

UTAH NATIONAL PARKS



DESIGN DOCUMENT

CONTRIBUTORS



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DESIGN

Sections:

- 1.0 Strategy
- 2.0 Scope
- 3.0 Structure
- 4.0 Skeleton
- 5.0 Surface



STRATEGY

The project aims to integrate 3D hike tours of Utah's five national parks into virtual reality, allowing users to access places that wouldn't usually be able to. With Meta as the main client and NPS involvement. The national parks included in this project are all the parks in Utah, which are.

- Arches
- Bryce Canyon
- Canyonlands
- Capitol Reef
- Zion

Our target audience includes those who would like to explore Utah's national parks but face barriers due to accessibility. This includes those with physical disabilities or mobility challenges, families with young children, and those who have difficulty traveling. Our audience also encompasses anyone with the desire to learn more about the national parks through virtual education.

SCOPE

To meet the needs of the project our scope will include a website designed and hosted locally containing the virtual click-through tours of the 5 of the national parks (Arches, Canyonlands, Capitol Reef, and Zion), integrated with audio and maps, and optimized for accessibility features in alignment with National Park Service (NPS) standards. Audio captured from parks and edited for both web and VR.

Some of the accessibility needs to be aware of in our design are

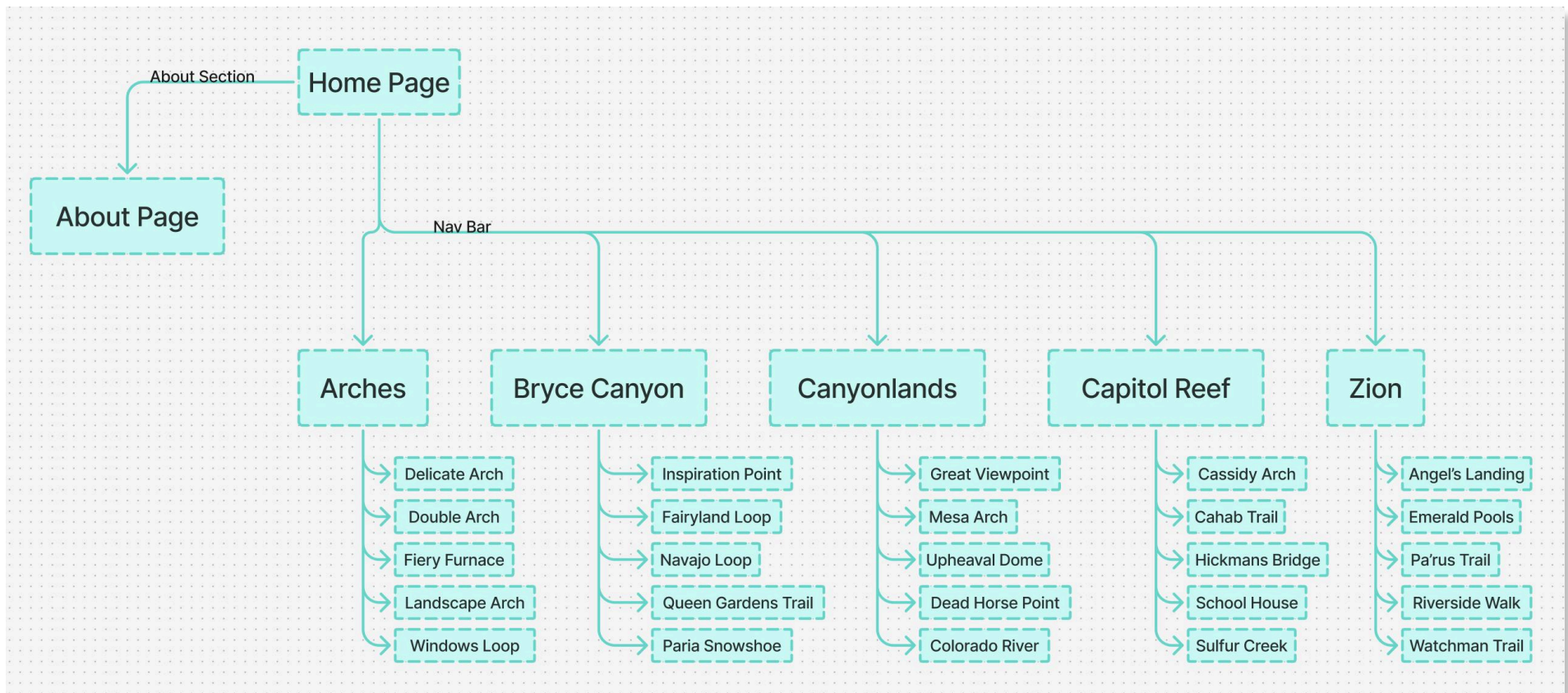
- Deafness
- Mobility issues
- Colorblindness or Low vision
- Tremors

Ways we are designing to meet those needs

- All designs can be accessed without a need for audio
- VR tours can be easily understood and navigated
- High contrast of buttons and text
- Large buttons

STRUCTURE

The website will consist of 7 main pages, a home page, about page, and 5 pages for each of the national parks. Each national park will have a link that leads to a new tab with the VR tour and will not have a separate page.



WIREFRAMES

Iterations

Iteration is the name of the game, design, design, and design some more. Spew all your ideas on the page and try to create the best solution. Here is a sample of some the designs we experimented with for the park cards.



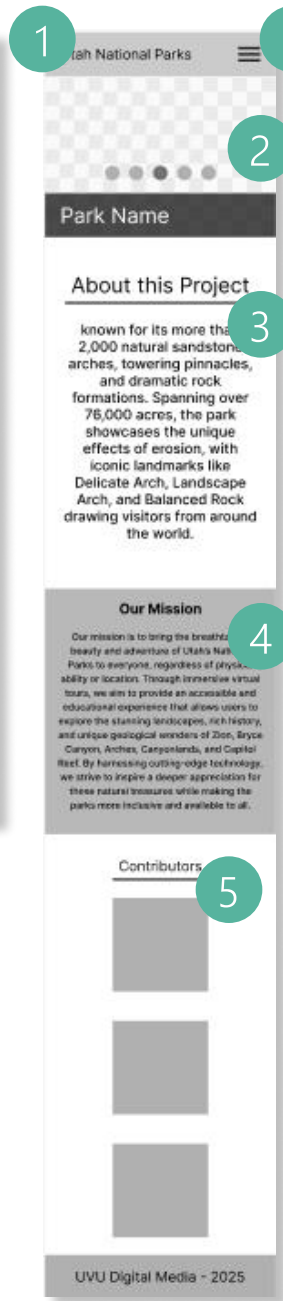
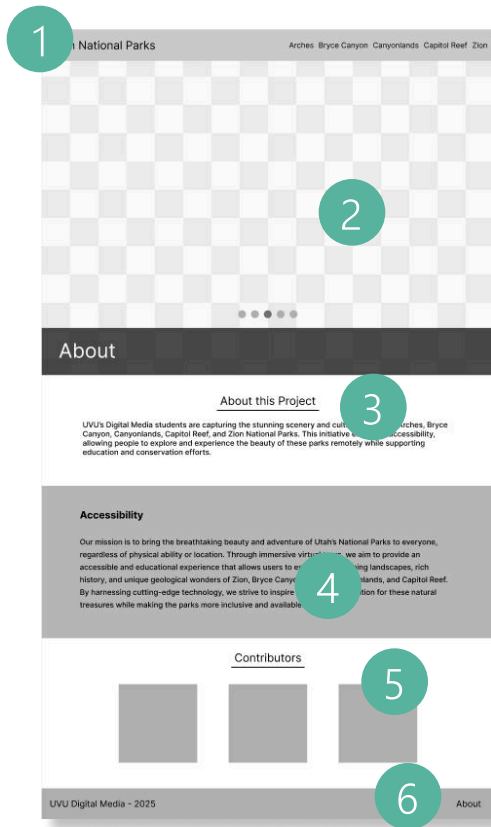
SKELETON



Home Page

1. Navigation bar: project title on the left and park names on the right, for mobile the navigation drops down to reveal park names and home buttons.
2. Image carousel: shows images of the different parks.
3. About: tells users about the project.
4. Park cards: individual cards for each park, this includes a small description of the park and a link to the park page. Mobile view removes the button and park description instead opting for a card that can be clicked.
5. About page: link to the about page, the link seemed out of place in the navigation so we moved it down here. In mobile the link to the about page is in the drop down navigation.

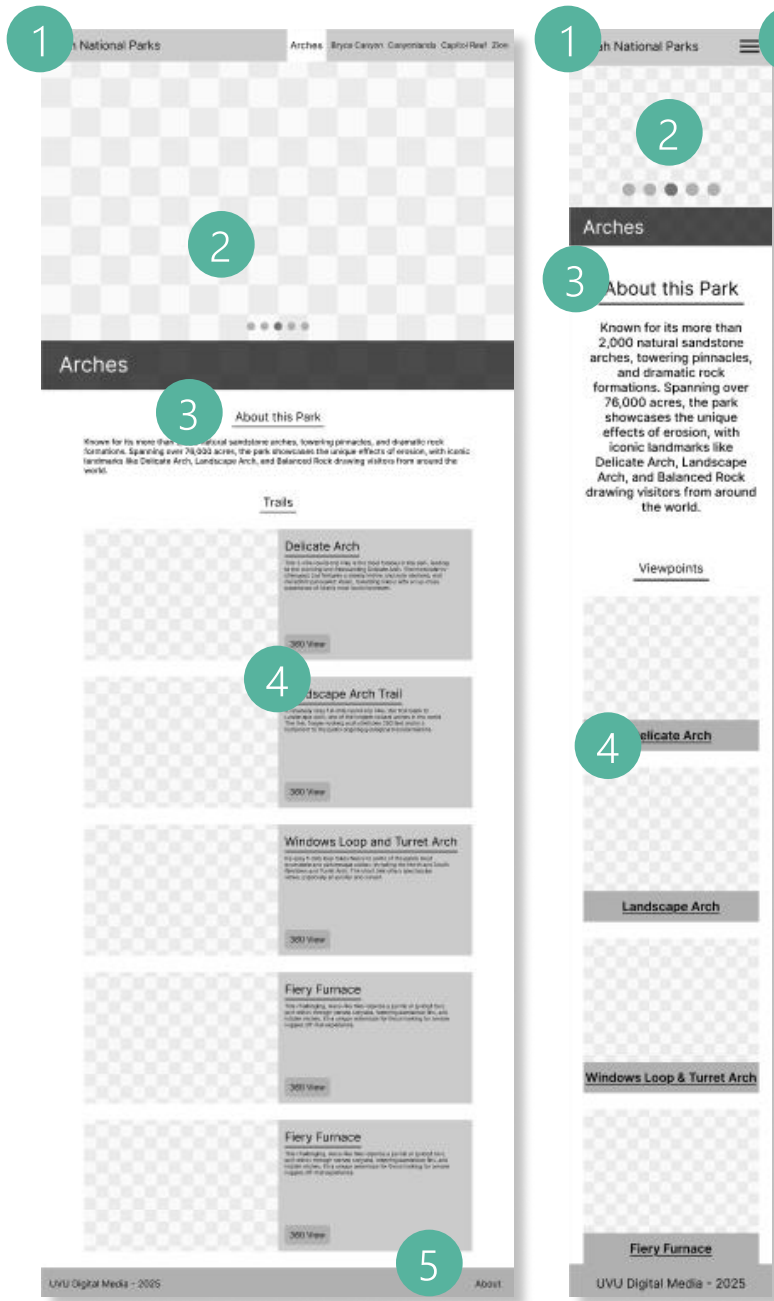
SKELETON



About Page

1. Navigation bar: project title on the left and park names on the right, for mobile the navigation drops down to reveal park names and home buttons
2. Image carousel: shows images of the different parks.
3. About: tells users about the project.
4. Accessibility: tells users about how accessibility was built into the project.
5. Contributors: this would contain UVU, NPS (national park services), and Meta.
6. About page: link to the about page, the link seemed out of place in the navigation so we moved it down here. In mobile the link to the about page is in the drop down navigation.

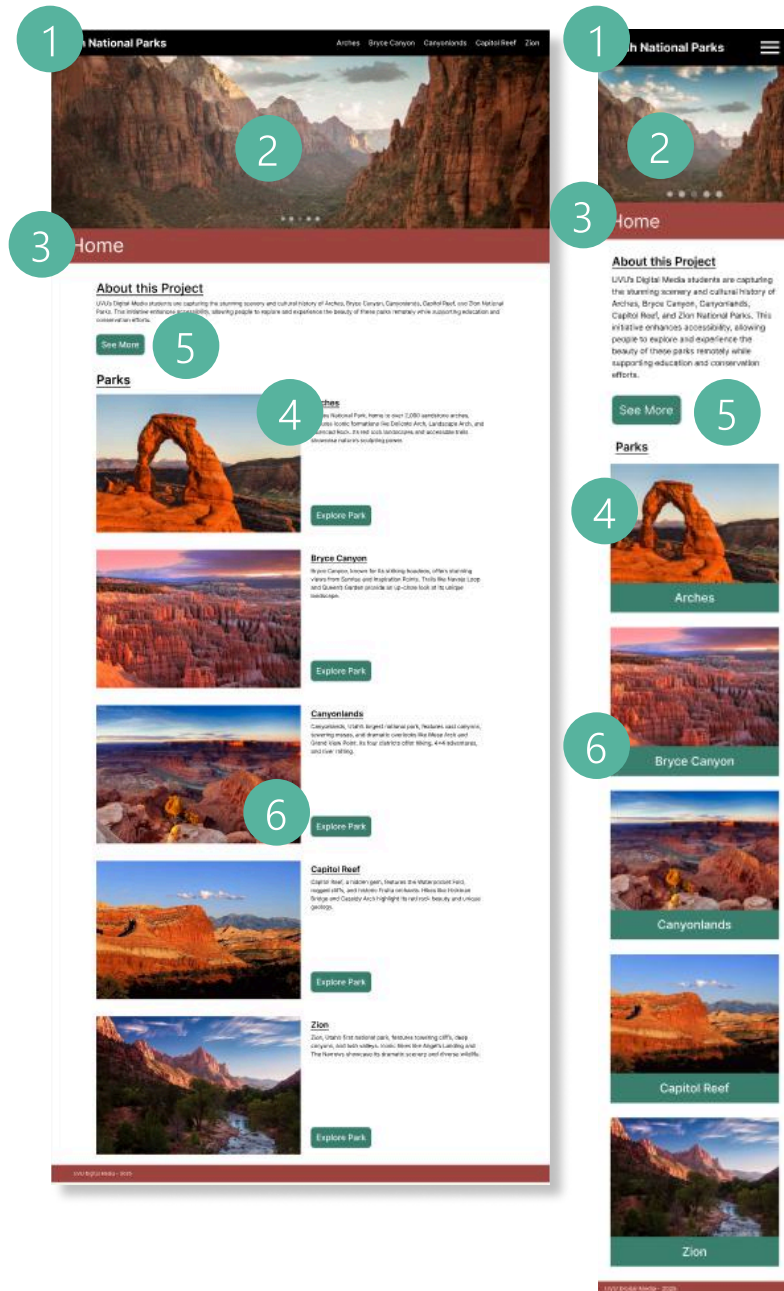
SKELTON



Park Pages

1. Navigation bar: project title on the left and park names on the right, for mobile the navigation drops down to reveal park names and home buttons. For readability the selected parks have a high contrast.
2. Image carousel: shows images of the different trails.
3. About: tells users about the national park.
4. Trail cards: individual cards for each trail, this includes a small description of the trail and a link to the VR tour. Mobile view removes the button and park description instead opting for a card that can be clicked.
5. About page: link to the about page, the link seemed out of place in the navigation so we moved it down here. In mobile the link to the about page is in the drop down navigation.

SURFACE



Home Page

1. Navigation bar: project title on the left and park names on the right, after user testing we decreased the size.
2. Image carousel: shows images of the different parks, height decreased to show page title better.
3. Page title: decreased the size of the title.
4. Park cards: individual cards for each park, changed the bolding and underline on the title.
5. About page: moved the about page link to fit inside the first paragraph of the home page.
6. Darkened the turquoise color for better readability.

SURFACE



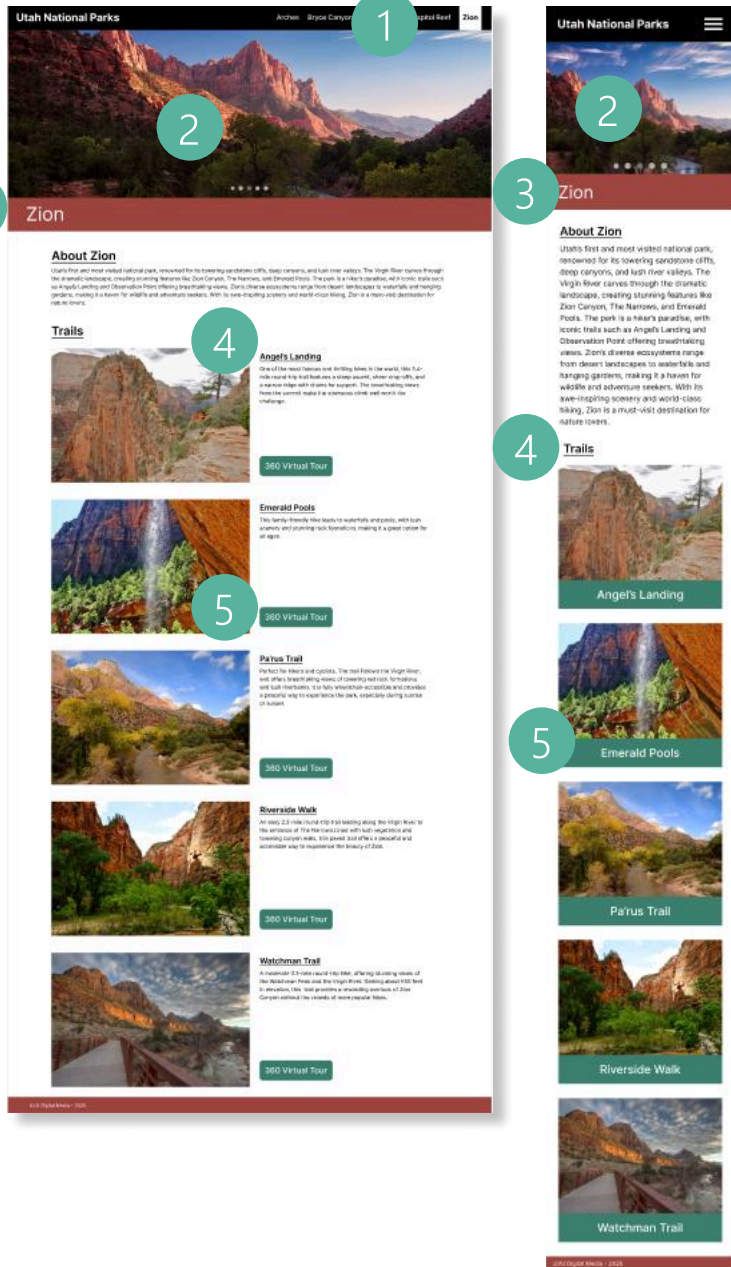
About Page

1. Navigation bar: project title on the left and park names on the right.
2. Image: shows an image of the project.
3. Page title: decreased the size of the title.
4. Mission statement: what the goal of the project is.
5. Contributors: this would contain UVU, NPS (national park services), and Meta.

SURFACE

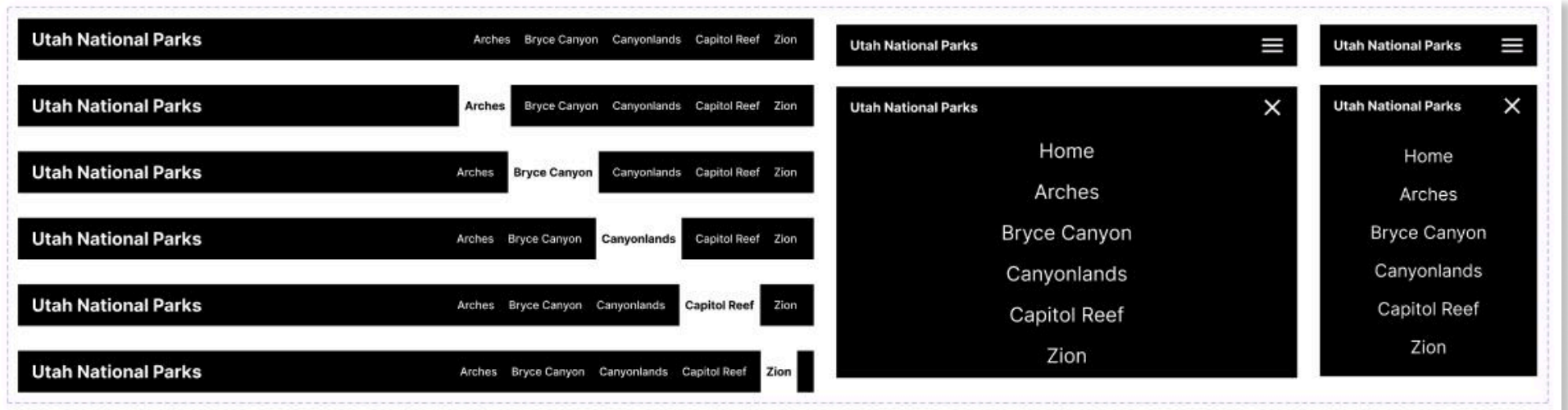
Park Pages

1. Navigation bar: project title on the left and park names on the right, high contrast on selected park page.
2. Image carousel: shows images of the different trails, height decreased to show page title better.
3. Page title: decreased the size of the title.
4. Trail cards: individual cards for each trail, changed the bolding and underline on the title.
5. Darkened the turquoise color for better readability.



SURFACE

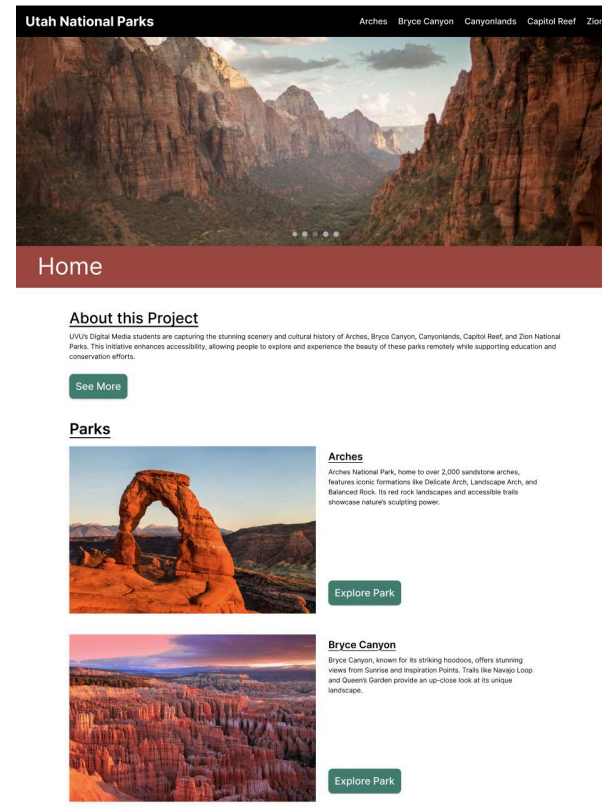
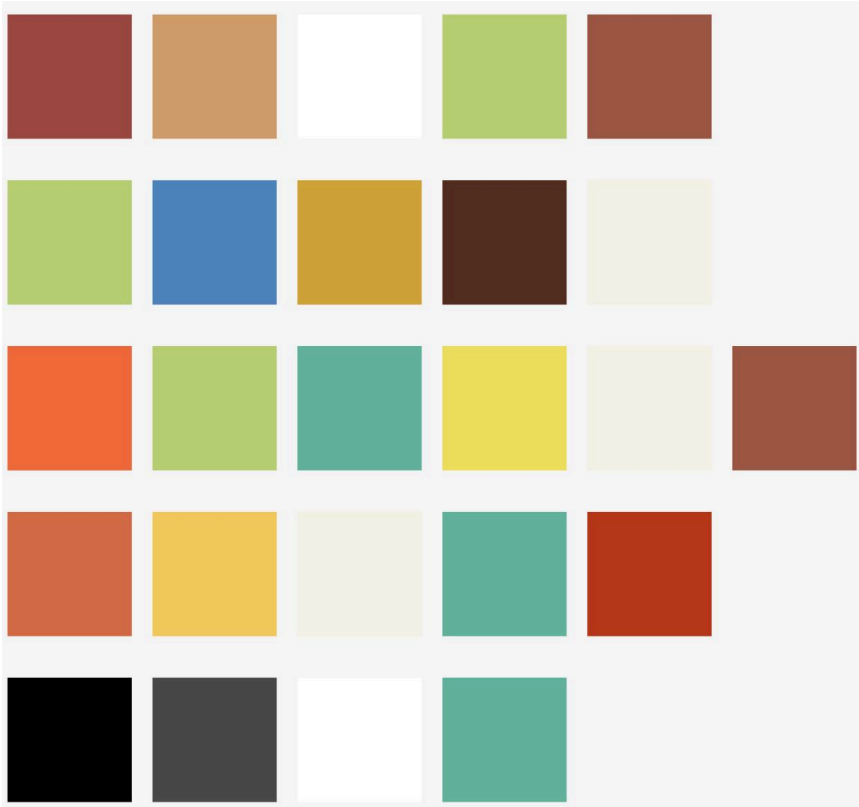
The navigation bar was made with accessibility in mind, the colors of black and white were chosen specifically because they have a very high contrast. When a user hovers over the desktop pages the name and background reverse colors, and when on the page the page stays that way. For tablet and mobile we included a link to the homepage as well, because many users did not realize that the name of the page would lead to the home page.



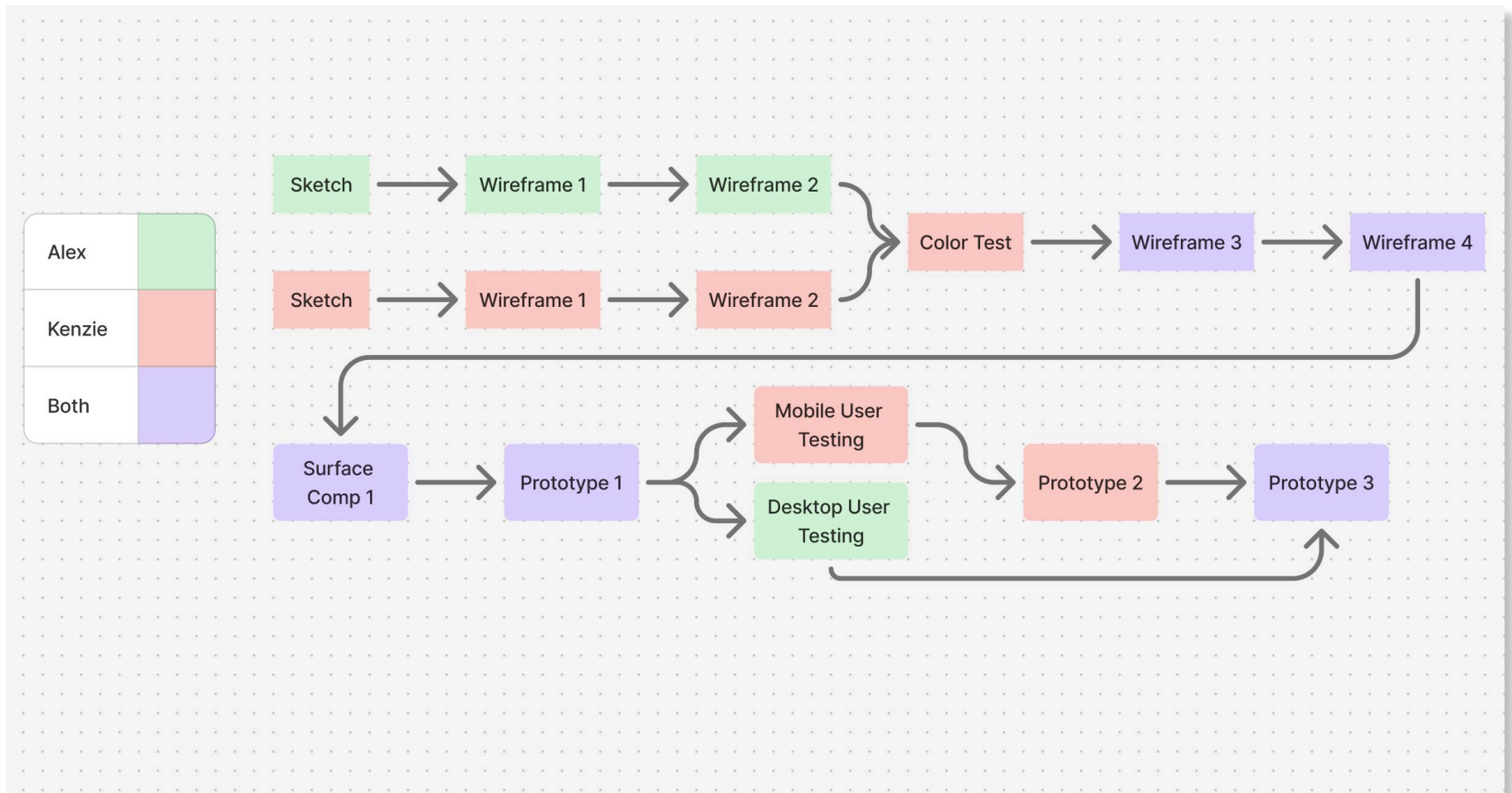
COLOR TESTS

Color Theory

With the surface comps we wanted to create a color scheme the reflected a more serious tone, being associated with the national parks, while also have a unique identity. On the left are some of the color palettes we experimented with, on the right is the colors we ended up using.



DOCUMENT MAP



<https://www.figma.com/design/jp56Q005m0cRxOv1ob2Ok9/Website-Redesign?node-id=0-1&t=f2IMzNSAtIXZEIJD-1>

TECHNICAL SPECIFICATIONS

Sections:

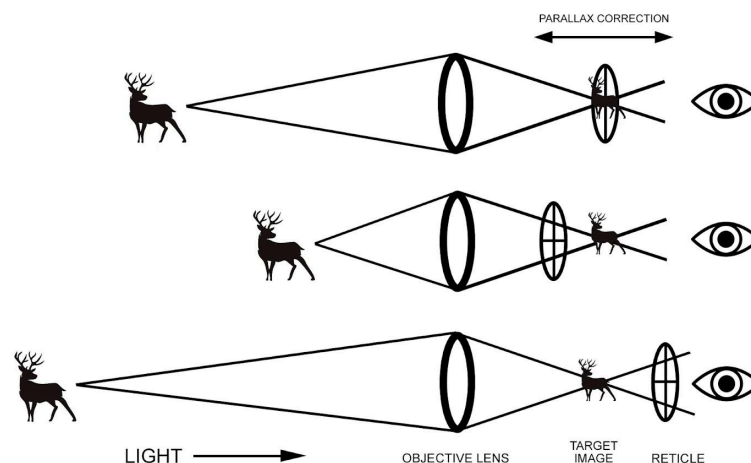
- 1.0 Camera & Equipment
- 2.0 Photomatics
- 3.0 PTGui Pro
- 4.0 Pano2VR
- 5.0 VS Code & SCSS



CAMERA & EQUIPMENT

Camera

1. Canon camera: takes 3 images for HDR, under, normal, and over exposure.
2. 8mm Fisheye Lens: takes a 180 degree image to get a full view, which later can be stitched into a complete 360 degree image for VR.



Support Gear

1. Nodal ninja: this holds the camera and can adjust the camera to mitigate parallax for a VR photo without issues.
2. Tripod: adjusts the camera to a consistent height for all the images, optimally the camera should be at 50 inches.

What is Parallax?

Parallax is a displacement or difference in the apparent position of an object viewed along two different lines of sight

PHOTOMATICS PRO

HDR

HDR is a way of taking images that takes an image that is underexposed, normal exposure, and overexposed. This allows the photographer to go in later and get what is called a dynamic range by combining the images. Dynamic range is the range of highlights and shadows, HDR is a method of getting this effect.

Photomatics Pro

The three exposures are combined in Photomatics Pro, which can do this in large batches and greatly speeds up the process of creating HDR images.

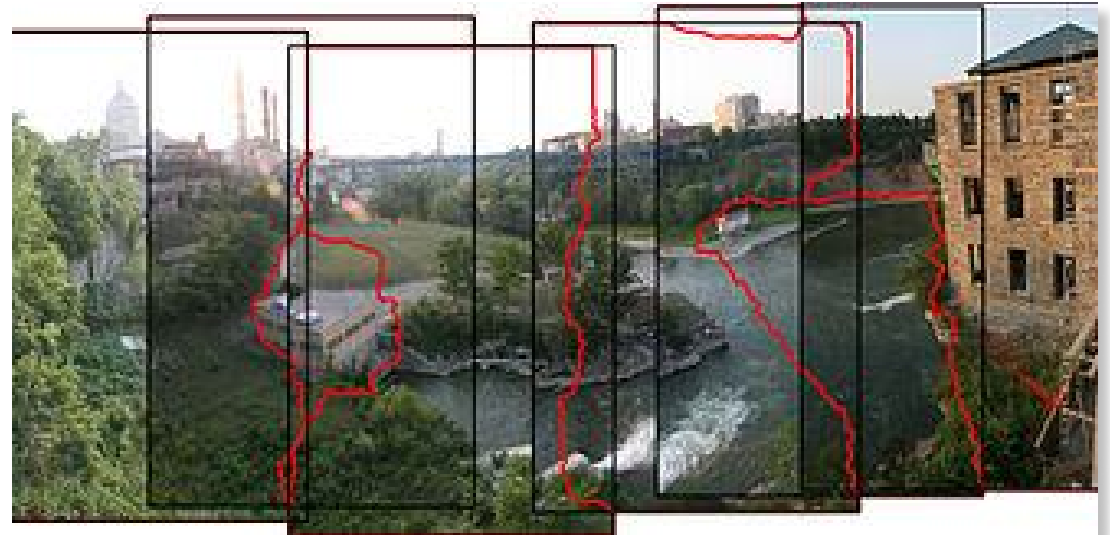


Under, Normal, and Over exposed images

PTGui Pro

Image Stitching

PTGui Pro is a program that helps you to stitching images together. When you take the images you take 4-6 shots from a central point. 4 shots around with a portion of the sky, and 2 optional down shots. The stitching tool connects the images across more natural lines creating a more cohesive image.

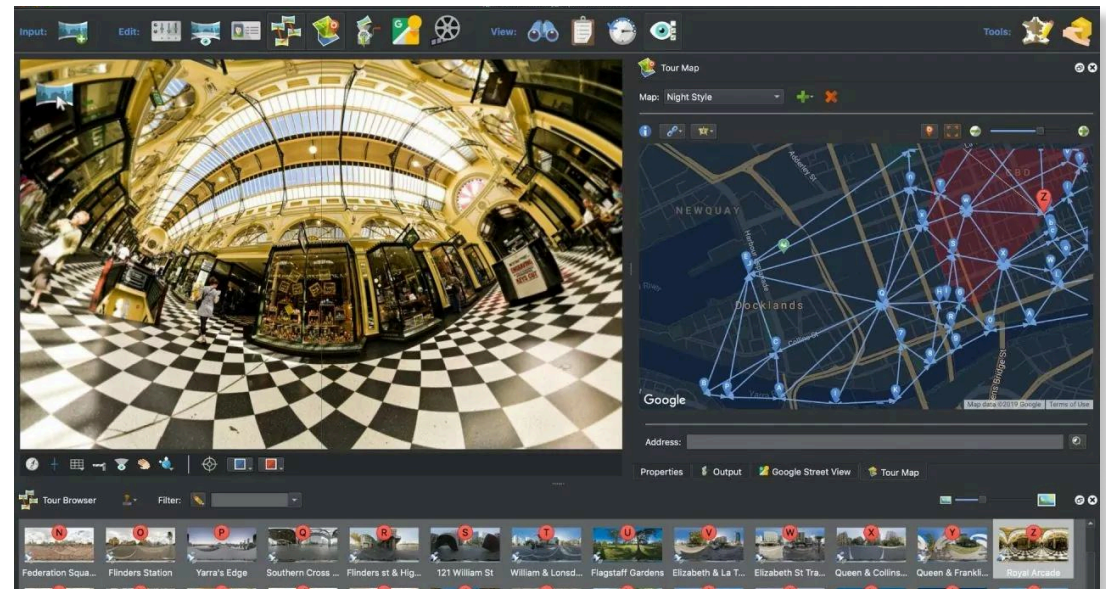


Example of images being stitched together

PANO2VR

VR Tours

With all the images processed through HDR, stitched together, and ready for the next step. They are put into Pano2VR as separate nodes, these nodes are connected to each other and if you have GPS data they can also be tied to a specific location. In this software you can also add elements to enhance the experience, directional sounds that adjust to where you are looking, pop-ups with additional information, or even masked video to make it look like a person talking in front of you. After the tour is finished it can be uploaded to the website and allow anyone with the link to view it.



The Pano2VR UI, on the left is the node, on the right is the map with all the nodes, on the bottom is the images of all the nodes.

PROJECT PLAN

Sections:

1.0 Work Breakdown Structure & Schedule

2.0 Budget

3.0 Risk Assessment

- 3.1 Dependencies
- 3.2 Technical Risks
- 3.3 Contingencies
- 3.4 Change Control Process

STRUCTURE & SCHEDULE

Schedule

Week 1 (Jan-6): Update new team, determine assets, locate and document assets (images/audio), build plan and schedule.

Week 2 (Jan-11): Locate assets, teach other students the VR process

Week 3 (Jan-19): Teaching VR process, wireframing, securing previous semester assets

Week 4 (Jan-26): Start editing files for Bryce Canyon, build website template and designs

Week 5 (Feb-2):  Determine additional National Park Assets needs, wireframing, looking over drive files

Week 6 (Feb-9): Developing set up for website, wireframing

Week 7 (Feb-16): Critique on wireframes, website architecture, coding the website architecture

Week 8 (Feb-23): Reviewed assets, figuring out FTP, coding cards and footer, redesigning wireframes

Week 9 (Mar-2): Got hard drive to work, update Zion tours, prototyping

Week 10 (Mar-9): Trip to Zion national park

STRUCTURE & SCHEDULE

Schedule

Week 11 (Mar-16): Assets for website, backed-up all assets on hard drives, user test plan

Week 12 (Mar-23): Developing slider and securing assets, building the other pages on the website, prototype user testing on desktop and mobile devices

Week 13 (Mar-30): Developing slider, debugging code for other website pages, user testing edits for surface comps, starting on end of semester assignments

Week 14 (Apr-6): Figuring out assets for the slider, creating VR tours for Zion trails, end of semester assignments

Week 15 (Apr-13): Finishing end of semester documentation, user-testing, design document, proposal final signing, final design document, and project presentation

BACKLOG

Summer Semester Backlog

- Finish tours for Bryce Canyon and Zion national parks.
- Add audio and pop-ups to Zion tours
- Website development
- User testing
- Preparing media for tours
- Finding media for website

BUDGET

Mighty 5 - VR Experiences for 5 Utah National Parks

UVU Digital Media

Project Budget

Project Info

Project Lead: Name
Start Date: Jan 6 2025

Budget Summary

Budget	Actual	Under(Over)
\$ 14,725	\$ 5,820	\$ 8,905

Tasks	Labor		Materials		Fixed Costs			Budget	Actual	Under(Over)
	Hrs	Rate	Units	\$/Unit	Material	Travel	Other			
Labor Costs - Team of 5								\$ 5,800	\$ 5,820	\$ (20)
Developer 1	45	\$28.00						1,200.00	1,260.00	(60.00)
Developer 2	45	\$28.00						1,200.00	1,260.00	(60.00)
Designer 1	45	\$26.00						1,200.00	1,170.00	30.00
Designer 2	45	\$26.00						1,200.00	1,170.00	30.00
Project Manager	30	\$32.00						1,000.00	960.00	40.00
Travel and Accommodations								\$ 4,900	\$ -	\$ 4,900
Lodging - Zions								4,000.00	-	4,000.00
Vehicle Rental/Fuel								500.00	-	500.00
Food								300.00	-	300.00
Park Fees								100.00	-	100.00
VR Content Development								\$ 850	\$ -	\$ 850
Camera Rental (provided by UVU)								-	-	-
Software Licenses (provided by UVU)								-	-	-
Cloud Storage for media assets								750.00	-	750.00
Physical Storage unit								100.00	-	100.00
Website Development								\$ 850	\$ -	\$ 850
Hosting								800.00	-	800.00
Doman Registration								50.00	-	50.00
Testing and QA								\$ 2,325	\$ -	\$ 2,325
Serveys								75.00	-	75.00
Bug and QA								1,250.00	-	1,250.00
Load & Performance Testing								1,000.00	-	1,000.00

RISK ASSESSMENT

Dependencies

In order to complete this project on time it will require the following

- Regular updates and feedback from project stakeholder

Technical Risks

- Uploading large VR tours to the website
- Finding media such as card and hero images that are under a creative commons license

Contingencies

- Two hard drives for all files, there is also a backup of the drives on Professor Harper's desktop
- Github to track code changes over time
- Figma files for each step of the design process to document changes

APPENDIX

Sections:

1.0 User Testing

2.0 Roadmap

3.0 Design Document Sign-Off



USER TESTS

User Tests

For the user tests each participant looked at either a mobile or desktop version of the prototype website. We gave them 4 tasks to complete and observed what challenges they faced when doing so.

User Tasks

1. Explore the app for 30-60 seconds
2. Find the Bryce Canyon page
3. Find the Angel's landing tour (Zion's national park)
4. Find the about page

Mobile Tests

<https://youtu.be/rZiOebvDaOw>

https://youtu.be/jPE_bOHnS6Y

<https://youtu.be/bzkXdOCxa-0>

<https://youtu.be/vcVwG2T-ZVk>

<https://youtube.com/shorts/MQuhDerVquk>

Observations

- Hero images were too large, made users confused
- About page was difficult to find
- Navigation bar elements were too close
- Better hierarchy for visual components
- Difficulty navigating back to the home page
- Turquoise color on buttons did not have enough contrast for easy readability

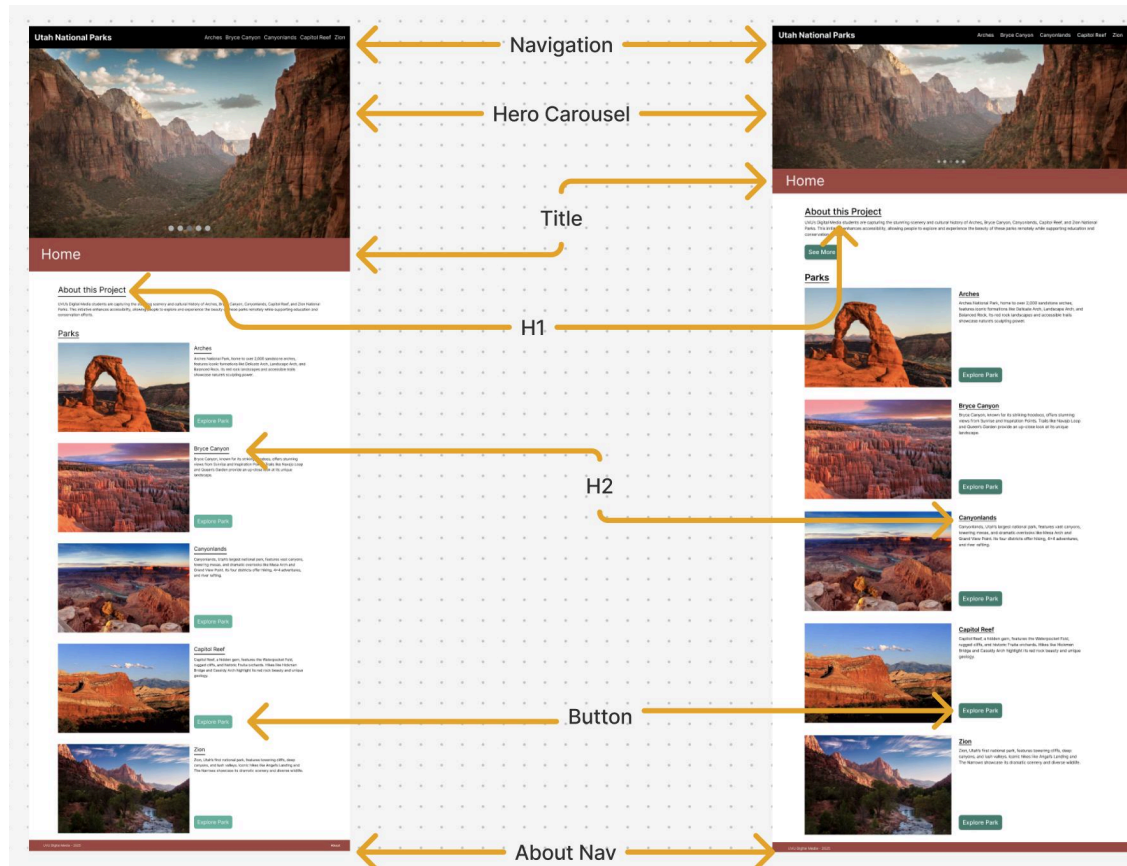
Desktop Tests

<https://youtu.be/d0clhGfCD58>

USER TESTS

Changes

After having users test the prototype we found numerous issues that needed to be addressed. Some of the changes we made were decreasing the size of the navigation, hero carousel, and title sections. We also made the H1, H2, and H3 styles have better hierarchy for clarity. We also moved the about button to the first paragraph of the home page, this made the about page easier to find for users.



ROADMAP

