

The Long Island Museum Information and Wayfinding App

Abstract

Since the massive closures due to the COVID-19 pandemic, many museums have been trying to find ways to encourage visitor engagement while they slowly reopen. New technologies, such as interactive kiosks, are becoming common in museums all around the world to attract visitors in a modern way. For this project, we developed an interactive display with a database backend for The Long Island Museum in Stony Brook, New York. The LIM has an extensive collection of art, historical pieces, structures, and exhibits spread across their large campus. They also host many events and visitors, such as tours and school field trips. This app would be a way for the museum staff to actively update their collection along with other pertinent information such as staff members and messages. Using iPads as kiosks, visitors can then query this database to see featured exhibits, upcoming events, as well as a map of the museum campus. Therefore, the museum staff would work with the administrative backend of this application, while visitors are interacting with the mobile and web frontend. As the user is interacting with the kiosk, the information will be projected on a large screen that would be set up in the main lobby of The Carriage Museum. In addition, when the kiosks aren't being used, they will enter an attract loop. In this state, the app would display a cycle of videos, animations, and general messages to greet visitors as they enter the museum. The main goal of this project is to use this interactive media display to create a more immersive and engaging atmosphere in the museum.

Background

The Long Island Museum

The Long Island Museum was the first museum to open in Stony Brook. Organized and funded by Mr. Ward Melville, the museum was officially incorporated as The Suffolk Museum on December 28th, 1939 (Stitt et al. 19). As the president of the board of trustees, Melville continued to fill the museum's collection over the years. He had been very interested in horses and carriages, so he sought after all different kinds of horse-drawn vehicles. This led to him opening the Carriage House to the public with about eighty vehicles and other pieces on July 7th, 1951.

The LIM and COVID-19

Joshua Ruff, the Director of Collections and Interpretation at The LIM, shared how the Long Island Museum has reacted to the COVID-19 pandemic. He started by explaining that the museum has about 25,000 visitors a year, which includes about 12,000 students who attend for the educational and family programs they offer. The curatorial staff has been busy populating the museum's YouTube channel and website with virtual tours of their big showcase exhibits. Joshua was able to comment on the progress of this advancement, saying that their presences on YouTube increased during the pandemic. They have videos posted in a variety of styles, such as

exhibit tours and interviews (Ruff 2020). Also, The Long Island Museum is part of the Google Cultural Institute. This site is an online collection of museums' exhibits and their best pieces. Joshua explained that this has brought new visitors to the museum, so they could see these exhibits in person.

Joshua also discussed the more financial side of the museum's response. The museum received several grants. One was from the National Endowment for the Humanities, and this money was used to install a more reliable WiFi signal, hard wires for live feeds in all the buildings and exhibits on campus and pay the staff and educators. The goal of this new technology is to create "unique learning opportunities to school districts of all sizes, student backgrounds, and income levels" (Ruff 2020).

While the future is still very unclear, Joshua and the rest of the museum's staff is hoping to open new exhibits by summer 2021. Even though this is a difficult time for everyone, The Long Island Museum has been able to keep moving forward and still bring their fascinating exhibits to as many visitors, students, and families as possible.

Son et Lumière

One of the earliest forms of historical multimedia exhibits is the son et lumière. The son et lumière "is a form of nighttime entertainment that is usually presented in an outdoor venue of historic significance" (*Son et lumière (show)* 2020). Specifically, lights and images are projected upon a building or ruins while music or narration is played. This concept was created by "Paul Robert-Houdin, who was the curator of the Château de Chambord in France, which hosted the world's first son et lumière in 1952" (*Son et lumière (show)* 2020). Son et lumière shows have been hosted all around the world including France, Britain, Luxembourg, Egypt, India, and the United States. This type of show is a great way to uniquely tell the story of specific historical events. The technology behind son et lumière, projection mapping, will be a main component in the interactive multimedia display at the LIM, which is what this research is building towards.

Survey of Applications

There were similar projects made in other universities that were very useful early on to have a better visual understanding of what this project would look like. One was created by Kate Ellenberger, a graduate assistant for the Binghamton University Art Museum. She used the same software, FileMaker, to create their museum tour application (Ellenberger 2014). This article provided many screenshots of their app, which contributed and influenced the design of this project.

This next case study was a touch screen kiosk developed for the Penn State University All-Sports Museum by Pat Besong. He also used FileMaker to develop their app, and it provided great insight and tips on how to properly set up and design the app (Besong 2007).

In addition, Paul Marty, from the University of Florida, discusses interactive technologies in his chapter of *Museum Informatics*. Interaction in museums has become an important part of the museum experience in the past few decades. To be clear, "interaction" doesn't refer to just technology. Interaction can mean talking to a tour guide, touching the pieces in an exhibit, reading through a book, or using a multimedia information kiosk (Marty

131). The main theme of advancements in interaction is breaking the barriers that have existed in museums up to this point. With new technologies, visitors can now look at digital 3D models of artifacts, regardless of where they might be in the museum or the world. Interactive experiences also have the potential to make museums more personal and individualized. This is nothing new, with audio guides or smartphone tour apps, visitors have been able to create their own tours and pick and choose what they would like to see and learn (Marty 133). Interfaces such as these put the visitor in the role of the curator, and many find this very engaging and exciting, but on the other hand, it becomes less likely for visitors to find exhibits by surprise or to look into an exhibit they wouldn't be interested in at face value (Marty 134).

This next chapter in Museum Informatics is by Maria Economou, from the University of Aegean, and she explains different types of applications of information and communication technology (ICT) in museums. The most popular use of this technology is the information kiosk in its many forms. Whether it be a stationary computer, handheld computers, touchscreens attached to the display cases and walls, or even entire sections areas with information stations, they all provide visitors with specific details about the museum and its exhibits (Economou 138).

More closely related to the project at hand, information kiosks can also be used to cover broader topics throughout the museum. They can spotlight specific artists and their works that are currently being featured or cover historical time periods and how they relate to the museum's featured displays and exhibits (Economou 139). Kiosks can also act as "conceptual pre-organizers", where they are set up at the entrance of an exhibit or the entire museum and provide introductory information and basic concepts that would help visitors have a better understanding of what they're about to see. By giving visitors this background information, they will be able to connect with each of the pieces better without having to create a context in their head.

Another use of information kiosks is as museum directories. Digital wayfinding is currently a very big trend in the museum industry. Museums can provide maps of the campus through a smartphone app, or in kiosks all throughout the building. Information kiosks could highlight potential routes to follow in the museum depending on a visitor's available time and interests. They can also show off key exhibits, special events and activities and the location of certain pieces and exhibits (Economou 140). Back in 2016, The Met released a new beta of their digital map. They describe this new map as a dataset, and that what we see is dynamically rendered from this dataset. What this means is that "we can manage the properties (and even languages) of each data point so that the type of information displayed on the map is appropriate to the context in which it is displayed" (Tallon, 2016). Information and communication technologies have the potential to make museums much more welcoming and engaging for visitors.

All this research culminated into an extensive literature review that was written before starting the design process of the application.

Approach/Methods

Design Brief

Before developing the application, I created a design brief, which essentially defines aspects of the application before developing it.

This first page discusses the “Personas”. Personas are used to have a better understanding of who will be using the application. In this case, there were three personas. The first was educators. Educators would use this application in hopes of encouraging their students to engage with the museum and all it has to offer. Using new technologies like this will grab student’s attention and get them to focus on everything there is to learn. Next are the students. When students visit the museum, this app will be there to welcome them. It will provide them with an immersive experience that will make them fascinated to learn more and get excited about the museum. Lastly is the museum staff. They will mainly be using the app to keep an updated record of their collection. The app’s user-friendly interface will make this a seamless and instant process to ensure the database will always be up to date.

Next are the “Use Cases”. The use cases define how the application will be used. First is user queries on the website. Users can query certain information from the database and have it presented to them on the LIM website. Second is visitors queries at the kiosk. Similarly, in-person visitors can use the iPad kiosks to query the information as it projected in the museum. Lastly is the administrative interface. The museum staff will have separate screens and views that give them access to edit the database in any way they’d like, whether it be to update, add, or delete records.

Next is a “Technology Assessment”. This explains the technologies and software that will be used to create this project. The actual database was developed in FileMaker Pro. FileMaker is a relational database management system. It is also very important to note that FileMaker is cross-platform, so the iPads and desktop computers can connect without any issue.

Next is the “Mood Board”. The mood board shows off the aesthetics aspect of the application including colors and fonts. I decided to go with simple fonts and a color scheme that matched the museum.

Then were the wireflows. Wireflows show how each of the screens of the application are connected. This top diagram shows how “Idle Mode” would work, while the bottom shows how the actual application is put together. Taking the time to lay out each of the screens and visualizing how they are all connected made it much easier to make sure no important aspect of the application was missing or inaccessible.

Lastly is the database structure. This illustrates the different kinds of entries that can be made in this database as well as how they are connected one and other, which are called relationships. For example, the “Pieces”, “Exhibits”, and “Events” table are all connected to the Locations table.

Application

As stated before, there are two versions of the application. One for the administrators while the other is for the museum visitors. When using the administrator version the app opens on a main menu screen with six options, “Locations”, “Pieces”, “Events”, “Exhibits”, “Staff”, “Messages” (Figure 1). These are the six entities in the database and represent different collections in the museum. By clicking on one of these buttons you are brought to a list view of all the records for this entity (Figure 3). Each listing includes the name and other important

information. Upon clicking on one of these listings, you are brought to the item view for the record (Figure 4). This page is dedicated entirely to the selected record. It includes a title header, picture, and all the other information attached to this record. Using the FileMaker interface, you can add a new record from this screen. You will be given a new blank item view page and you can fill it in with all the pertinent information, and it will then be added to the list view page and the database.

There is also the visitor version of the app that would be installed on the iPad kiosks. The main menu screen on this version has three buttons that represent three different queries that the visitors can use to see specific information from the database (Figure 2). After choosing one of these queries, you are brought to a similar looking list view page, but the listings are more refined. For example, the “Exhibits” list view page will only present visitors with current or ongoing exhibits, rather than all the exhibits the admins have entered the database. This effect was achieved by writing scripts within FileMaker, and they run once the user clicks on the query buttons. This example checks the date field of each record and only presents the current ones. Then, from the list view page, you can still move on to the item view page, just like the admins can. However, the biggest difference is that the FileMaker interface isn’t visible in this kiosk version of the application. This prevents visitors from editing the database in any way.

In addition, there is the map portion of this app. Back on the main menu of the kiosk version of the app, one of the queries says, “Where Am I?”. If a user clicks on this, they’re shown a map of the museum grounds with a marker on the Carriage Museum. This is where the kiosk would be set up, so it’s showing the user their current location (Figure 5).

Lastly, is the “Idle Mode” that was previously mentioned. If the kiosk is unattended for 5 minutes, it will enter an attract loop and transition to a new screen. On this screen, the app will automatically play animations and videos until a new user interacts with the kiosk.

Future Work

The next step for this project would be to work with The LIM and have this system installed at The Carriage Museum. We established the early idea of how this system would work when writing the Technology Assessment. This projection system would be made up of two projectors, one for each kiosk we plan to have. There will then be three modes this system could be in. The first is “Idle Mode”, for when neither kiosk is in use. When the kiosks are in use, the system will either be in “One User” or “Two Users” mode. This essentially means that if only one kiosk is in use, half of the projector screen will be active, but if both kiosks are being used, the entire screen will be active.

We would then investigate different projector units, screens, and configurations to understand what would be best for this setup. Once this part is set up, we’d pair the iPad kiosk to the projectors, and the system would then be up and running (Figure 6).

The museum staff would also need to be trained on how this application works so they can use it to its full potential.

Diagrams

The design brief can be viewed at the following link: <https://you.stonybrook.edu/limmearvolino/>

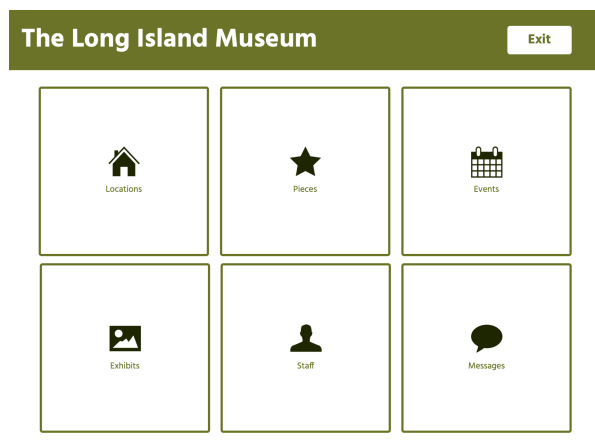


Figure 1. Administrator Main Menu



Figure 2. Kiosk Main Menu

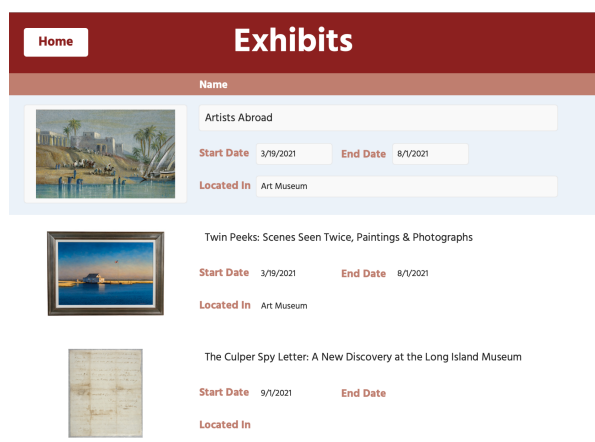


Figure 3. List View Screen

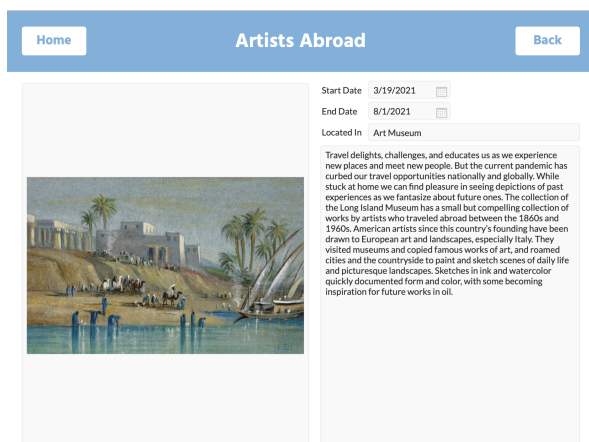


Figure 4. Item View Menu



Figure 5. Map Screen

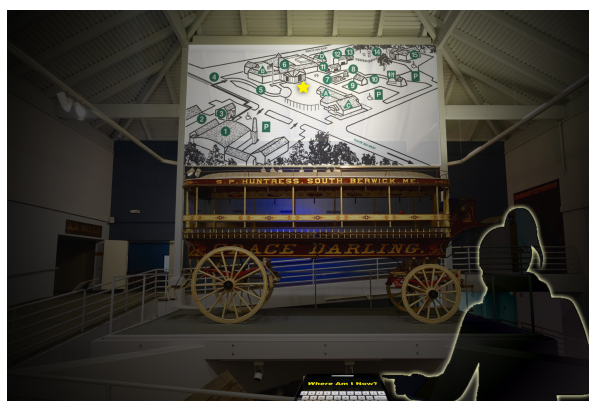


Figure 6. Setup in The Carriage Museum

Works Cited

- Besong, P. (2007, August 30). New Touch-screen Kiosk for PSU All-Sports Museum. Retrieved May 12, 2021, from http://www.personal.psu.edu/pzb4/blogs/all_your_base/2007/08/new_touchscreen_kiosk_for_psu.html
- Economou, Maria. "A World of Interactive Exhibits." *Museum Informatics*, Routledge, 2008, pp. 137-157.
- Ellenberger, K. (2014). Museum Tablet Tour (2014). Retrieved May 12, 2021, from <http://kateellenberger.com/digital-archaeology/museum-tablet-tour-2014/>
- Marty, Paul F. "Interactive Technologies." *Museum Informatics*, Routledge, 2008, pp. 131-135.
- Son et lumière (show). (2020, April 13). Retrieved November 19, 2020, from https://en.wikipedia.org/wiki/Son_et_lumi%C3%A8re_%28show%29
- Stitt, Susan, et al., editors. *The Carriage Museum*. Stony Brook, NY, The Museums at Stony Brook Souvenir Publication, 1987.
- Tallon, L. (2016, April 18). The Future of Mapping and Wayfinding at The Met. Retrieved January 10, 2021, from <https://www.metmuseum.org/blogs/digital-underground/2016/future-of-mapping-and-wayfinding>