

Digital GLAM Spaces Conference

VR Exhibit Usability: Virginia Tech Digital Library Virtual Exhibit (Transcript)

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This session is about the usability for the virtual exhibit created using Artsteps.

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We will start with a little background for the virtual exhibit

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The Digital Imaging and Preservation Services unit from Virginia Tech University Libraries provides online access to the science and cultural heritage materials from under-resourced small regional institutions without collection acquisition since 2016.

After the temporary digital library platform was properly set up, and collections were published, we moved to the next phase to promote the digital collections with the exhibit. And the exhibit's goal is to increase brand awareness while promoting the digital collections. The initial proposed collaborative exhibition was a multi-point interactive physical exhibit throughout Virginia Tech Newman Library and the Art & Architecture Library in Fall 2020.

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However, the viewing rate of the in-person exhibit in the libraries will be low due to the stay-at-home order. In tandem with the low traffic, the impact of the physical exhibits will be minimal.

To better adapt to the volatile macroenvironment caused by the pandemic and to better justify the effort invested for the project, the majority of the digital collections were built into an interactive virtual exhibit. Now we have a goal with a new target audience group, that is an online exhibit where everyone in the world with internet access can enjoy.

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Despite the virtual exhibit creates an engaging experience for the majority of the viewers, the virtual exhibit has some limitations as well, such as required internet access, devices to optimize viewing experience, and accessibility limitations that will be presented throughout this presentation..

The project duration for just the creation of this virtual exhibit is from May 2020 to August of the same year. The initial proposed exhibit was planned since 2018.

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My role in the just the virtual exhibit part for the project is the designer and creator of the virtual exhibit from conception to delivery. Responsibilities included conducting usability studies, editing design, liaising with collection owners, and managing all the digital assets.

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Table of Contents for the session today. We've covered Section 1, which is the introduction and project background part.

For Section 2: starting the design from choosing software, the design focus, and usability studies. Section 3, focus on the designs refined with themes derived from usability studies. Section 4 on unresolved issues. And lastly, Section 5, next steps to take.

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Starting the design

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Eleven software were explored for creating the virtual exhibit, which are:

Google Arts & Culture

Ikono Space

Exhibbit

Roomful

Kunsmatrix

Artsteps

Open Exhibits

Ortelia

A-frame

model-viewer

Virtual Trade Show Platform

Artsteps was selected as the software to build the virtual exhibit - because it best fit our needs for the exhibit. Which includes the pricing, the quantity and format of digital objects accepted for the exhibit. And - the exhibit is built on virtual space instead of replicating physical exhibit space.

Most importantly, the ease of using the software that is essential for working with collaborators with different expertise levels

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We made the decision of creating a hybrid exhibit that consists of the virtual exhibit and smaller scale in-person exhibit on campus. Here is a quick overview of collaborators for the exhibit. There are a total of 21 contributors from different library units, university departments, and regional institutions involved in the hybrid exhibit. Our colleagues were involved in different functions of the exhibit, including exhibit planning, cataloging, collection curation, virtual exhibit creation, physical exhibit installation, digitization, digital signage, social media, news, presentation, and publication. Of which 10 of them contributed to the content for the virtual exhibit.

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To get started with creating a virtual exhibit on artsteps, we will first need to define our virtual space. There were two virtual space templates provided by Artsteps. Given the number of digital objects that will be displayed in the exhibit, it's better off creating our own virtual space. By referring to other existing exhibits and after a few editing, a refined floor plan with smooth traffic flow is created.

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We try to create an experience to be as much like a museum exhibit as possible, so the descriptive text for items in displayed were provided as well to help users learn about the community collections and the significance of them.

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The virtual exhibit presented today can be accessed through bit.ly/vt-vr or from the Virginia Tech Libraries website. And I'm going to play the short clip for the exhibit as a preview.

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Unmoderated usability study was conducted on the virtual exhibit throughout the exhibit creation process. Users were asked to browse the exhibit and interact with items in the exhibit. Meanwhile, I'm focusing on finding answers to the questions such as:

How long does it take for a user to learn how to navigate on the site or the app?

challenging parts of the user flow?

parts of the browsing activity where users are getting stuck?

And additional feedback from users?

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There were a number of usability testing conducted for the virtual exhibit.

The major findings were highlighted on the slide:

The beginning test findings were: unclear navigation directions and difficulties in moving in between the narrow walls built in the exhibit.

Consecutive round of test found that users having difficulties reading text images and users were stuck at using other devices to navigate the exhibit.

Later, we still encountered the same issue with slow loading time for the exhibit or unable to load the exhibit in the browser on phone devices.

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From the findings, the virtual exhibit design was refined numerous times.

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A template floor plan, selected refined floor plan, and final version floor plan are shown in the slide.

The floor plan from the template is straightforward and is more interesting with premade landscape. However, the template floor plan does not have enough space to fit in all of our digital assets.

The second floor plan offers distinctive spaces for different collections. But the confusion comes into place when there are multiple directions that users can be going. The small spacing causing movement within the exhibit to be challenging as well. And the repetitive path will also cause users to miss the objects on display. The final design provides direction signage on the exhibit and offers only one direction entering and exiting the exhibit so users can see all the objects in the exhibit and there's no repetitive pathway that causes items to be overlooked by users.

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Text documents (book, handwritten letter) are difficult to read from the virtual exhibit. Besides image resolution, bound document is also a problematic format for display in the exhibit, because filling the whole exhibit walls with thousands of book pages isn't appealing to anyone.

To solve the issue, we provided shortened links that would redirect users to the site hosting the digital object. When users click an object to view the details, a window will pop-up on the top-left corner of the exhibit window, showing descriptive text and shortened link for the object, as shown in the screenshot on the left of

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the slide. One thing to note though is that the links are not clickable on the free version of Artsteps, users still have to copy and paste the link to a new window to interact with the item.

Screenshot on the right is the zoomed in text image accessed from our Omeka site, where the temporary digital library platform is built on. The higher resolution and image viewer functionality is better for reading the text in detail.

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Artsteps has a Poly API asset library where creators can search and insert the 3D objects in their exhibit. In our exhibit, we used representative 3D objects from the library and redirect users to Sketchfab site to interact with our actual specimens.

Screenshot on the left of the slide is from the virtual exhibit, showing a pop-up window for the 3D butterfly object. And on the right, is the 3D model for the actual monarch butterfly specimen on Sketchfab site.

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Images, text, and 3D objects were turned into interactive objects to make navigation easier when using a tablet. The left image on the slide shows settings for text with the interactive option turned on. And the right image shows the user's view where they were brought to the front of the text with a pop-out window when they clicked on the text asset.

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Users were prone to miss the introduction and instruction text at the entrance of the exhibit due to the lack of text contrast against the wall design.

The text was then converted to image with white color background and uploaded as an image asset to the exhibit to solve the issue.

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Unresolved usability issues

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There are a few issues that are limited by the software that we used. First is compatibility of software across different devices, second is the slow loading speed for the exhibit, especially for an exhibit with over a hundred digital assets.

Screenshots in the slide were from using a phone device to view the exhibit. Image to the right showing the exhibit prompt users to view the exhibit in the app. The other image shows an error message after loading the exhibit in a browser on the phone. The majority of phone users who view the exhibit in browsers encountered the same issue.

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So what if we use the mobile app designed by Artsteps?

The mobile app is not designed to provide unified user experience. First being different controls on the app. Navigation on the app is challenging for users because they are having difficulties figuring out the feet and eye icons on the screen functioning like a joystick controller.

In comparison to viewing the exhibit on desktop or laptop computers, the navigation depends heavily on drag and click actions on a mouse.

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Secondly, the digital assets react differently on the mobile app. The image on the left is a screenshot taken from the mobile app that shows garbled text when clicked on an object. The image to the right of the slide is the exhibit screenshot from the desktop for comparison.

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Most importantly, users are unable to copy the redirect links for objects.

The app design is beyond our reach for improvement. Therefore, we encourage users to view the exhibit from a desktop or laptop computer - even though that is not an ideal solution.

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Next, we created an alternative exhibit to the virtual exhibit on the Omeka site because it can be navigated on the keyboard. However, it is still going to be different from experiencing the virtual exhibit. For an example,

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The alternative exhibit created does not include three-dimensional objects because we currently still have no way to making them accessible. 1. The 3D objects are keyboard inaccessible (while keyboard is the primary input device for people who are blind), they are unable to perform click and drag actions on the model on keyboard like able-bodied person) 2) we do not have a precise way of describing user's input or interaction with the 3D objects and describing the manipulated status of the 3D objects to help with interpretation for people who are blind or deaf-blind.

A GIF image of a 3D monarch butterfly model is presented in the slide, with the user rotating the butterfly model in 360 degree from right to left, then zooming in to the thorax of the specimen.

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Another known issue for accessibility is the image of text. Even though we are redirecting users to Omeka site to view the high-resolution images of the text, we are still unable to provide alternative text for the images unless there's handwritten text recognition performed on the images. otherwise, it will not be accessible. Selected pages from an account book that is difficult to interpret by able-bodied person are shown on the slide.

Note: Virtual Reality in the Dark: VR Development for People Who Are Blind

<https://www.meetup.com/a11yvr/events/280442199/>

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The last section: Next steps to take

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Due to the limitation of the software and to better serve the next billion users, which is the mobile device user group, we will need to search for another virtual exhibit software that can be rendered in a browser on mobile devices and also provide a unified experience.

Meanwhile, we can continue improving on the Artsteps exhibit through more usability testing to find new pain points to produce the best designed product or to apply the findings on the next project.

Lastly, we still have the gap to fill on accessibility, especially accessibility for interacting with 3D objects.