Design Case Study
“MUSE: An enhanced art museum experience”

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1. Project Concept
MUSE is a mobile application that encourages visitors to interact with art museum collections in ways that are not yet widely available. It is an affordable way for museum staff to easily create, organize, and publish authoritative content to augment physical museum artifacts. In addition, visitors can create their own content and attach it to artifacts. Users can save and comment on artifacts, review other visitors’ comments, explore supplementary material associated with an artifact, and leave feedback for museum staff.

In contrast to traditional audio guides, MUSE re-imagines the museums guide in a way that emphasizes timely and alternative content, rather than production value. Visitors and curators alike can converse through their interpretations of the art pieces in dynamic and interesting ways. MUSE blurs the line between curator and consumer in a way that will be beneficial to the visitor as well as the museum. Constantly changing, timely, and interesting content will be available to augment the museum experience for visitors, which will in turn attract new and repeat visitors alike.

2. Problem Space
Interactive museum tours are an increasingly necessary addition to physical collections. Enriching a museum’s physical offerings with multimedia tools may increase consumption by a broader audience (M. Economou, 1999). While not a replacement for traditional pedagogical content, interactive tours can augment existing content with novel and memorable interactions.

Traditional audio guides are expensive and time consuming to create. As a result the guides must remain relevant for a long time. Other “do-it-yourself” approaches, including downloadable podcasts, have received lukewarm reviews because they are difficult to use (Milne-Tyte, 2009).

The resulting collection of museum audio guides is diminutive and static. Moreover, the feature set common to these guides is predictable. A typical device consists of a large blocky pendant (hard to steal or forget) worn around the neck. Interaction with the device is limited to typing in code numbers and listening to the recorded content. These devices are only available at large museums and tend to play the same content about the same pieces for years. They do little to stimulate interest in new collections or foster timely interpretation of pieces.

3. Project Blueprint
3.1 Features

User-Centered Features
• Select art pieces using a mobile phone’s camera as a scanner
• Read information on-screen about an art piece
• Listen to recorded information about an art piece
• Listen to others’ recordings and record messages about a piece of art
  o Vote messages up or down
• “Heart” a piece, to save it as a favorite for later review
• Send a piece to a friend using email, SMS, or social networking services
• Leave museum feedback
• Access content from different museums on the same device
Museum Administrator Features

- Create an online exhibition repository
  - Upload written, recorded, and image content
  - Publish an exhibition when it is ready to be viewed by the public
- Print barcodes used to identify pieces in the gallery
- Review (and remove if necessary) user generated content, recorded messages
- Archive an exhibition

3.2 Use Cases

The following use cases describe the typical interaction of a user and an administrator. Features are labeled with the MOSCOW prioritization scheme.

<table>
<thead>
<tr>
<th>Name</th>
<th>aMUSEme – Front end Exploring a museum using the MUSE application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version</td>
<td>1.0</td>
</tr>
<tr>
<td>Goal</td>
<td>To having an enriched museum experience by viewing the provided information about art pieces and creating atmosphere while walking around.</td>
</tr>
<tr>
<td>Actors</td>
<td>Museum visitor(s)</td>
</tr>
<tr>
<td>Preconditions</td>
<td>Smart phone, MUSE application downloaded to smart phone, MUSENet online database with collection and art piece information, barcodes affixed to art pieces in museum.</td>
</tr>
<tr>
<td>Trigger</td>
<td>Museum visitor enters a museum (which offers MUSE) and downloads the MUSE application onto his smart phone.</td>
</tr>
</tbody>
</table>

Course of Events

[Must Haves and Should Haves (S)]

- The museum visitor (MV) starts the MUSE application as he begins to walk through the museum.
- (S) The MUSE opening screens shows MV the different features of the application and gives him a short introduction.
- At the entrance to the first collection room, MV scans a barcode with his phone. MV is presented with brief informational text about the collection, its theme, participating artists etc.
- MV enters the room and looks at the different art pieces.
  1) He wants to find out more about art piece “blue”, so he scans the adjacent barcode with his smart phone. MV can then read the explanatory text about “blue” using MUSE, which also includes the thumbnail image of “blue”.
  2) MV really likes “blue” and wants to share his feelings about it with others. MV can easily do this by recording a short audio comment with MUSE and virtually “attaching” it to the artwork for others to hear. MV presses the record button in the application interface, speaks into the microphone (“This piece reminds me of the last time I was at the sea. I think it’s wonderful”) and saves the message, after reviewing it.
  3) MV wants to know what other visitors think of “blue”. So, he listens to the recorded audio comments on MUSE made by previous museum visitors.
  4) MV really likes a couple of the scanned art pieces, so he “hearts” them in his MUSE application. This action stores the thumbnail, artist and piece name, museum name, and the recorded audio comment onto his device for later retrieval.
- MV repeats actions 1 through 4 at several collections and art pieces.
- (S) After his museum visit, MV reviews his “hearts” on his phone and arranges them in his personal mobile art gallery.

Outcomes | Enriched museum visit and art pieces saved on smart phone for personal collection. |
Alternatives (Could Haves)

- While walking through the rooms, MV listens to music (chosen to be appropriate to the art collection), which is offered to him when he scans a collection placard and chooses the music option.
- MV likes the piece “blue” and wants to share it with people outside the museum. He taps on the “share button in MUSE and sends a thumbnail including short information to others via Twitter, Email or SMS.
- MV doesn’t want to read the text on the MUSE application screen; so he chooses the text-to-speech option instead.
- After listening to several visitor audio comments, MV votes the ones he likes “up”, the ones he doesn’t “down”.
- MV leaves feedback for museum management using a form in the MUSE application at the end of his visit.

<table>
<thead>
<tr>
<th>Name</th>
<th>MUSENet – Museum collection backend</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Uploading the museum’s collection to the MUSE web service</td>
</tr>
<tr>
<td>Version</td>
<td>1.0</td>
</tr>
<tr>
<td>Goal</td>
<td>To store information about an exhibitions’ art pieces in the centralized MUSENet web service</td>
</tr>
<tr>
<td>Actors</td>
<td>Museum employee/Curator</td>
</tr>
<tr>
<td>Preconditions</td>
<td>Human resources, MUSENet web service, PC as input device, artwork metadata such as the creator’s name, images of the pieces, a description, acquisition date, etc. in digital or non-digital format</td>
</tr>
<tr>
<td>Trigger</td>
<td>Management wants to offer the MUSE application as a new interactive guide in the museum</td>
</tr>
</tbody>
</table>

Course of Events [Must Haves and Should Haves (S)]

- The new museum exhibition “Expressions” with 15 photographs is starting soon.
  1) In order to provide a MUSE guide for the exhibition, a museum employee (ME) creates a new exhibition in the MUSENet web database with the name “Expressions” (the exhibition is listed as a “current exhibition”).
  2) To add content to the exhibition record on MUSENet, ME collects the data of the photographs e.g. creator’s name, piece name, a picture, acquisition date and enters it via the MUSENet web form.
  3) ME also adds a short description of the photographs (ME writes the description or receives the description from museum curator (MC)).
  4) Finally, for each art piece, ME receives a unique barcode, to print on adhesive paper, for each piece, which should be affixed to the placard by the respective pieces. These barcodes can then be scanned by a MUSE enabled smart phone to display MUSENet information on-screen.
- ME repeats step 1 to 4 for all 15 photographs of the exhibition.
- (S) When the exhibition is over, MC decides to add three photographs from that exhibition to the museum’s permanent collection on MUSENet.
- (S) The exhibition “permanent” has already been created, therefore ME simply copies the three pieces with their information from the “Expressions” collection to the “permanent” collection.
- At that point, since the “Expressions” exhibition is over, ME adjusts the status of the exhibition in MUSENet from “current” to “past”.

3
Outcomes

• Art piece photographs and metadata are uploaded to MUSENet and linked to barcodes that are placed about the museum.

Alternatives (Could Haves)

• MUSE software is also used to store previous collections as a means of off-site archiving.
• MUSE software could also be used to classify art pieces.
• MUSE software could also be used to remix existing content into new virtual collections that may not be related in the physical museum space.

Comments

Lack of material organization at museums could be a constraint (⁻) or an incentive (⁺) for using the MUSE system.

3.3 Service Blueprint

This service blueprint identifies the touch points between users, museum employees and the systems supporting the MUSE application. The most striking feature of this blueprint is the lack of front-stage employee interaction. We feel that this is a feature of the system allowing front-stage employees to fulfill their traditional roles in instances where personal touch points are necessary, while not overwhelming them with new responsibilities and technology. MUSE and MUSENet are intended to be self-service tools for visitors, not traditional audio guides or guided tours.

We’ve taken some liberty with the blueprint format by including backstage employee’s interaction with the Support Processes, independent of the Customer Actions. Please note, these backstage employee actions are not meant to be synchronous with the actions of the customer even though they are in-line with them in the diagram, these backstage employee actions can be done at the employee’s convenience. The arrows in the diagram are directional based on the information flow to or from MUSENet.

Figure 1. An information service blueprint for the MUSE system
4. Prototypes

Prototypes are useful for eliciting feedback and gathering support at various stages of the design process. At the time of writing we have developed a conceptual video prototype ([www.ljuba.net/stuff/MUSE.m4v](http://www.ljuba.net/stuff/MUSE.m4v)) in order to elicit feedback from relevant stakeholder on the project concept before investing significant time designing specific design elements. Next steps in prototyping MUSE include a paper prototype for working out the UI design details and higher fidelity prototypes on the web.

5. Conclusion

Although MUSE has not yet been put into production, initial feedback from users and museum staff alike has been very positive. Small museums can certainly benefit from systematic approaches to designing service systems. Self-service systems in particular may enable museums to publish content in a medium that would otherwise be unavailable. By enabling and encouraging museums to use systems like MUSE, the designers hope to increase visitors to these valuable cultural attractions.

6. Citations


7. Acknowledgements

We would like to thank the staff at the Berkeley Art Museum for allowing us to explore their museum in detail, question their visitors, and shoot a movie in their building. We would like to especially thank Richard Rinehart, Digital Media Director and Adjunct Curators and Dominic Willsdon. In addition thanks are due to Leanne and George Roberts Curators of Education and Public Programs at SFMOMA. We would also like to thank the respondents in our ethnographies including Freud Reia of the Museum of Craft and Folk Art in San Francisco, Andrew Farago and Diane Shapiro Sommerfield of the Cartoon Art Museum in San Francisco, Kim Turner of the Fresno Art Museum, and Lisa Eriksen of the California Historical Society.