consistency, user control, and visibility violations found in the paper prototype heuristic evaluation.

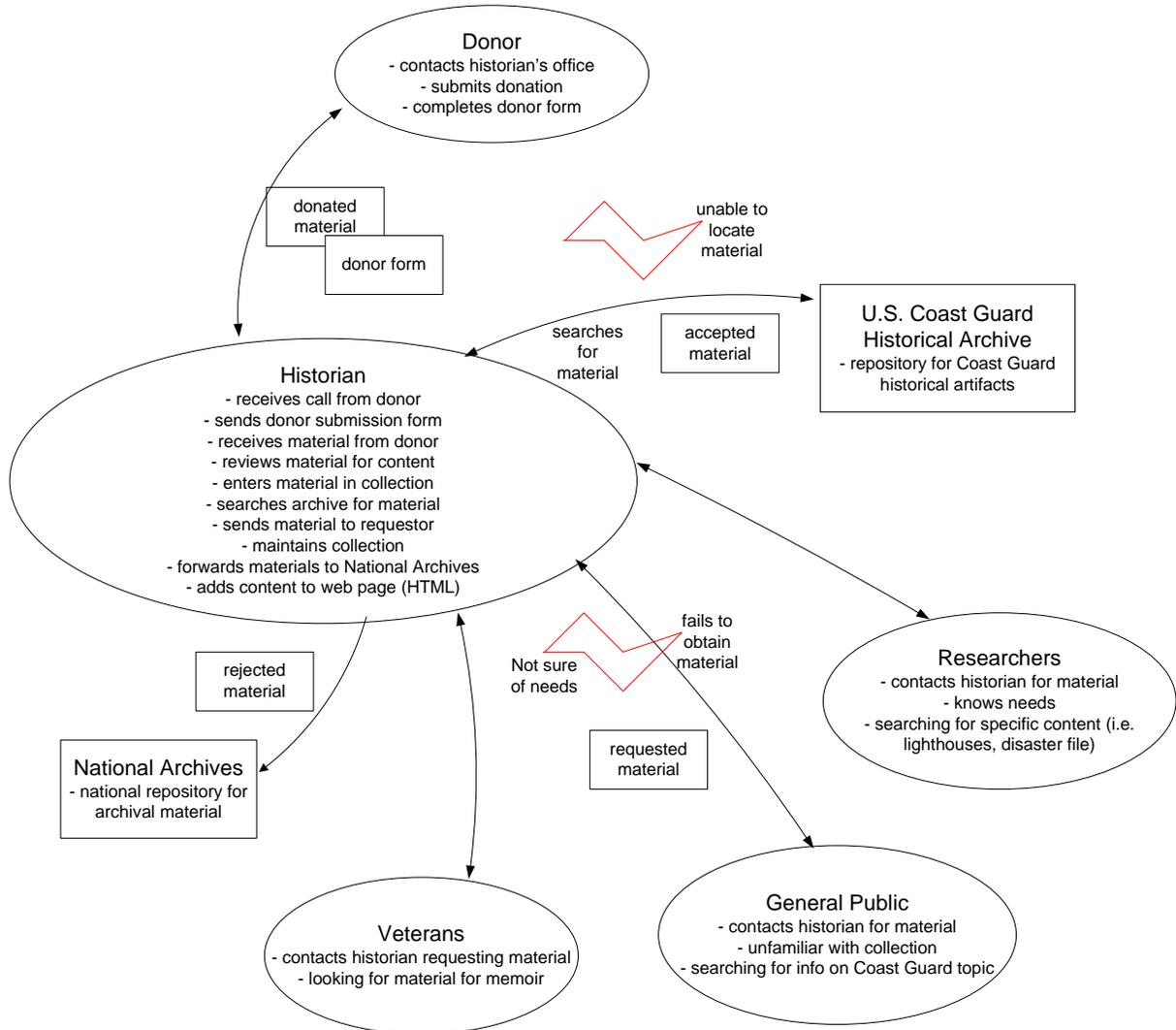
Additionally, user testing suggests that the design to help users find photographs "more like these" (in browsing endgame screens) should include a border around these choices to explain that "related topics" can be found by selecting one of the available links.

Lastly, the data administration interface needs work. Currently, adding a record to the collection appears intuitive to test subjects; however, adding descriptive metadata to the same file proved troublesome for everyone involved.

### ***XV. Conclusions***

Feedback received in initial interviews along with comments during user testing suggests a digital archive for U.S. Coast Guard history would benefit both internal and external users. With our limited testing, it is apparent that keyword search and general browsing techniques are relatively easy to understand. That said, the concept of a browsing hierarchy requires that system administrators create and understand an established hierarchy before content can be successfully added to the system for subsequent retrieval.

## Appendix A: Flow Model



*As evidenced in the flow model, the central entity in the process is the historian. The waypoints digital archive offers a solution for existing breakdowns in the flow by providing a mechanism for searching/browsing the collection of historical artifacts.*

## **Appendix B: Interview Questionnaire & Aggregate Results (Administration)**

(individual interviews available upon request)

Thank you for taking the time to complete this questionnaire. The information that you provide will be used by our team to develop an understanding of your work requirements, your goals, and the mission for your office. Additionally, your candid feedback will be useful in deciding whether development of a digital archive supports your goals. Please let us know if you have any concerns or if there are any questions that need clarification.

Of note, there is a brief series of questions at the end of the questionnaire geared towards collecting demographic information. Responses that you provide to these questions are confidential and will not be connected to any other information about you.

### **Office/Department**

1. How many people work in your office?

- 5
- Currently there are 5 employees who work in this office at HQ.
- Total of 12-13 if you count an Auxiliarist and two reservists. This includes the curator at the museum and area representatives.

2. What is the mission statement for your department/division?

- To preserve the institutional memory of the service.
- Preserve the institutional memory of the USCG.
- To collect, preserve, organize and present the institutional memory of the U.S. Coast Guard.

3. What are your department/divisions goals (i.e. promote Coast Guard history, increase knowledge of Coast Guard history)?

- No real goals listed out. Long term plans (1) digitize photograph & put most of it accessible to public, (2) larger national museum – in New London area, (3) start collecting more personal/private papers, etc. (oral histories, private papers, diaries). All development is dependent on people, money,
- Collect and preserve the artifacts and documents of historical importance. Promote knowledge of the USCG's history both among the service & the general public.
- To ensure the preservation of all relevant materials necessary to preserve and promote the history of the U.S. Coast Guard.

4. Do you have any goals specific to your historical collection?

- Getting in digital format. Getting unidentified photography input from the public (have public contribute to knowledge base).
- Ultimately transfer much of the documentation & photography, of an official nature to the National Archives. Collect oral histories and personal papers related to the service's history. Create electronic resources that can be used by researchers remotely via the USCG Historian's webpage & the Internet.
- At this point we are focused on documenting the collection itself and to develop finding aids for all the various types of material, whether it is documentary or visual, and to continue to collect historical material.

5. Who funds your department/division? Are there any measurements that are used to determine the amount of funding you receive (i.e. the number of customers you assist in a given time frame)?

- G-IPA. Pretty much standard amount – tied to what we got the year before
- U.S. Coast Guard Public Affairs (G-IPA)
- Our office is a subdivision of Coast Guard Governmental and Public Affairs Directorate (G-I), and our direct supervisor is the head of Coast Guard Public Affairs (G-IPA). G-IPA approves our budget request and G-I approves the entire department's budget. Our workload in general is taken into consideration but it never seems to matter as we are the "junior" partner in G-I and always get the short end of the stick. Funding levels have remained stagnant (we ask for the moon hoping for a table scrap) for the past 10 years or so.

## **Workload**

6. What does your current job entail?

- Coordinating admin functions, help researchers, steer people to other agencies, collections.
- Reorganizing and managing the archival collection. Managing photo duplication services. Responding to public inquiries. Providing material for inclusion on the website. Generating historical product for use in promoting the history of the USCG.
- My primary duties include supervising the Historian's Office website, researching and writing historical materials for publication, responding to requests from internal and external sources, accepting and sorting materials donated to the office and running the office in the absence of the Chief Historian.

7. What tasks do you spend most of your time doing?

- Admin tasks (answering e-mails, directing program)
- Currently, it is the reorganization of our collections

- Managing the Historian's Office website development and answering public/USCG/gov't inquiries.
8. What are the most important things you do?
- Most fun thing to do is write. If I had time, writing is of course valuable. Collecting history (preserving is most important). If you don't capture it, no one can write about it.
  - Work toward the improvement of the historical collections.
  - At this time it is to preserve and promote USCG history by getting veterans to write their memoirs or conduct oral histories and then edit them for publication to the USCG Historian's Office website—saving the "history" of the USCG's World War II veterans.
9. What tools do you use to do your job?
- Phones, computer, some research online (wonderful research tool), locating things is sometimes difficult, use internet to answer questions that can't be answered in our collection. Other historical societies (Miss river society)
  - Computer. Primary & secondary source material. Archival appliances
  - Email, telephone, MS Frontpage, Word, and Adobe Photoshop.

## **Collection**

10. How often are materials added to the collection of artifacts?
- Continually, but on no set schedule
  - 1 or two items/collections per week.
11. Describe a recent example of how materials were added to the collection. Be as specific as possible - the details help identify important parts of your process.
- In last week, had veteran call & had been on a couple of CG units. Had material & sent it to us. Generally, donor form filled out (if only a few PA photos, maybe not). If it's a lot of personal photograph, always get a form – for personal papers & artifacts, always. Private stuff a little different – go back to person & let them know what we're going to do with materials. Send back donor form w/ info on materials we take. Goes into special collections area.
  - The office received boxes of documents & photographs from the different district and marine safety offices. These materials have to be assessed for historical value then accessed into the collection
  - Another office brought down four large boxes of office material that they were going to throw out; gave it to us instead. I went through it and added it to our aviation subject files.

12. How much of your overall workload currently goes towards managing the collection of historical artifacts?

- Probably 30 percent of time (overseeing everything). Other people on staff (curators, most of time); area (much less).
- It is a significant part of my job, but daily performance tends to change depending on a number of factors
- 30-35 percent

13. Is the collection organized in any particular way (i.e. according to topic, library index)?

- Basically it is still the way I inherited it. Done a lot more with special collections. Created initially didn't know a lot about CG history, we have taken system & made it more sophisticated. For cutters, one box would have all the cutter stuff (3 Escanabas in one box). Taking & separating files. Organized according to how we get it; topically oriented.
- The collection is organized by subject and each major category has further sub-divisions which allows for better organization and retrieval of resources for and by researchers.
- Subject files (usually by mission, Cutter files, aircraft-type files, disaster files, boat files, station files and a library that is organized on a subject basis (again, usually by mission: ATON, marine safety, etc.).

14. How would your collection be organized in an ideal world?

- Keep like it is now b/c it's relatively easy to find stuff in one file, look in two different files.
- Electronically, with detailed finding aids.
- As it stands now but with decent finding aids for everything.

15. Would it be beneficial to track the exact location of where a photograph/artifact is (e.g. the image is in cabinet 3, section 4, box 17)?

- Problem with that is that since files are constantly growing, it becomes difficult to maintain. Become slave to a system you've created. In special collections, yes.
- Given the size of our collection it would not be cost effective to be so detailed in noting the physical location to such a degree
- Yes, in an ideal world.

16. How might a digital archive contribute to your division/department goals?

- Helps promote history of the service. The more available it is, the more likely they are to write about it – on worldwide basis; anyone, anywhere can access it @ anytime.

- It would go a long way toward allowing us to spend less time on direct response to public inquiries, as researchers would be able to access and use the collection remotely
- It would definitely increase our accessibility and therefore our exposure once the digital archive was on-line.

17. Do you have any concerns about having the collection made available via the Internet?

- Not really, its all in public domain. There are a few files that we can't put online (classified files). Cutter nicknames (named with "salty" names) might not be for general consumption. In Vietnam file, there are pictures of dead people (not something you'd put on web site); picture of airplane crash w/ person deceased. Due to graphic nature, they may not be appropriate.
- Unauthorized duplication of our collection by unscrupulous dealers who would then sell these materials to individuals who are ignorant of the ability to get it free directly from our office
- No.

18. Are there any additional thoughts you have on the possibility of digitizing the Coast Guard's collection of historical artifacts?

- Not can I can think of at this point
- Until the project is adequately funded and staffed, it is not likely to proceed in any significant way
- Resources, resource.

### **Image Searching**

19. How much of your time is dedicated to searching for images (photographs)?

- Depends on file. If file has a lot of stuff in it – more complex. Finding is relatively easy. If you really need it, you'll have to come in & find it yourself (folks sometimes looking for specific photograph);
- In an average week I will spend 2-3 hours looking for images.
- Depends on what project I am working on, for hurricane response I spent about four hours during one workday.

Please describe a recent example of how you searched for a photograph in your collection.

- Looking for picture of presidents on CGC Eagle. I don't do too much of it; other office personnel do.
- I generally receive requests directly from the public either by phone, mail, or email. I then go to our collection and look through the appropriate files for the

relevant images requested. I then Xerox the images, number and log them, then forward them to the requestor along with information on how to obtain photo duplicates from our vendor. We do not create digital images upon request as we do not have the staffing to do so on the scale that would likely be required, were that service available

- Open an archive box and manually look through each photo.

20. If the collection were available online, would you use it to search for images on particular topics?

- Probably so. Pull up thumbnails of photos; familiar with majority of photos in collection. Enable patron to do the same thing.
- Yes, I often use our website to locate information for response to inquiries and to perform other tasks
- Yes.

## Customers

21. Who typically accesses the collection? What do customers generally look for (i.e. photographs on specific events, people, vessels)?

- Veterans, genealogists, historians, school kids, lawyers generally have specific things they're looking for. School kids looking for lighthouses. Tell me something about my grandfather. Veterans served on ships looking for photos of where they were.
- The customers are generally looking for images of cutters and lighthouses. These are generally veterans, collectors, or authors.
- In about this order: Lighthouse researchers-authors (usually associated with a lighthouse preservation group) / persons interested in cutters (USCG veterans and their families) / persons interested in subject files/disaster files (documentarians—television researchers).

22. Do you track who your customers are? If yes, how.

- Used to by web site counter, so we're not capable of doing that. It would be nice to know if it were available. Seems to be meaningless to our parent entity.
- Yes, by a log.
- No.

Is there anything about your customers that would be useful to track, but is not currently?

- More useful is knowing what kinds of questions we're getting; helps shapes goals (website, etc.)
- Not particularly

- Tough call, there may be privacy issues.

23. Are there any customers who have recently used the collection who might be interested in providing feedback on their experience?

- I wouldn't know.
- None of which I am aware.
- Yes, particularly the lighthouse enthusiast/research crowd.

## Reports

24. Are there any reports that you currently generate about the collection

- Not really. Donor info is for our records & for them to know what's been added to our collection (to put in public domain for use).
- No.
- No, not about the collection.

25. Are there any reports that you would like to develop?

- Not really.
- No.
- What within the collection gets used and by how much.

## Demographics

This information will be kept confidential, and will not be connected to any personal identification.

26. Your age range:

- 0-18
- 19-30
- 31-40 (one selection)
- 41-50 (two selections)
- 51-60
- 61-70
- Over 71

27. Your education level (choose highest level completed):

- High school
- College (2 year)
- College (4 year)
- Advanced degree (three selections)

28. On a scale of 1 to 5, please rate your level of computer experience:

- 1 (No experience)
- 2
- 3 (Average)
- 4 (three selections)
- 5 (Expert)

29. On a scale of 1 to 5, please rate how often you use the Internet:

- 1 (Never)
- 2
- 3 (Daily) (one selection)
- 4
- 5 (Numerous times daily) (two selections)

## **Appendix C: Interview Questionnaire & Results – Browsing**

(individual interviews available upon request)

Thank you for taking the time to complete this questionnaire. The information that you provide will be used by our team to develop an understanding of how you search for photographs. Additionally, your candid feedback will be useful in deciding whether development of a digital archive of U.S. Coast Guard historical artifacts supports your needs. Please let us know if you have any concerns or if there are any questions that need clarification.

Of note, there is a brief series of questions at the end of the questionnaire geared towards collecting demographic information. Responses that you provide to these questions are confidential and will not be connected to any other information about you.

### **Image Searching**

1. Have you ever searched the Internet for a particular image?

If so, please explain in detail how you did so (i.e. what search engine did you use, what criteria did you use in your query, how did you choose the image from the results)?

- Yes. "Google" is the search engine of choice. Usually search by vessel name, or class. Sometimes by length (particularly since the Coast Guard regularly identifies its vessels by type (WHEC, WLB, etc) and length (i.e. WHEC 378 or WAGL 180). Sometimes, I will go to specific known websites to cull out info (and pix). Sites like USCG.mil, HAZEGRAY.org, or the Naval Historical Center site. As Historical Archivist, I am often asked to research the histories of past maritime training ships, and various ships of the maritime industry.
- Haven't needed to do a lot of image searching. I would probably take a shot at the image search engines found at Fagan Finder <http://www.faganfinder.com/img/> or Directory of Image Search Engines [http://www.search-engine-index.co.uk/Images\\_Search/](http://www.search-engine-index.co.uk/Images_Search/). As for criteria, I would like to be able to search specific descriptors (actual name of ship, person, place, etc.) and be able to browse classifications of images. Keyword searching within the classifications would also be useful.

Why were you searching for the image (i.e. what were you going to do with it)?

- I am a Coast Guard vessel historian, and a retired Coast Guard officer. I collect all things dealing with the history of vessels of the Coast Guard (including the predecessors: Revenue Cutter Service, Lighthouse Service, and Life-Saving Service). I have over 1700 named vessels in my files. I have written numerous articles about Coast Guard Cutters, and an award winning book on the U.S. Lighthouse Service Tenders, which is the only book

of its genre in the United States, that includes many images of the old Tenders, from numerous sources.

2. Were there any obstacles that you had to contend with while searching for the image?

- Improper or incomplete identification of information or imagery, which hinders the ability to do a proper search. When that occurs (which is often), it gets back to basic grunt work, browsing for information. Historical research is just that. One must know the subject to be successful in searching or browsing for information. If you are not familiar enough with your subject when you begin, you will most likely get frustrated on not finding specifics, or not recognize tidbits of info (that put together with other bits of data) that help put together the information you might be seeking.

### **Interface Design**

3. When searching for images in a known collection, how do you prefer to do so (i.e browsing through images, keyword search)?

- Yes, both.
- Both. Often keyword searches are ineffective because of the limitations of the database file info used to link to photos. Detective work and research is still primarily mode, requiring hard and boring search of files.

4. What information about a photograph do you find useful?

- Two or more words that describe it. Date, time, place, event, ...
- Photographs, particularly when properly labeled and dated (which is often not the case), can not only provide details about a vessel, but also show what changes might have occurred over the years. The most vivid modern example is comparing the Coast Guard's 210-foot "Reliance" class cutters when built in the late 1960's with a more recent photo after their major FRAM in the 1990's (which added the stacks and changed the flight decks). Or even in a more subtle mode, compare the USCGC DILIGENCE builder's photo to that of the same ship in 1969. (most notable is the change-over to the CG Racing Stripe from the old "W" hull number). This becomes even more profound when comparing photos of old ships in the late 1800's and early 1900's.

5. Would you be interested in downloading images for reproduction if they were available online?

- I can image that many people would be interested in reproduction.
- Yes.

## Coast Guard Collection

6. Have you ever searched for a particular image related to Coast Guard history? If yes, how did you go about your search? Were you successful?

- No
- Yes. Yes. Yes. However, the Coast Guard Historian's Office is limited in manpower and resources to have all the info they should have. And when they do, they often have to file it under a broad category instead of under specific groupings.

7. Did you know that the U.S. Coast Guard historian's office in maintains a paper-based collection of historical artifacts (i.e. photographs, case files)?

- Yes
- Yes

8. Have you ever used the Coast Guard historian's office to locate an artifact (i.e. photograph or other material)?

- No
- Yes

If so, please provide describe the most recent example of how you did so.  
See paragraph 1 above.

9. If the entire collection of Coast Guard historical artifacts were available online, would you use it to search for information on Coast Guard history?

- We have many historians visit our library and some do research what information we have on the Coast Guard. Expanding such capabilities would be tremendous for us and many other maritime and history librarians. Student in our Coast Guard Reserve program might be interested as well.
- I don't think there is enough computer space available, plus the website with this info would be so loaded down that it would not necessarily be effective.

10. What type of materials do you believe you would search for?

- Historians using our library would be interested in virtually any CG records and images. You never know what direction they may be going in.
- For information within the CG Historian's Office, I am searching for vessel photos, specifications, homeports (past and present), specific actions and citations, major modifications, dates of events (funded, keel laid, launched, commissioned, decommissioned, fate, etc.). For proposed vessels, time schedules, builders, proposed names and hull numbers, drawings.

## Searching

11. If you were looking for something in particular, would searching for specific words (i.e. Coast Guard Cutter Eagle, Hurricane Andrew) be useful?

- Yes. Very important.
- See paragraph 10 above.

12. If you weren't familiar with the collection, would browsing via topic be useful (i.e. people, events, missions)?

- Yes. Very important.
- Yes.

13. Are there any additional thoughts you have regarding digitization of the Coast Guard's historical collection?

- Get ahold of Greg Notess for a little preliminary advice. He authors the Search Engine Showdown, an important site for search engine reviews and information. If your engine got a good review from him, it would likely be a success.
- See paragraph 9 above.

14. How useful do you think an online system could be?

- For maritime and military historians, it would be a boon to have such a system. Former enlisted and fans of the coast guard would also really find it to be a key resource.
- See paragraphs 2 and 6 above. Manpower to maintain this would be huge.

Would you use it? Please explain.

- Yes, probably in assistance to our library users.

## **Demographics**

15. Your age range:

- 0-18
- 19-30
- 31-40
- 41-50 (one response)
- 51-60
- 61-70 (one response)
- Over 71

16. Your education level (choose highest level completed):

- High school
- College (2 year)
- College (4 year) (one response)
- Advanced degree (one response)

17. On a scale of 1 to 5, please rate your level of computer experience:

- 1 (No experience)
- 2
- 3 (Average) – (one response)
- 4 (one response)
- 5 (Expert)

18. On a scale of 1 to 5, please rate how often you use the Internet:

- 1 (Never)
- 2
- 3 (Daily)
- 4 - (one response)
- 5 (Numerous times daily) (one response)

## **Appendix D: Statement of Informed Consent**

### STATEMENT OF INFORMED CONSENT

A group of graduate students in the School of Information Management and Systems at UC Berkeley are conducting studies to assess the effectiveness of an interface being developed to view the contents of the U.S. Coast Guard's historical archive.

If you volunteer to participate in this study, you will be asked to use one or more prototypes to evaluate the functionality of the interface, and to answer some questions. The questions will be asked orally throughout an interview. Your interactions with the system may be recorded on video and/or with still photographs.

There are no benefits to you for participating, other than what may be an educational experience. We hope that the research will benefit development by improving upon the interface which has been developed. This research poses no risks to you other than those normally encountered in daily life. All of the information from your session will be kept confidential and be referred to by an ID number. The correspondence between your name and ID number will be kept confidential and treated with the same care as our own confidential information. We will not name you if and when we discuss your behavior in research publications. After the research is completed, we may save the notes for future use by ourselves or others. However, this same confidentiality guarantees given here will apply to future storage and use of the materials.

Your participation in this research is voluntary, and you are free to refuse to participate or quit the experiment at any time. Whether or not you chose to participate will have no bearing in relation to your standing in any department of UC Berkeley. If you have questions about the research, you may contact Professor Ray Larson at 510-642-6046, or by electronic mail [ray@sims.berkeley.edu](mailto:ray@sims.berkeley.edu). You may keep a copy of this form for reference.

If you accept these terms, please write your initials and the date here:

---

**Appendix E: Records Release Consent Form**

## Records Release Consent Form

As part of a research project on a user interface for a digital archive, we are making a photographic and/or video record of the tasks you perform with one or more interfaces. We would like you to indicate below what uses of these records you are willing to consent to. This is completely up to you. We will only use the records in ways that you agree to. In any use of these records, your name will not be identified.

Please initial all those statements that you agree to.

The records can be studied by the research team for use in research reports.

\_\_\_\_\_

The records can be shown to subjects in other experiments. \_\_\_\_\_

The records can be used in scientific publications. \_\_\_\_\_

The records can be shown at meetings of scientists interested in the study of human-computer interaction and information access. \_\_\_\_\_

The records can be shown in public presentations to nonscientific groups. \_\_\_\_\_

I have read the description and give my consent for the use of the records as indicated above.

Name (printed): \_\_\_\_\_

Signature: \_\_\_\_\_ Date \_\_\_\_\_

# **The Waypoints Project**

## **Usability Study**

### **User Testing Scenarios**

#### **Greeter Instructions**

- ❖ Have the participant sit down and get comfortable
- ❖ Offer water or another beverage
- ❖ Introduce other people in the room

**Thank you for agreeing to participate in our analysis of a user interface designed to browse digital document collections. Before we get started, I am going to provide some background information about the interface (and collection) we'll be evaluating.**

**The U.S. Coast Guard maintains a collection of historical materials from their headquarters in Washington, D.C. The collection is quite diverse and contains artifacts such as physical objects (e.g. lighthouse lenses, artistic works), case records (e.g. the Titanic sinking), and photographic images. With the exception of physical objects, materials are typically stored in large filing cabinets and organized according to topic. In order to access the artifacts, a person must submit a written request or alternatively come to the Washington, D.C. office to search through the collection.**

**Unfortunately, much of the collection remains idle either because people do not know what is available or they are in a position where they cannot manually search through the materials.**

**With this in mind, a team of information management students began work to develop a web-based digital archive that broadens availability of the collection to those who were previously unable to access the materials. Through an interface that allows users to see what is in the collection, the team hopes to provide an experience similar to what one might experience**

walking through a museum or browsing through books in the library. This interface is what we will be evaluating today.

**“Before we can start, our team must obtain permission to use your feedback in our analysis. This requires that we review a consent form and ask for your signature. The form simply states that you are agreeing to participate in our analysis and understand that our observations may be recorded and used in our analysis. All of our observations are confidential and will not be assigned to you by name. If you sign the consent form, we will begin. If you’re not comfortable signing the form, it is okay to change your mind about participating. If you sign the form and later change your mind at any point during our session, just say so and we can stop.”**

- ❖ Have subject fill out informed consent & records release forms ...

### Facilitator Instructions

**“Let’s begin ... we’ve brought you here so that you can provide us critical feedback on the user interface that we’ve been asked to critique. We have a script that we’ll be using to guide what we ask you to do. Imagine you are at home, work, or a place where you would likely use a computer. For purposes of our tests, assume that the paper prototype that you are about to look at is the screen of a computer. This computer has Internet access and you have located the Coast Guard historian’s home page through the use of your favorite search engine.**

**We’ll give you specific situations and ask you to try to accomplish certain tasks using the interface. Though you are encouraged to explore the interface, functionality is limited to those the parts we are evaluating. It is common to feel confused or lost during the testing. Any problems you have are a reflection of the design, not your abilities. What would be most helpful to us is if you would think aloud while you are completing a task – the information that you provide when you think aloud is really important to us and often provides critical feedback that will help improve the design.**

**For example, if we ask you to find something, and you don't see it - you could say, 'Geez I have no idea where it is,' or 'hmm I think it should be there, but I don't see it.' Additionally, you are encouraged to provide positive feedback when something is easy to use or makes sense.**

## Introducing the prototype

- ❖ Bring out the prototype default home page
- ❖ Give the subject a minute to get acquainted with the way it looks
- ❖ Point out that whoever is the “computer” for the day will be updating the display to react to actions

## Cue Cards

### ***Content Review***

#### **Scenario: Search collection for specific content (1.a)**

Settings: Default home

- ❖ “After seeing a show on the history channel about U.S. Coast Guard lighthouse keeper Katherine Walker, you decide to see if there are any photographs of her in the digital archive. Search the collection for her name and see what is available.”

#### **Scenario: Begin new browse (1.b)**

Settings: From previous task end position

- ❖ “You’ve decided that the results are not what you’re looking for and want to start over. Use the interface to begin again.”

#### **Scenario: Locate a specific artifact within a broad topic (1.c)**

Settings: Default home

- ❖ “As a history buff doing research for a friend, you are looking for photographs that depict U.S. Coast Guard historic figures. Browse the archive to see what materials are available. ”

#### **Scenario: Sort search results (1.d)**

Settings: Midgame results screen

- ❖ “You’re not sure how the information is arranged, so you want to sort the results by year. Sort the results by year.”

#### **Scenario: View descriptive information (1.e)**

Settings: Midgame results

- ❖ **“You see a photograph of Alex Haley and would like to know more. Locate the image and look at the descriptive information for it.”**

### **Scenario: Submit feedback on artifact (1.f)**

Settings: Endgame image

- ❖ **“You note a typographical error in the description and want to let someone know so they can correct it. Send an e-mail to the historian so that they can identify the photograph and correct the information.”**

### **Scenario: View large image (1.g)**

- ❖ **“Overall, you like what you see and decide that you want to save a copy of the photograph. Save a copy of the image to your computer.”**

### **Scenario: View images similar to current selection (1.h)**

Settings: Endgame

- ❖ **“Now that you’ve saved a copy of the file, you’re interested in seeing more. You like the image that you are viewing and want to look at only photographs taken 1921. Use the interface to browse images taken of the U.S. Coast Guard.”**

## ***Administrative Functionality***

### **Scenario: Log into system (2.a)**

“Changing hats from a system user to system administrator, we are now going to look at some basic administrative functionality. Though you likely aren’t an expert in Coast Guard history, we’ll provide information to complete each task. Assume you are a historian working for the Coast Guard. You have some administrative tasks that you need to complete.”

- ❖ **“You begin your workday focused on managing the digital archive. Log into the system.”**

### **Scenario: Search for and update record (2.b)**

- ❖ **“You received an e-mail from a concerned customer that one of the artifacts in the archive contains a typographical error. The e-mail included the name of the artifact, its ID number, and a note about the error. Locate the file and edit the record.”**

(Note – Provide scenario e-mail.)

### **Scenario: Delete record from system (2.c)**

- ❖ **“Your boss tells you that there are two instances of the same “Joshua James” photograph in the digital archive. Though he looked at the files to make sure they were exactly the same, he wants you to delete one of the two duplicates. He’s reassured you that the records are the same, so you can delete either one. Locate one of the duplicates using the information he’s provided and delete one.**

(Note – Provide copy of note listing duplicates)

### **Scenario: Add record to system (2.d)**

- ❖ **“Having reviewed a box of photographs that were donated to the collection, you decide that only one should be added to the archive. Add the material to the collection using the information provided.”**

(Note – Provide record for entry.)

(Note – If initial entry is complete, continue to metadata input.)

### **Scenario: Add metadata to record (2.e)**

- ❖ **“Once basic record information is added to the system, additional descriptive data (i.e. metadata) must be added so that users browsing the system can easily locate the information they’re looking for. The data is organized in hierarchies so that users can begin a search in a broad field and then narrow their search by selecting categories that are narrower. Input the metadata about your record into the system.**

(Note – Provide metadata list.)

### **Scenario: Tag for subsequent review (2.f)**

- ❖ **“You’re not quite complete with your final record review, but your carpool will be leaving in 5 minutes. You decide to mark the record you’re working on for future review. Highlight the file as needing review so that you can locate it when begin work tomorrow.”**

**Scenario 2.b.**

**-----Original Message-----**

**From: Smyth, Brett <BSmyth@history.net>  
To: Historian <historian@coastguard.mil>  
Sent: Thu, 28 Oct 2005  
Subject: Artifact ID 4759 Typographical Error**

**Hello shipmate! While browsing though your collection, I noticed that the picture you have of Joshua James (artifact 4749) has his name misspelled in the description. I thought I would let you know so that you could correct it. I really like the material you have online & hope this helps!**

**Best of luck!**

**Brett Smyth  
U.S.N. Retired**

**Scenario 2.c.**

-----Original Message-----

**From:** Jones, Tom <TJones@coastguard.mil >

**To:** Ranier, Stan <SRanier@coastguard.mil >

**Sent:** Thu, 29 Oct 2005

**Subject:** Duplicates in collection

Hey Stan,

I noticed that we have two copies of the same Joshua James photograph in the digital collection. When you have time, can you take a look & delete one of them. From what I see, they're the same exact file. The artifact numbers are 4749 and 4836.

Thanks in advance.

Tom

Scenario 2.d.



# U.S. Coast Guard

## Photo

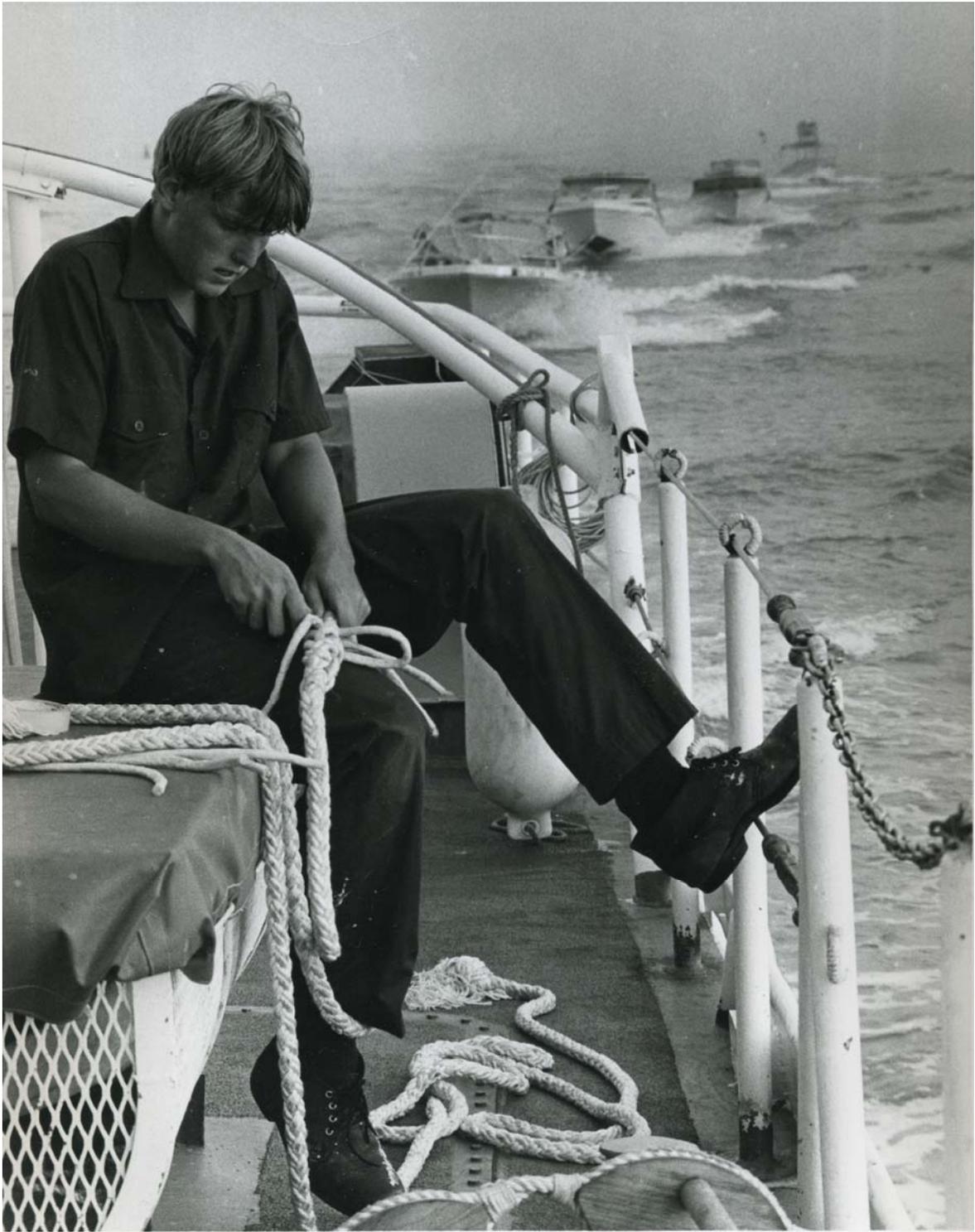
Date: Oct 15, 1980

Contact: 7<sup>th</sup> District  
Public Affairs

### **FREEDOM FLOTILLA – MAY 21 TO SEPTEMBER 26 1980**

**MIAMI** – Coastguardsmen offer navigational assistance to Cuban refugee boats returning from Mariel. The Coast Guard and Navy assisted 1,409 vessels during the Cuban Boatlift.

(U.S. Coast Guard Photo)



**Scenario 2.e.**

**Based on a review by one of the U.S. Coast Guard's historians, the following metadata should be added to the file.**

<b><u>Level 1</u></b>	<b><u>Level 2</u></b>	<b><u>Level 3</u></b>	<b><u>Level 4</u></b>	<b><u>Level</u></b>
<b><u>5</u></b>				
Thing	Boat			
Organization	USCG			
Event	Law Enforcement	Marinel Boatlift		
Year	1980-1989	1980		

## Appendix G: Usability Test Notes

### User Testing

All of our users had some experience using computers. The first participant knew a little about the Coast Guard's organizational structure as he spent several years in the Marine Corps (1988-1994). The second participant was a retired mortgage company administrative clerk and knew little of the Coast Guard's organizational structure or history. The third participant was an active duty Coastguardsman that knew a great deal about both the organization and its history.

User #	Gender	Occupation	Organization Familiarity
1	Male	Telecommunications Contractor	Some
2	Female	Retired	None
3	Male	Active Duty Military	Extensive

Each user performed several tasks using the paper prototype. Testing began with browsing/search tasks, then transitioned to administrative (data entry) tasks.

### User Comments

Our observations user comments that we thought were particularly interesting or representative are noted below. Individual test results are available upon request.

#### User #1

- Easily found search information for majority of tasks.
- Used keyword search as primary method for locating materials with known name, date, etc. If unable to find results in initial search, used "refine" capability to try again.
- Though very familiar with keyword searching, had difficulty understanding what the left-hand menus meant (it wasn't clear that they included metadata for result set).
- Confused by some abbreviations in UI. Said, "I think this should be U.S. something, but I'm not sure about the rest."
- Chose option for "historic documents" which wasn't functional for trying to locate name of lightkeeper. Took about 30 seconds to come up with alternate solution to browse or use keyword search.
- Sort-by function not readily visible during task 1.d. After testing, was shown sorting tool & remarked "I should have seen it there, but didn't. There's a lot of information to digest."
- E-mail to historian feature understood well. Thought "that's nice to have."

- Had difficulty understanding the right-hand menu options in the endgame screens (i.e. selectable 1921). Thought that the number had something to do with the current content on screen.
- Initial admin (record entry) easily understood. Adding metadata proved extremely difficult and task was not completed.
- Suggested deletion task have an “are you sure” prompt before actually deleting file.
- During debrief said that he would be interested in exploring more once the system was online.

### User #2

- Had little difficulty with tasks 1.a. through 1.c.
- When asked to sort, had to look at screen for several seconds before locating “sort by” tool.
- Did not understand right-hand metadata values in endgame screen. Looked at description & remarked “this is nice.” But, thought out loud with the metadata “I understand some of these, but don’t know what these others are for (referring to selectable categories for broader search).
- For task 1.e. initiated new search rather than using links in endgame screen to link to refined result set.
- Record entry easily understood as was duplicate record deletion.
- Had extremely difficult time understanding how to add metadata though in debrief commented “if I did it once, I don’t think I’d have trouble if I knew the different categories to choose from.”
- Thought that using system “might be fun to look at” once if it was available online.

### User #3

- Had no difficulty with “content review tasks” 1.a. through 1.g.
- Was confused by metadata links on endgame screen (task 1.h.), but chose one anyway during testing. Upon seeing new result set thought “that is pretty nice since I didn’t have to start a new search.
- Understood abbreviations well, but thought that “some folks might have a hard time understanding these if they don’t know the Coast Guard.”
- Easily added record to database, but wasn’t sure on metadata entry. With testing script, was able to follow directions to add simple data. But, body language and comments that “I hope this is right” suggests this unfamiliar area was difficult to understand.

## **Appendix H: Nielsen's 10 Heuristics for User Interface Design**<sup>5</sup>

### *Visibility of system status*

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

### *Match between system and the real world*

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

### *User control and freedom*

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

### *Consistency and standards*

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

### *Error prevention*

Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

### *Recognition rather than recall*

Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

### *Flexibility and efficiency of use*

Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

### *Aesthetic and minimalist design*

Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

### *Help users recognize, diagnose, and recover from errors*

Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

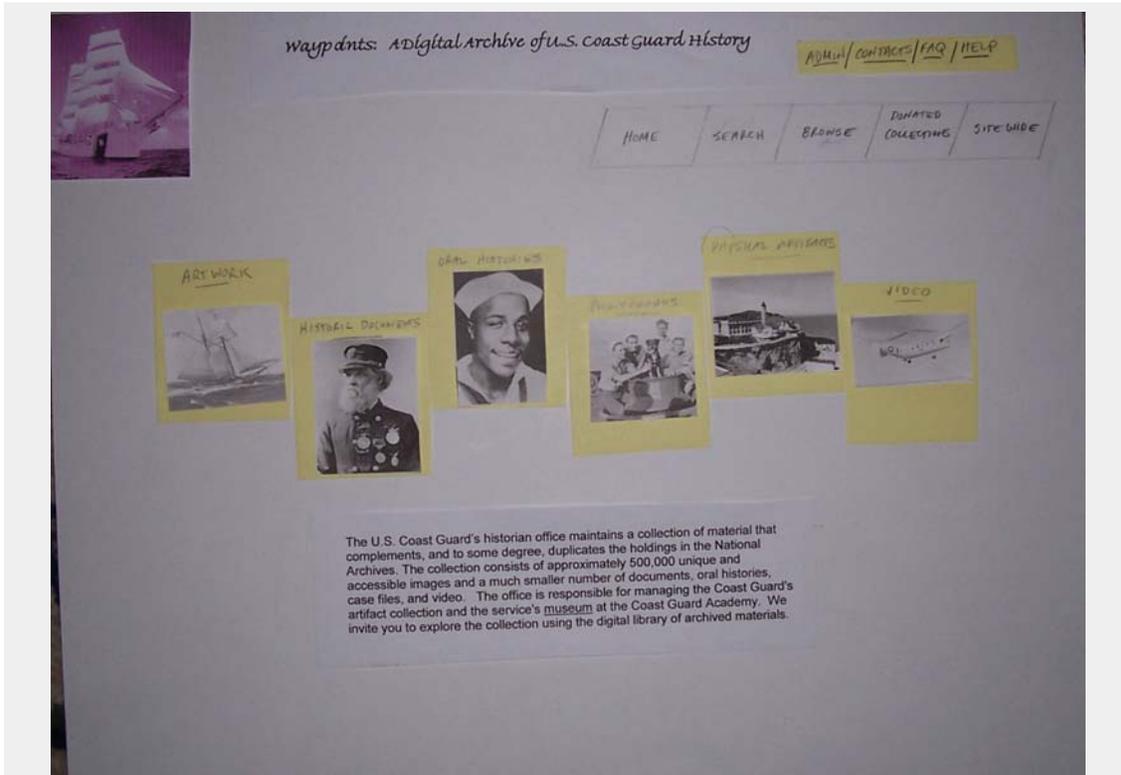
### *Help and documentation*

Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

---

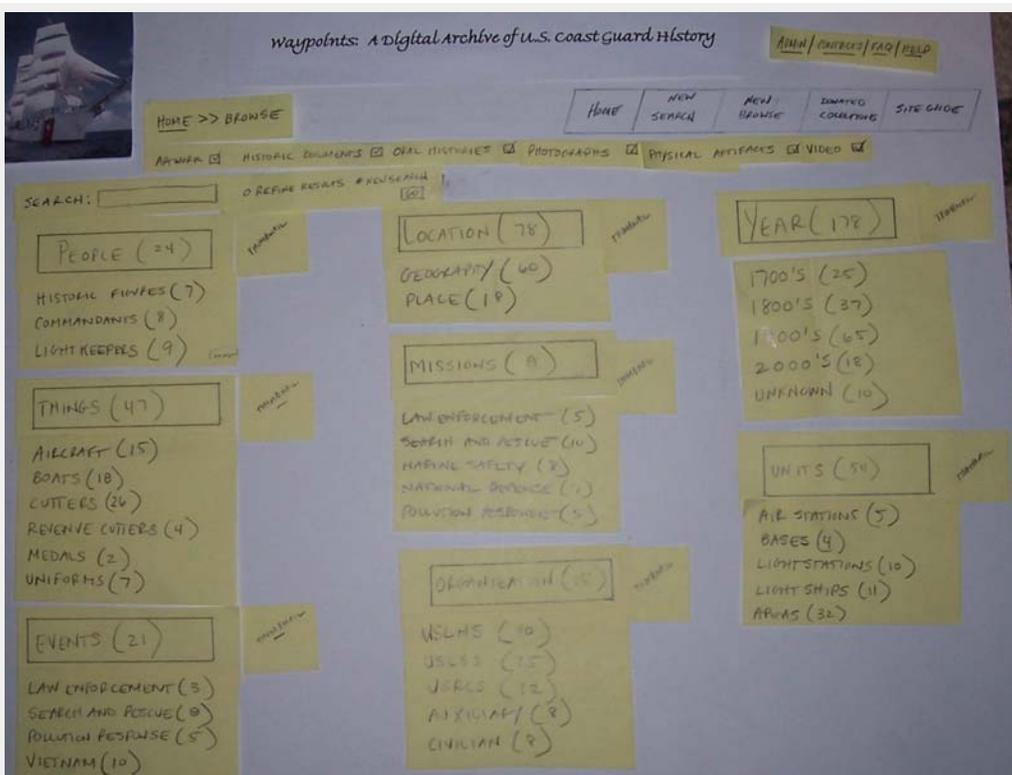
<sup>5</sup> Jakob Nielsen, *Ten Usability Heuristics*, [http://www.useit.com/papers/heuristic/heuristic\\_list.html](http://www.useit.com/papers/heuristic/heuristic_list.html) (accessed November 19, 2005).

## Appendix I: Paper Prototype (screen shots)



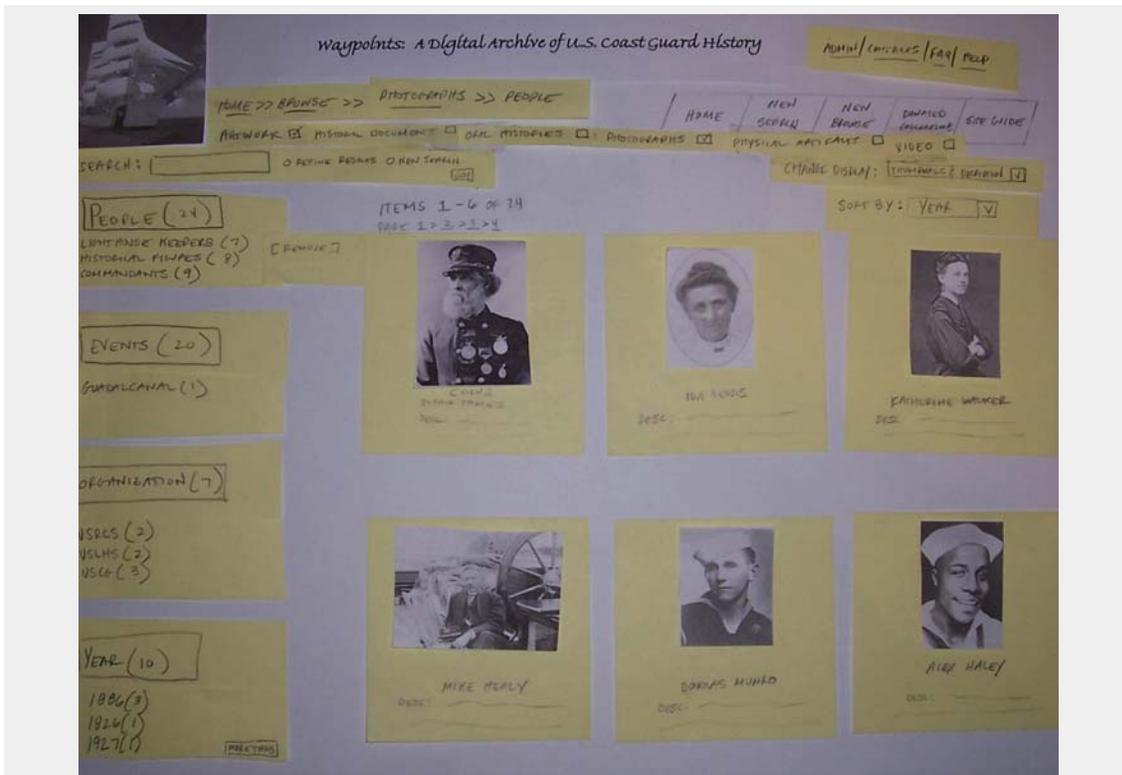
### Home Page

- List to different categories of artifacts along with description of entire collection.
- Users can chose a category to begin browsing or select “search” or “browse” from tab menu.



## Opening

- Similar to the Flamenco Search Interface, a browsing hierarchy is presented to users after choosing a category or selecting “browse.”
- Numbers beside each category represent the number of artifacts in the collection containing that descriptive metadata.



## Midgame

- Upon selection of a sub-category, a list of available artifacts (with thumbnails) populates the right-hand menu.
- A breadcrumb trail keeps track of location; users can change the display to include thumbs only, descriptions, or both.
- A sort-by function allows users to view data alphabetically or by creation date (year).

Waypoints: A Digital Archive of U.S. Coast Guard History

ADMIN | CONTACTS | FAQ | HELP

HOME >> BROWSE >> PHOTOGRAPHS >> PEOPLE >> HISTORIC FIGURES

SEARCH:  0 RETURN RESULTS 0 NEW SEARCH [GO]

PEOPLE (24)  
LEFT HAND KEELERS (7)  
KATHERINE WALKER

ORGANIZATION (7)  
VSLHS



[VIEW LARGE IMAGE]  
[EMAIL HISTORIAN JOHN THIS PROJECT]

ID: 4380  
Short Description: Katherine Walker (1848-1931)

Person(s): Katherine Walker (2)  
Organization: U.S. Lifesaving Service (10)  
Year: 1848 (17); 1931 (8)

Donor Information Donor: Unknown  
Collection Information Collection: N/A

Katherine Walker  
1848 - 1931

The story of Katherine (Katie) Walker is one of the immortal sagas of New York City and its many islands, ledges and lighthouses. Robbins Reef Light, located in the straits between Manhattan Island and Staten Island on the west side of the channel, is seen by more than a million people daily. Of those, only a few have ever heard of Mrs. Katherine Walker.

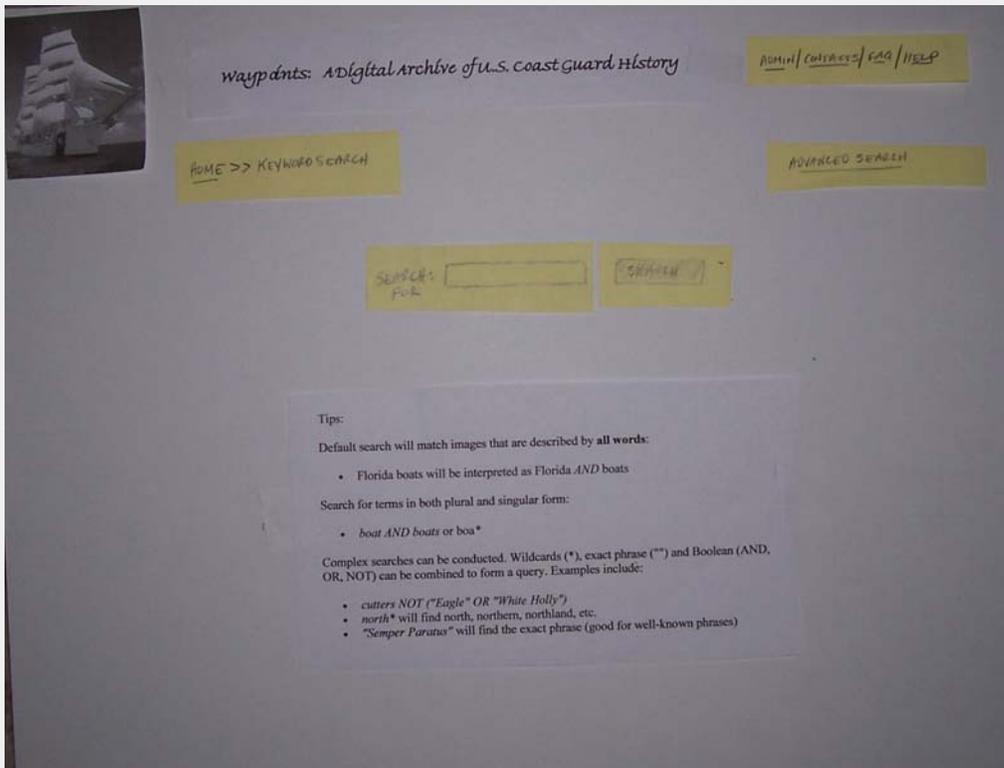
In the winter of 1886, Keeper John Walker developed pneumonia and died, leaving his wife Katherine as temporary head keeper to tend the light. His last reported words to her were, "Mind the lights, Katie."

She decided to stay on as keeper if the government permitted. However, objections were raised when she applied for the appointment, as she was only 4' 10" and 100 pounds. After several men turned the job down because the light was too isolated, Katie was hired. Time proved that she was as good at the job as any man, but her official appointment was not until June 6, 1895.

She not only kept the light burning but by her own account may have saved as many as 50 people. Most were fishermen whose boats were blown onto the reef by sudden storms Katherine observed, "Generally, they joke and laugh about it. I've never made up my mind whether they are courageous or stupid. Maybe they don't know how near they have come to their Maker, or perhaps they know and are not afraid. But I think that in the adventure they haven't realized how near their souls have been to taking flight from the

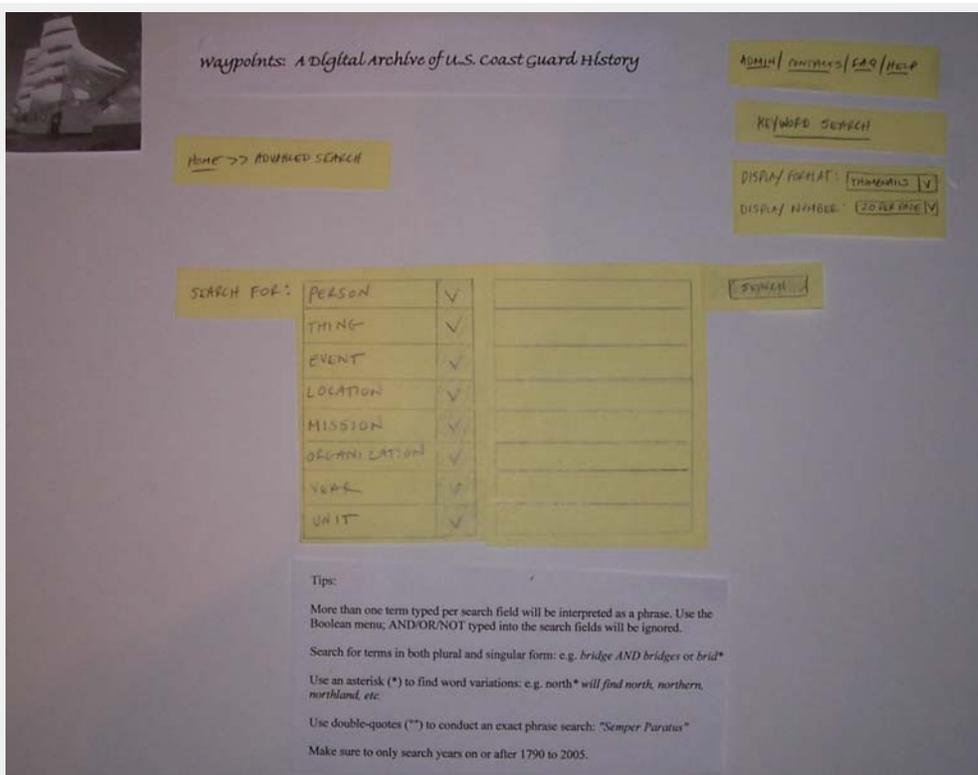
## Endgame

- The end screen in a browse contains a left-hand menu that shows the top level facets for the artifact.
- A thumbnail is shown along with a description of the artifact.
- The right-hand menu shows specific metadata. This list allows users to select new categories to view (i.e. all images from the U.S. Lifesaving Service).



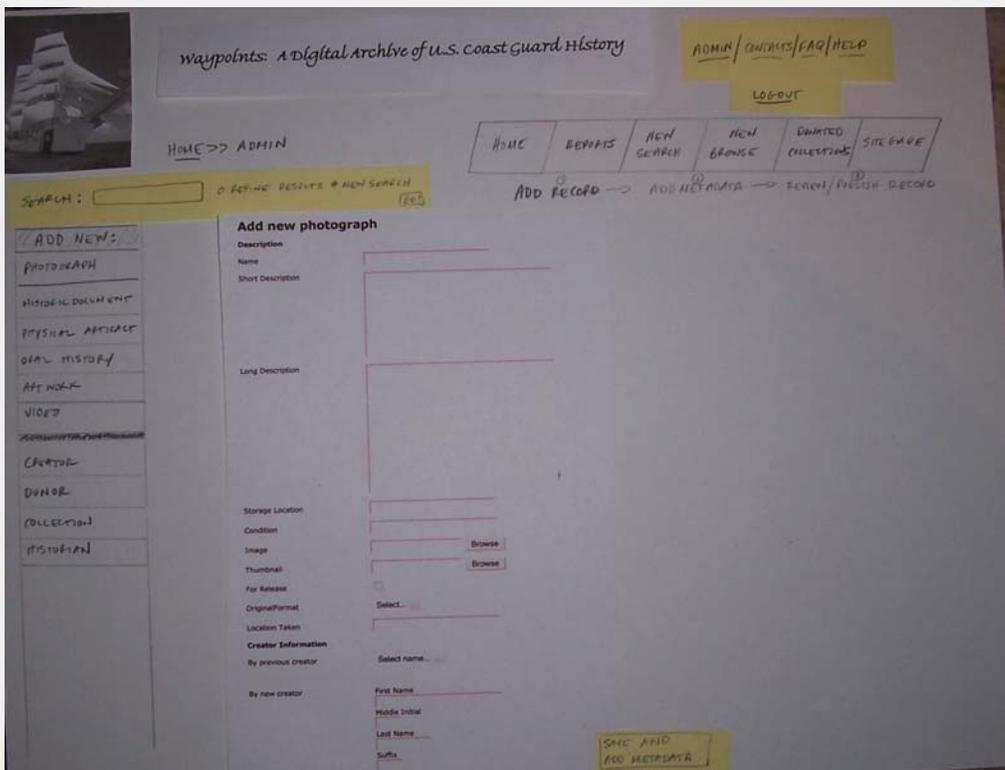
## Basic Search

- The UI includes basic search. The text provides an overview of how to create Boolean queries and shows example results.



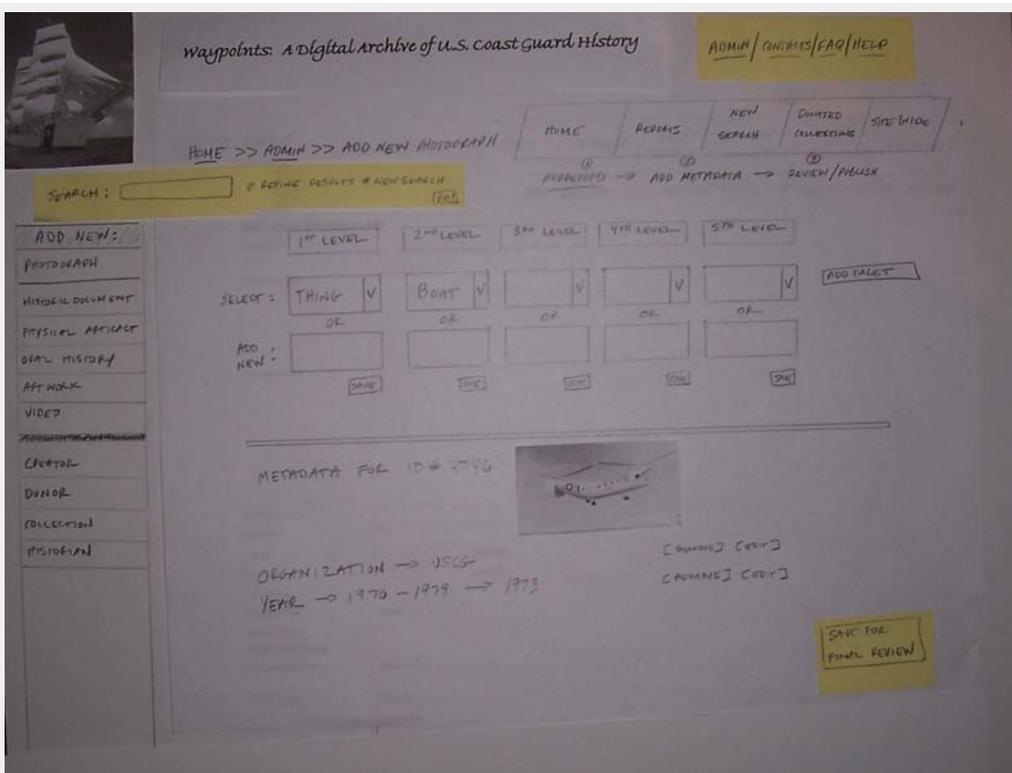
## Advanced Search

- The UI includes an advanced search functionality which allows users to search for specific metadata/keywords (combining and/or/not).
- The text again explains the functionality.



## Artifact Entry

- Admin users have an interface which allows them to add individual artifacts to the database – in this case a photograph.
- A menu in the top left portion of the screen provides the 1-2-3 step layout for adding an artifact (with metadata) to the system.
- The left-hand menu allows for adding other artifact types (i.e. artwork, historic document) and new creators, donors, collections, and historians.



## Metadata Entry

- The admin interface includes a screen to add metadata for an artifact. The top part of the screen is intended to allow user to select from the existing hierarchy or to add new sub-facets to the hierarchy.
- The bottom portion of the menu shows a thumbnail of the image you are describing along with the descriptive metadata already added to the artifact. Upon selecting save, users would be prompted to review and publish the artifact.

## Appendix J: Faceted Hierarchy

Main Facet	1st Sublevel	2nd Sublevel	3rd Sublevel	4th Sublevel
Person				
Person	Historic Figures			
Person	Historic Figures	Maxie Berry, Sr.		
Person	Historic Figures	John P. Greathouse		
Person	Historic Figures	Alex Haley		
Person	Historic Figures	Mike Healey		
Person	Historic Figures	Joshua James		
Person	Historic Figures	Rudolph R. Schlesinger, Jr.		
Person	Historic Figures	Elmer Stone		
Person	Commandants			
Person	Commandants	Thomas H. Collins		
Person	Commandants	J. William Kime		
Person	Commandants	James M. Loy		
Person	Commandants	Paul A. Yost, Jr.		
Person	Lightkeepers			
Person	Lightkeepers	Ida Lewis		
Person	Lightkeepers	Oscar Lindbert		
Person	Lightkeepers	Barney Lokken		
Person	Lightkeepers	Charles Shepardson		
Person	Lightkeepers	Katherine Walker		
Thing				
Thing	Aircraft			
Thing	Aircraft	By type	Helicopter	
Thing	Aircraft	By type	Helicopter	H-3
Thing	Aircraft	By type	Helicopter	HH-60J (Jayhawk)
Thing	Aircraft	By type	Helicopter	HH-65 (Dolphin)
Thing	Aircraft	By type	Helicopter	HNS-1
Thing	Aircraft	By type	Helicopter	HO45-3
Thing	Aircraft	By type	Helicopter	HO45-2G
Thing	Aircraft	By type	Helicopter	HH-52A
Thing	Aircraft	By type	Helicopter	HK-225
Thing	Aircraft	By type	Helicopter	HO5S-1G
Thing	Aircraft	By type	Helicopter	HRP-1
Thing	Aircraft	By type	Helicopter	HUS-1G
Thing	Aircraft	By type	Helicopter	HOS-1G
Thing	Aircraft	By type	Fixed wing	
Thing	Aircraft	By type	Fixed wing	Guardian
Thing	Aircraft	By type	Fixed wing	HC-130 (Hercules)
Thing	Aircraft	By type	Fixed wing	HU-16E
Thing	Aircraft	By type	Fixed wing	PJ-1 (Fokker)
Thing	Aircraft	By type	Fixed wing	PJ-2 (Antares)
Thing	Aircraft	By type	Fixed wing	R3Q-1 (Reliant)
Thing	Aircraft	By type	Fixed wing	MU-16E (Albatross)
Thing	Aircraft	By type	Fixed wing	CGAW-1

**Notes:**

Highlighting in light green indicates those attributes which users can select as browsable topics. All leaf nodes may be used.

Highlighting in yellow indicates those attributes which are not browsable, but may be displayed in the I II to clarify browsing

Thing	Aircraft	By type	Fixed wing	HS-2L (Flying Boat)
Thing	Aircraft	By type	Fixed wing	JRB-4
Thing	Aircraft	By type	Fixed wing	JRF-5 (Goose)
Thing	Aircraft	By type	Fixed wing	PH-2
Thing	Aircraft	By type	Fixed wing	SOC-4 (Seagull)
Thing	Aircraft	By type	Fixed wing	VC-11A (Gulfstream II)
Thing	Aircraft	By type	Fixed wing	RT-1
Thing	Aircraft	By type	Fixed wing	RD-1 (Sirius)
Thing	Aircraft	By type	Fixed wing	H50-1 (Electra)
Thing	Aircraft	By manufacturer		
Thing	Aircraft	By manufacturer	Letourneau Westinghouse Company	
Thing	Aircraft	By manufacturer	Sikorsky	
Thing	Aircraft	By manufacturer	Gruman	
Thing	Aircraft	By manufacturer	Stinson	
Thing	Aircraft	By manufacturer	Curtiss	
Thing	Aircraft	By manufacturer	Beechcraft	
Thing	Aircraft	By manufacturer	Douglas	
Thing	Aircraft	By manufacturer	Lockheed	
Thing	Boats			
Thing	Boats	By length		
Thing	Boats	By length		16
Thing	Boats	By length		30
Thing	Boats	By length		41
Thing	Boats	By length		45
Thing	Boats	By length		52
Thing	Boats	By length		56
Thing	Boats	By length		65
Thing	Boats	By type		
Thing	Boats	By type	Utility Boats	
Thing	Boats	By type	Motor Surf Boats	
Thing	Boats	By type	Deployable Pursuit Boats	
Thing	Boats	By type	Prototypes	
Thing	Boats	By type	Amphibious	
Thing	Boats	By type	Hovercraft	
Thing	Cutters			
Thing	Cutters	By name		
Thing	Cutters	By name	Bering Strait	
Thing	Cutters	By name	Blackhaw	
Thing	Cutters	By name	Block Island	
Thing	Cutters	By name	Boutwell	
Thing	Cutters	By name	Cape Gull	
Thing	Cutters	By name	Cape Strait	
Thing	Cutters	By name	Cherokee	
Thing	Cutters	By name	Dallas	
Thing	Cutters	By name	Eagle	
Thing	Cutters	By name	Evergreen	
Thing	Cutters	By name	Farallon	

Thing	Cutters	By name	Frederick Lee	
Thing	Cutters	By name	Glacier	
Thing	Cutters	By name	Half Moon	
Thing	Cutters	By name	Itasca	
Thing	Cutters	By name	Juniper	
Thing	Cutters	By name	Mendota	
Thing	Cutters	By name	Munro	
Thing	Cutters	By name	Point Banks	
Thing	Cutters	By name	Point Barnes	
Thing	Cutters	By name	Point Brower	
Thing	Cutters	By name	Point Comfort	
Thing	Cutters	By name	Point Glover	
Thing	Cutters	By name	Point League	
Thing	Cutters	By name	Point Lomas	
Thing	Cutters	By name	Point Orient	
Thing	Cutters	By name	Point White	
Thing	Cutters	By name	Point Young	
Thing	Cutters	By name	Rush	
Thing	Cutters	By designation		
Thing	Cutters	By designation	WAGL	
Thing	Cutters	By designation	WAGO	
Thing	Cutters	By designation	WHEC (High Endurance Cutter)	
Thing	Cutters	By designation	WLIC (Inland Construction Tender)	
Thing	Cutters	By designation	WMEC (Medium Endurance)	
Thing	Cutters	By designation	WPB (Patrol Boats)	
Thing	Cutters	By designation	WAL (Lightships)	
Thing	Cutters	By length		
Thing	Cutters	By length	72	
Thing	Cutters	By length	74	
Thing	Cutters	By length	75	
Thing	Cutters	By length	82	
Thing	Cutters	By length	82	Point Banks
Thing	Cutters	By length	82	Point Barnes
Thing	Cutters	By length	82	Point Brower
Thing	Cutters	By length	82	Point Comfort
Thing	Cutters	By length	82	Point Glover
Thing	Cutters	By length	82	Point League
Thing	Cutters	By length	82	Point Lomas
Thing	Cutters	By length	82	Point Orient
Thing	Cutters	By length	82	Point White
Thing	Cutters	By length	82	Point Young
Thing	Cutters	By length	83	
Thing	Cutters	By length	95	
Thing	Cutters	By length	95	Cape Gull
Thing	Cutters	By length	95	Cape Strait
Thing	Cutters	By length	110	
Thing	Cutters	By length	110	Block Island
Thing	Cutters	By length	110	Farallon

Thing	Cutters	By length	133	
Thing	Cutters	By length	133	White Holly
Thing	Cutters	By length	160	
Thing	Cutters	By length	180	
Thing	Cutters	By length	180	Boutwell
Thing	Cutters	By length	180	Evergreen
Thing	Cutters	By length	210	
Thing	Cutters	By length	225	
Thing	Cutters	By length	225	Juniper
Thing	Cutters	By length	270	
Thing	Cutters	By length	295	
Thing	Cutters	By length	295	Eagle
Thing	Cutters	By length	311	
Thing	Cutters	By length	311	Half Moon
Thing	Cutters	By length	378	
Thing	Cutters	By length	378	Dallas
Thing	Cutters	By length	378	Boutwell
Thing	Cutters	By length	378	Munro
Thing	Cutters	By manufacturer		
Thing	Cutters	By manufacturer	Marine Iron and Shipbuilding Co.	
Thing	Revenue Cutters			
Thing	Revenue Cutters	By Class	First Class	
Thing	Revenue Cutters	By Class	Second Class	
Thing	Revenue Cutters	By Class	Third Class	
Thing	Revenue Cutters	By Class	Launch	
Thing	Communications			
Thing	Communications	LORAN		
Thing	Rates			
Thing	Rates	Aviation Pilot		
Thing	Rates	Machinery Technician		
Thing	Rates	Aviation Survivalman		
Thing	Rates	Radioman		
Thing	Rates	Quartermaster		
Thing	Rates	Boatswains Mate		
Thing	Ordinance			
Thing	Weaponry			
Thing	Medals/Awards			
Thing	Medals/Awards	Legion of Merit		
Thing	Medals/Awards	Commendation Medal		
Thing	Equipment			
Thing	Mascots			
Thing	Uniforms			
Event				
Event	Law Enforcement			
Event	Law Enforcement	Operation Able Vigil		
Event	Law Enforcement	Mariel Boat Lift		
Event	Search and Rescue			
Event	Search and Rescue	Andrea Doria		

Event	Search and Rescue	Titanic		
Event	Search and Rescue	Ameila Earhart		
Event	Search and Rescue	Challenger Shuttle Disaster		
Event	Search and Rescue	Edmund Fitzgerald		
Event	Search and Rescue	Prinsendam		
Event	Search and Rescue	Marine Sulphur Queen		
Event	Pollution Response			
Event	Pollution Response	Oil		
Event	Pollution Response	Oil	Ocean Eagle	
Event	Pollution Response	Oil	Exxon Valdez	
Event	Civil War			
Event	Desert Shield			
Event	Desert Storm			
Event	Ice Patrol			
Event	Korea			
Event	Mishaps			
Event	OPSAIL			
Event	Vietnam			
Event	Whaling			
Event	WWII			
Event	Natural Disasters			
Event	Natural Disasters	Hurricanes		
Event	Natural Disasters	Hurricanes	Andrew (1992)	
Event	Natural Disasters	Hurricanes	Katrina (2005)	
Event	Natural Disasters	Terrorism		
Event	Natural Disasters	Terrorism	September 11, 2005	
Mission				
Mission	Law Enforcement			
Mission	Law Enforcement	Immigration		
Mission	Law Enforcement	Immigration	Mariel Boat Lift	
Mission	Law Enforcement	Immigration	Operation Able Vigil	
Mission	Law Enforcement	Fisheries		
Mission	Law Enforcement	Drug Enforcement		
Mission	Search & Rescue			
Mission	Marine Safety			
Mission	Marine Inspection			
Mission	MariYear Mobility			
Mission	National Defense			
Mission	Pollution Response			
Mission	Protection of Natural Resources			
Mission	Aids to Navigation			
Mission	Boating Safety			
Mission	Ice Breaking			
Mission	Homeland Security			
Unit				
Unit	Air Stations			
Unit	Bases			

Unit	Lightstations		
Unit	Lightships		
Unit	Areas		
Unit	Districts		
Unit	Groups		
Unit	Stations		
Unit	PSUs (Port Security Unit)		
Unit	Weather Stations		
Organization			
Organization	U.S. Lighthouse Service		
Organization	U.S. Livesaving Service		
Organization	U.S. Coast Guard		
Organization	U.S. Revenue Cutter Service		
Organization	Auxiliary		
Organization	Civilian		
Location			
Location	Unknown		
Location	Africa		
Location	Antarctica		
Location	Asia		
Location	Australia		
Location	Europe		
Location	Europe		
Location	Europe	Spain	
Location	Europe	United Kingdom	
Location	Puerto Rico		
Location	Puerto Rico	San Juan	
Location	United States		
Location	United States	Alabama	
Location	United States	Alabama	Mobile
Location	United States	Alaska	
Location	United States	Alaska	Sitka
Location	United States	Arizona	
Location	United States	Arkansas	
Location	United States	California	
Location	United States	California	Los Angeles
Location	United States	California	San Francisco
Location	United States	California	Benecia
Location	United States	California	San Diego
Location	United States	Colorado	
Location	United States	Connecticut	
Location	United States	Delaware	
Location	United States	Florida	
Location	United States	Florida	Key West
Location	United States	Florida	Miami
Location	United States	Florida	Santa Rosa Island
Location	United States	Florida	Key Biscayne
Location	United States	Florida	St. Petersburg

Location	United States	Georgia		
Location	United States	Hawaii		
Location	United States	Idaho		
Location	United States	Illinois		
Location	United States	Indiana		
Location	United States	Iowa		
Location	United States	Kansas		
Location	United States	Kentucky		
Location	United States	Louisiana		
Location	United States	Maine		
Location	United States	Maryland		
Location	United States	Maryland	Curtis Bay	
Location	United States	Maryland	Baltimore	
Location	United States	Massachusetts		
Location	United States	Massachusetts	Chatham	
Location	United States	Michigan		
Location	United States	Minnesota		
Location	United States	Mississippi		
Location	United States	Missouri		
Location	United States	Montana		
Location	United States	Nebraska		
Location	United States	Nevada		
Location	United States	New Hampshire		
Location	United States	New Jersey		
Location	United States	New Jersey	Cape May	
Location	United States	New Mexico		
Location	United States	New York		
Location	United States	New York	New York	
Location	United States	New York	Brooklyn	
Location	United States	North Carolina		
Location	United States	North Carolina	Kitty Hawk	
Location	United States	North Carolina	Elizabeth City	
Location	United States	North Carolina	Morehead City	
Location	United States	North Carolina	Pea Island	
Location	United States	North Dakota		
Location	United States	Ohio		
Location	United States	Oklahoma		
Location	United States	Oregon		
Location	United States	Pennsylvania		
Location	United States	Rhode Island		
Location	United States	South Carolina		
Location	United States	South Dakota		
Location	United States	Tennessee		
Location	United States	Texas		
Location	United States	Texas	Beaumont	
Location	United States	Texas	Port Aransas	
Location	United States	Utah		
Location	United States	Vermont		

Location	United States	Virginia	
Location	United States	Virginia	Virginia Beach
Location	United States	Virginia	Norfolk
Location	United States	Washington	
Location	United States	Washington	Port Angeles
Location	United States	Washington	Seattle
Location	United States	West Virginia	
Location	United States	Wisconsin	
Location	United States	Wisconsin	Marinette
Location	United States	Wyoming	
Location	United States	Washington, D.C.	
Location	South America		
Location	Atlantic Ocean		
Location	Pacific Ocean		
Location	Pacific Ocean	Gulf of Alaska	
Location	Pacific Ocean	Gulf of Thailand	
Year			
Year	Unknown		
Year	1790-1799		
Year	1790-1799	1790	
Year	1790-1799	1791	
Year	1790-1799	1792	
Year	1790-1799	1793	
Year	1790-1799	1794	
Year	1790-1799	1795	
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Year	1790-1799	1799	
Year	1800-1899		
Year	1800-1899	1800	
Year	1800-1899	1801	
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Year	1900-1999			
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Year	1900-1999	1997		
Year	1900-1999	1998		
Year	1900-1999	1999		
Year	2000-2005			
Year	2000-2005	2000		
Year	2000-2005	2001		
Year	2000-2005	2002		
Year	2000-2005	2003		
Year	2000-2005	2004		
Year	2000-2005	2005		

**Appendix K: Deed of Gift Form**

Deed of Gift

to the

UNITED STATES COAST GUARD

**Donation of Personal Property:**

I hereby donate unconditionally the property described herein to the United States Coast Guard, relinquishing in perpetuity all ownership rights, title, interest and possession, including copyright, to the property.

I also understand that museum records-keeping procedures require that my name and address be kept on file, and I hereby acknowledge that I do not consider this to be an invasion of my privacy.

Donor: Roger D. Johnson, CWO4 , USCG (Ret.)

Address: 124 Hardscrabble Road  
Limington, ME 04049

Phone:

Donor Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Pursuant to the authority vested in the Commandant of the U.S. Coast Guard the herein described property is hereby accepted on behalf of the United States Coast Guard.

For the United States of America, acting by and through the Secretary of Transportation and Commandant, U.S. Coast Guard:

by: \_\_\_\_\_ Title: \_\_\_\_\_

**DATA REQUIRED BY THE PRIVACY ACT OF 1974**

**AUTHORITY: 5 USC 552**

PURPOSE: To provide a record of donations and contributions of historical properties to the United States Coast Guard; to enable the Coast Guard to provide upon request by the donor or donor's heirs information concerning the status/location of his/her donation; to enable the Coast Guard to establish title to the property.

DISCLOSURE: Disclosure of the requested information is voluntary. Failure to provide complete information may prohibit acceptance of gift or donation.

**DESCRIPTION OF PROPERTY:**

*Material from his father's Coast Guard career during World War II, including:*

- 1) Christmas, 1942, Dinner Menu from USCGC *Spencer*
- 2) RDM 1/c Roger D. Johnson's diary kept while aboard USCGC *Spencer* while she served as an amphibious force flagship. Entries are from 27 September 1944 to late-December 1945.

## **Appendix L: Historian's Office Response Form**

Commandant  
U.S. Coast Guard

2100 2<sup>nd</sup> Street, S.W.  
Washington, D.C. 20593  
Staff Symbol: G-IPA-4  
Phone (202) 267-2596  
FAX: (202) 267-4309

5750

Dear Sir or Madam:

This form is in response to your inquiry. I am answering you in this manner to reduce costs and to service a larger number of requests.

The material you requested:

\_\_\_ is enclosed.

\_\_\_ may be available through the National Archives, 7th and Pennsylvania Ave., N.W., Washington, D.C., 20408.

\_\_\_ may be available through the National Archives II, 8601 Adelphi Road, College Park, MD 20740.

\_\_\_ may be available through the National Personnel Records Center, 9700 Page Ave., St. Louis, MO, 63132.

\_\_\_ may be available through the Naval Historical Center, 901 M Street SE, Washington Navy Yard, Washington, D.C., 20374.

\_\_\_ may be available through the US Lighthouse Society, 244 Kearny Street, 5th Floor, San Francisco, CA 94108.

\_\_\_ are shared between the Coast Guard and the National Archives, whose address is cited above. Due to the size of my staff, I am unable to undertake this research for you. If you wish to research Coast Guard controlled materials, please make an appointment.

\_\_\_ may be purchased through this office. Each 8x10 print costs \$10.00. Please describe the photographic materials you are seeking before sending a check. Do not send cash. Checks should be made payable to the U.S. Coast Guard.

\_\_\_ please remit \$ \_\_\_\_\_ for the enclosed photography. Checks should be made payable to the U.S. Coast Guard.

\_\_\_ may be found at our Website. It is: <http://www.uscg.mil/hq/c-cp/history/collect.html>

Comments:

If I may be of further service, please write.

Sincerely,

Historian, U.S. Coast Guard  
By direction

## Appendix M: Data Dictionary (Milestone 1)

Entity	Attribute	Key Type (if any)	Data Type (format)
Artifact	ArtifactID	PK	Integer
	ArtifactName		Text
	ArtifactType		Text
	HistorianReviewID	FK	Integer
	ShortDescription		Text
	LongDescription		Text
	StorageLocation		Text
	Condition		Text
	SubmissionDate		Text
	CreationDate		Text
	Image		Binary (Image)
	Thumbnail		Binary (Image)
	CreatorID	FK	Integer
	DonorID	FK	Integer
	CollectionID	FK	Integer
ForRelease		Boolean	
Photograph	PhotographID	PK	Integer
	ArtifactID	FK	Integer
	OriginalFormat (digital, Slide, 35mm, analog)		Text
	LocationTaken		Text
Artwork	ArtworkID	PK	Integer
	ArtifactID	FK	Integer
	Medium		Text
HistoricDocument	HistoricDocumentID	PK	Integer
	ArtifactID	FK	Integer
	NumberPages		Integer
Video	VideoID	PK	Integer
	ArtifactID	FK	Integer
	Length		Text
	VideoLocationTaken		Text
	OriginalFormat		Text
PhysicalArtifact	PhysicalArtifactID	PK	Integer
	ArtifactID	FK	Integer
	Medium		Text
OralHistory	OralHistoryID	PK	Integer
	ArtifactID	FK	Integer
	OriginalFormat		Text
	ReadBy		Text
Collection	CollectionID	PK	Integer
	ArtifactID	FK	Integer
	DonorID	FK	Text
	CollectionName		Text
HistorianReview	HistorianReviewID	PK	Integer
	ArtifactID	FK	Integer
	HistorianID	FK	Integer
	ReviewDate		Text
	HistorianReviewFlag		Boolean
	Comments		Text
Historian	HistorianID	PK	Integer
	HistorianName		Text
	FirstName		Text
	LastName		Text

	MiddleInitialName		Text
	SuffixName		Text
Donor	DonorID	PK	Integer
	ArtifactID	FK	Integer
	FirstName		Text
	LastName		Text
	MiddleInitialName		Text
	SuffixName		Text
	Title		Text
	DonorGroupName		
	Affiliation		Text
	AddressStreet		Text
	AddressCity		Text
	AddressState		Text
	AddressZip		Text
	PhoneNumber		Text
Creator (Photographer, Artist, Author, Orator)	CreatorID	PK	Integer
	ArtifactID	FK	Integer
	FirstName		Text
	LastName		Text
	MiddleInitialName		Text
	SuffixName		Text
	Affiliation		Text

## Appendix N: Data Dictionary (Milestone 2)

Entity	Attribute	Key Type (if any)	Data Type (format)
artifact	ArtifactID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactName		Text (VARCHAR(50))
	ArtifactType		Text (VARCHAR(50))
	HistorianReviewID	FK	Integer (INT)
	ShortDescription		Text (VARCHAR(50))
	LongDescription		Text (BLOB)
	StorageLocation		Text (VARCHAR(50))
	Condition		Text (VARCHAR(20))
	SubmissionDate		Text (DATE)
	CreationDate		Text (DATE)
	Image		Binary (Image)
	Thumbnail		Binary (Image)
	CreatorID	FK	Integer (INT)
	DonorID	FK	Integer (INT)
	CollectionID	FK	Integer (INT)
TimeFacetID	FK	Integer (INT)	
ForRelease		Boolean (Bit)	
photograph	PhotographID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	OriginalFormat (digital, Slide, 35mm, analog)		Text (VARCHAR(50) or ENUM)
artwork	LocationTaken		Text (VARCHAR(50))
	ArtworkID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
historicDocument	Medium		Text (VARCHAR(20))
	HistoricDocumentID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
video	NumberPages		Integer (INT)
	VideoID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
physicalArtifact	Length		Text (VARCHAR(30))
	VideoLocationTaken		Text (VARCHAR(50))
	OriginalFormat		Text (VARCHAR(20))
	PhysicalArtifactID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
oralHistory	Medium		Text (VARCHAR(20))
	OralHistoryID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
collection	OriginalFormat		Text (VARCHAR(20))
	ReadBy		Text (VARCHAR(50))
	CollectionID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
historianReview	DonorID	FK	Integer (INT)
	CollectionName		Text (VARCHAR(50))
	HistorianReviewID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	HistorianID	FK	Integer (INT)
historian	ReviewDate		Text (DATE)
	HistorianReviewFlag		Boolean (Bit)
	Comments		Text (BLOB)
historian	HistorianID	PK	Integer (INT AUTO_INCREMENT)
	FirstName		Text (VARCHAR(50))
	LastName		Text (VARCHAR(50))

	MiddleInitialName		Text (VARCHAR(50))
	SuffixName		Text (VARCHAR(10))
donor	DonorID	PK	Integer (INT AUTO_INCREMENT)
	DonorGroupName		Text (VARCHAR(50))
	ArtifactID	FK	Integer (INT)
	FirstName		Text (VARCHAR(50))
	LastName		Text (VARCHAR(50))
	MiddleInitialName		Text (VARCHAR(50))
	SuffixName		Text (VARCHAR(10))
	Title		Text (VARCHAR(50))
	Affiliation		Text (VARCHAR(50))
	AddressStreet		Text (VARCHAR(50))
	AddressCity		Text (VARCHAR(50))
	AddressState		Text (VARCHAR(50))
	AddressZip		Text (VARCHAR(10))
	PhoneNumber		Text (VARCHAR(20))
creator (Photographer, Artist, Author, Orator)	CreatorID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	FirstName		Text (VARCHAR(50))
	LastName		Text (VARCHAR(50))
	MiddleInitialName		Text (VARCHAR(50))
	SuffixName		Text (VARCHAR(10))
	Affiliation		Text (VARCHAR(50))
person	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(50))
	ParentRecord		Text (VARCHAR(50))
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
thing	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(50))
	ParentRecord		Text (VARCHAR(50))
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
event	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(50))
	ParentRecord		Text (VARCHAR(50))
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
mission	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(50))
	ParentRecord		Text (VARCHAR(50))
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
unit	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(50))
	ParentRecord		Text (VARCHAR(50))
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
organization	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(50))
	ParentRecord		Text (VARCHAR(50))
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
location	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(50))
	ParentRecord		Text (VARCHAR(50))
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
time	FacetID	PK	Integer (INT AUTO_INCREMENT)

	FacetName		Text (VARCHAR(50))
	ParentRecord		Text (VARCHAR(50))
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
personAssociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	PersonFacetID	FK	Integer (INT)
thingAssociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	ThingFacetID	FK	Integer (INT)
eventAssociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	EventFacetID	FK	Integer (INT)
missionAssociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	MissionFacetID	FK	Integer (INT)
unitAssociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	UnitFacetID	FK	Integer (INT)
organizationAssociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	OrganizationFacetID	FK	Integer (INT)
locationAssociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	LocationFacetID	FK	Integer (INT)

## Appendix O: Data Dictionary (Milestone 3)

Entity	Attribute	Key Type (if any)	Data Type (format)
artifact	ArtifactID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactName	Index	Text (VARCHAR(100))
	ArtifactType		Enum
	HistorianReviewID	FK	Integer (INT)
	ShortDescription	Index	Text (VARCHAR(100))
	LongDescription	Index	Text (Text)
	StorageLocation		Text (VARCHAR(100))
	Condition		Text (VARCHAR(100))
	SubmissionDate		Text (DATE)
	CreationDate		Text (DATE)
	Image		Text (VARCHAR(100))
	Thumbnail		Text (VARCHAR(100))
	CreatorID	FK	Integer (INT)
	DonorID	FK	Integer (INT)
	CollectionID	FK	Integer (INT)
ForRelease		Boolean (Bit)	
photograph	PhotographID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	OriginalFormat (digital, Slide, 35mm, analog)		Text (VARCHAR(50))
	LocationTaken		Text (VARCHAR(100))
artwork	ArtworkID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	Medium		Text (VARCHAR(100))
historicdocument	HistoricDocumentID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	NumberPages		Integer (INT)
video	VideoID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	Length		Text (VARCHAR(50))
	VideoLocationTaken		Text (VARCHAR(100))
	OriginalFormat		Text (VARCHAR(100))
physicalartifact	PhysicalArtifactID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	Medium		Text (VARCHAR(100))
oralhistory	OralHistoryID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	OriginalFormat		Text (VARCHAR(50))
	ReadBy		Text (VARCHAR(100))
collection	CollectionID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	DonorID	FK	Integer (INT)
	CollectionName		Text (VARCHAR(100))
historianreview	HistorianReviewID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	HistorianID	FK	Integer (INT)
	ReviewDate		Text (DATE)
	HistorianReviewFlag		Boolean (Bit)
	Comments		Text (Text)
historian	HistorianID	PK	Integer (INT AUTO_INCREMENT)
	FirstName		Text (VARCHAR(50))
	LastName		Text (VARCHAR(50))
	MiddleInitialName		Text (VARCHAR(10))

	SuffixName		Text (VARCHAR(10))
donor	DonorID	PK	Integer (INT AUTO_INCREMENT)
	DonorGroupName		Text (VARCHAR(100))
	ArtifactID	FK	Integer (INT)
	FirstName		Text (VARCHAR(50))
	LastName		Text (VARCHAR(50))
	MiddleInitialName		Text (VARCHAR(10))
	SuffixName		Text (VARCHAR(10))
	Title		Text (VARCHAR(50))
	Affiliation		Text (VARCHAR(100))
	AddressStreet		Text (VARCHAR(100))
	AddressCity		Text (VARCHAR(50))
	AddressState		Text (VARCHAR(50))
	AddressZip		Text (VARCHAR(10))
	PhoneNumber		Text (VARCHAR(20))
creator (Photographer, Artist, Author, Orator)	CreatorID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	FirstName		Text (VARCHAR(50))
	LastName		Text (VARCHAR(50))
	MiddleInitialName		Text (VARCHAR(10))
	SuffixName		Text (VARCHAR(10))
	Affiliation		Text (VARCHAR(100))
person	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(100))
	ParentID		Integer (INT)
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
thing	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(100))
	ParentID		Integer (INT)
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
event	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(100))
	ParentID		Integer (INT)
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
mission	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(100))
	ParentID		Integer (INT)
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
unit	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(100))
	ParentID		Integer (INT)
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
organization	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(100))
	ParentID		Integer (INT)
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
location	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(100))
	ParentID		Integer (INT)
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
year	FacetID	PK	Integer (INT AUTO_INCREMENT)
	FacetName		Text (VARCHAR(100))

	ParentID		Integer (INT)
	TopLevelFlag		Boolean (Bit)
	LeafFlag		Boolean (Bit)
yearassociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	FacetID	FK	Integer (INT)
personassociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	FacetID	FK	Integer (INT)
thingassociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	FacetID	FK	Integer (INT)
eventassociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	FacetID	FK	Integer (INT)
missionassociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	FacetID	FK	Integer (INT)
unitassociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	FacetID	FK	Integer (INT)
organizationassociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	FacetID	FK	Integer (INT)
locationassociation	AssociationID	PK	Integer (INT AUTO_INCREMENT)
	ArtifactID	FK	Integer (INT)
	FacetID	FK	Integer (INT)

# Appendix P: ER Diagram (Final)

