Peak of the Parks: A User-Centric Website Revision

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Abstract:

This paper outlines the use of service design principles and methods, with the incorporation of people’s psychological needs, as applied to a user-centric re-design of a website. The website in question, “Peak of the Parks,” is an interactive informational website with the goal of helping U.S. National Park visitors compare locations visually on a map and details on the park’s activities, landmarks, and facilities all in one place. The original website helps to give enough information at a glance to create informed opinions, but was initially made with little outside input. Using service design methods offers a user-centric way to find out what the expanded audience needs, create goals grounded in this research, and choose improvements that directly work towards those goals; this ensures that these efforts are not only solving problems, but solving the most important problems according to stakeholders closest to the product or service.
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Introduction:

One of the biggest drivers for making a service or product is the recognition of a problem or need, and creating something that addresses it. The same idea is held when starting a business. For example, Walt Disney came up with the idea for Disneyland while sitting and watching his children play on a merry-go-round, wishing there was a place where adults and children alike could have fun together. This wasn’t a problem unique to him; he saw a larger need, and made something to fulfill it. Framing the production of a service or product in this way creates a built in sense of user-centric design, as your main goal from the start is to meet a specific need for the audience.

So what problem are we addressing? This paper is based on a project called “Peak of the Parks,” which is a website that helps people compare the U.S. National Parks and choose one or more to visit. It was made after I myself was having trouble looking into all of the national parks and finding ones that were interesting to me, easy to get to, etc.. This was especially challenging when I had to find parks that were accessible without a rental car, as they were not affordable due to my young age at the time. Each research session meant opening dozens of tabs, scribbling notes, and checking back and forth between maps and websites that had information on the activities and landmarks of the park. Tools to learn about the parks and/or plan a trip existed, but they weren’t providing me with what I needed all at once. The fact that I visited several U.S. National Parks growing up and had some knowledge on them, yet still had to do this much digging for visual and relevant at-a-glance information, felt like a missed opportunity. After making a set of National Park illustrations as a personal project, I took advantage of a web design and development project to create the first version of my website. “Peak of the Parks” gives people a look at the “peak” information about the areas of land run by
the U.S. National Park Service that are specifically designated “National Parks” (as opposed to national monuments, historic sites, etc.) with an interactive map on a single webpage.

Now, it’s time to make improvements to that initial project. When designing a service or product, it can be hard to know where to start. Then, once you’ve finished making a usable version, improving that design can make it feel like you’re back at square one. While many frameworks exist for building and improving products and have been used throughout the years, in this paper we’ll be focusing mostly on one called “service design.” It’s important that even though the initial idea for this product was to solve one of my own problems, the ideas for improvements are coming from a more expanded audience. This idea that the improvements will be derived from the research being done is called a “grounded theory,” and it ensures that the project is not only addressing a need or question, but addressing the right need or question according to the audience at hand.

The rest of this paper will summarize established practices in service design and adjacent fields that help to gather research on what users actually need, want, and will enjoy within the service. It will then explain which of these practices were used and the results of the research performed. Then, moving on to implementation, some of the resulting improvements made from the research will be shown; this will show just a small portion of how the research results can be used to drive the evolution of a product. It’s important to note that this entire process is being adopted in a completely remote setting; this means that any research being done (aside from accounting for personal experiences) is being done online. Service design principles can be used in many different disciplines, and take on many forms; perhaps this paper will illuminate possible implementations of methods for research and development, as well as help you decide how it can be applied to your own work to maintain a user-centric view.
Literature Review

Service Design

In *This is Service Design Thinking*, Marc Stickdorn and Jakob Scheider make it clear that “Since service design is an interdisciplinary approach, different people teach and learn service design in different ways.” (pg 15) In fact, Marc Stickdorn elaborates saying that “If you would ask ten people what service design is, you would end up with eleven different answers-at least.” (pg 29) However, there are always common themes.

“When you have two coffee shops right next to each other, and each sells the exact same coffee at the exact same price, service design is what makes you walk into one and not the other.” (Stickdorn&Schneider, pg 31)

-31 Volts Service Design, 2008

Service design is an overarching term that encompasses collaborative, user-centric design that takes a holistic approach to creating or improving a product and/or service. It’s a fluid process that can be applied in product design, marketing, graphic design, design ethnography, social design, and instructional design- the list could go on.

There is also the question of what is considered a service, as some distinguish products as different from services. For the purposes of our conversation, the wider definition of a service will be used, meaning a service can be any experience or product that serves a purpose for the user; this includes an interactive website. For this reason, the words ‘product’ and ‘service’ may be used interchangeably in this paper.
Service Design Process

Service design does not have a linear process, but it does have certain categories of activities related to carrying it out. This is Service Design Doing shares “four core activities:”

1) Research, 2) Ideation, 3) Prototyping, and 4) Implementation. These broad categories “are not mutually exclusive; there can be overlaps.” (Stickdorn et al., 2021, pg 92)

Despite many describing design processes as cyclical, this book suggests that “Design processes do not go in circles. They do not go back. Instead, they constantly move forward and adapt” like a spiral or looping scribble. (Stickdorn et al., 2021, pg 90) For example, there’s no one way or one time to do research during the process, because we don’t know what unanswered questions will occur during any phase of production.

Service Design Principles

Since the definition of service design is so flexible, it is not surprising that there is not a strict structure for carrying out service design thinking. “One of the major challenges for service design as a research field is to establish its structure; to find and develop theories and methods which make research criticisable.” (Stickdorn & Schneider, 2010, pg 314)

However, Stickdorn does offers five principles of service design that help characterize what works within service design thinking:

1) **User-centred**: Services should be experienced through the customer’s eyes
2) **Co-creative**: All stakeholders should be included in the service design process
3) **Sequencing**: The service should be visualized as a sequence of interrelated actions
4) **Evidencing**: Intangible services should be visualised in terms of physical artefacts,
5) **Holistic**: The entire environment of a service should be considered. (pg 34)
Imagining the experience as a movie or narrative and making a user journey map during production can keep the project user-centered and seen in a sequence, while visualizing intangible services. Having your team go on the “service safari,” explained further in the methods section of this paper, to find examples of what makes a service good or bad can help them look at things holistically, while doing this with different stakeholders like users, administration, developers, and designers can be co-creative.

Gamification

Gamification, while not commonly referred to as a set part of service design, lends itself to these five principles and gives designers a way to adapt things that we know work in one service (in this case games) to another service. Gamification takes elements of games, or “the ‘building blocks’ of games” that people enjoy and incorporates them into other experiences, “often with the goal of motivating specific behaviours.” (Sailer et al., 2016) Because of this, “in practice, the specific designs and realizations of gamification environments can be quite diverse” (Sailer et al., 2016)

It is important to point out that the experience does not have to include an actual game engine to be “gamified,” as is the confusion when many people use the term. Things that could be included into an experience without implementing a full game could be rules or guidelines, characters or avatars, a storyline, rewarding success, checkpoints, etc..

There is no single way to implement gamification; however, a set process to gamify a service was described in the research article “From Game Design to Service Design: A Framework to
Gamify Services. "Klapztein and Cipolla created a process framework on how to implement gamification within designing, or redesigning, a service, shown in Figure 1.

![Figure 1, Framework for gamifying a service (Klapzlein, 2022)](image)

The actual editing process takes place within steps 2 and 3, Building and Intervention. This is when the service or product is deeply analyzed and research is done on different available resources. Then, modifications can be proposed based on the best aspects of game elements and the existing product, while avoiding the worst. Klapztein and Cipolla state the following:

"It is worth noting that the application of this model, in practice, is far less linear….The sequence of steps usually tends to occur in this way, but the use of game design concepts and the transformation of service features within each of these steps, not."

(pg 35)

Similar to the service design process, it is more of a spiraling scribble in practice than the cyclical process shown. For example, you may find that during brainstorming, it’s necessary to go back and gather more information, or perhaps another resource needs to be analyzed.
Before steps 2 and 3 are even reached, step one requires Identifying a problem with a service and deciding that it could benefit from gamification. This is not an exact science, but looking for signs that your users’ psychological needs are not being met is a good start.

**Psychological Needs Met Through Gamification**

The article “How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction” explains how certain game elements can be related to the three psychological and intrinsic needs of self-determination theory: **the need for competence, the need for autonomy, and the need for social relatedness** (Deci and Ryan, 1985, Ryan and Deci, 2002, Ryan, 1995).” (Sailer et al., 2016) While the others seem self-explanatory, social relatedness is not just the need to socialize, but encompasses all interests and desires attached to social behavior. Figure 2 shows how these needs (with autonomy separated into decision freedom and task meaningfulness) connect to different game functions.

<table>
<thead>
<tr>
<th>Psychological need</th>
<th>Mechanism</th>
<th>Game design element</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for competence</td>
<td>Granular feedback</td>
<td>Points</td>
</tr>
<tr>
<td></td>
<td>Sustained feedback</td>
<td>Performance graphs</td>
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<td></td>
<td>Cumulative feedback</td>
<td>Badges</td>
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<td></td>
<td>Cumulative feedback</td>
<td>Leaderboards</td>
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<tr>
<td>Need for autonomy (decision freedom)</td>
<td>Choices</td>
<td>Avatars</td>
</tr>
<tr>
<td>Need for autonomy (task meaningfulness)</td>
<td>Volitional engagement</td>
<td>Meaningful stories</td>
</tr>
<tr>
<td>Need for social relatedness</td>
<td>Sense of relevance</td>
<td>Teammates</td>
</tr>
<tr>
<td></td>
<td>Shared goal</td>
<td>Meaningful stories</td>
</tr>
</tbody>
</table>

*Figure 2, Psychological needs and corresponding game elements (Sailer et al., 2016)*
A study was carried out by Sailer, Hense, Mayr, and Mandl with 3 gaming environments to test:

1) Control condition, with only a point system,
2) Experimental Condition 1, added badges, a leaderboard, and a performance graph, and
3) Experimental Condition 2, which included avatars, a meaningful story, and teammates.

About 400 participants, recruited online, completed an entire game and questionnaire. Below is a summary of the study’s results:

“The game design element group with badges, leaderboards, and performance graphs (experimental condition 1) fostered competence need satisfaction and autonomy need satisfaction reading task meaningfulness. The game design element group with avatars, meaningful stories, and teammates (experimental condition 2) fostered social relatedness need satisfaction. However, autonomy need satisfaction in regard to decision freedom was not affected by any of the tested game design element groups.”

(Sailer et al.)

This means adding rewards for success, competition, and performance feedback mechanisms can address someone’s need to be competent, and someone’s need for a task to be meaningful. We can also use storylines and teamwork to address people’s desire to interact with and understand other people.

Gamification of Trip Planning

Marianna Sigala analyzes a project that uses gamification in trip planning- TripAdvisor’s “funware.” Their website experience was altered to better embrace their corporate mission, “to ‘Help travelers around the world plan and have the perfect trip’,” and attract new users. (Sigala, 2015) By focusing on a goal of audience building and audience engagement, “the gamification…benefits both the travelers and the TripAdvisor.” (Sigala, 2015) Their shift included changes to “website tasks; and a gamified application using the Facebook social graph.” (Sigala, 2015)
In this study, elements or actions provided points to users. These elements were chosen by linking them to different psychological needs, listed as the motivational affordances of each element. This means that each element is suited to address (affords) that need. For example, the user providing information in order to get “personalized travel content and notifications,” or in other words user set notification controls, affords autonomy (Sigala, 2015). Meanwhile, participating in a social forum to share information and advice affords competence and relatedness. When looking at the impact of these gamified elements, the effect was categorized by when the impact was felt: 1) the process of planning, 2) the outcome of the planning, and 3) the social interaction involved in the planning. “Respondents perceived the impact of TripAdvisor on the trip planning process as the most important … travellers are more concerned about finding reliable and trustful information(process) rather than on how much information they can find (outcome) (Sigala 2012; Tohetal.2011).” (Sigala, 2015)

This is an important insight that shows how valuable crafting an enjoyable, less stressful, and truly user-centric trip-planning process can be.

Concerning other important points in the study, Sigala states that:

The findings advise designers to:

[1] align game mechanics with users’ profiles and values;

[2] …allow the users to experience autonomy [through personalization]…

[3] exploit social media affordances for integrating social and communication aspects into the gamification applications, since social gaming contexts can have greater users’ outcomes. (Sigala, 2015)

These points align with the psychological motivations of autonomy and relatedness
Storytelling

In this research storytelling as applied to service design has two parts: 1) using narratives within an experience as a sort of gamification so that people can relate to their stories and be invested in the characters, and 2) using storytelling as a way to understand the user’s experience while using the product or service, like creating a customer journey map.

As previously mentioned, adding things like avatars or a meaningful storyline to a product or experience can greatly enhance it by catering to people’s interest in other people and social behavior. But you can also think of the experience itself as a story that has highs and lows, with the customer or user as the main character. “Stories are framed around real people and their lives. Stories are important because they are accounts of specific events, not general statements. They provide us with concrete details that help us imagine solutions to particular problems.” (Dam & Siang, 2021)

Methods:

This project will take shape through the service design thinking process: 1) Research, 2) Ideation, 3) Prototyping, and 4) Implementation, explained further in the literature review section of this paper. The process will also follow the idea of grounded theory, where you derive a theory grounded in the data. This means that the alteration goal for the website will not be defined before the start of the project, but will be established based on research of what users find the most important. Ideas of how to meet these observed problems and needs will be converted into a prototype, and then those most successful or promising will be implemented in the product.
Research and Data Collection

*This is Service Design Doing* provides a variety of potential research methods, loosely organized within five different categories that “are not academic standard… [so] the boundaries between the categories might be rather fluid.” (pg 117) This is not a comprehensive list of all existing methods, but rather a sample of each category. The book suggests that to do a comprehensive research study, at least one method from each category should be used.

1. Desk Research (Literature Review)
   - Preparatory Research
     “Preparatory (or simply ‘prep’) research often includes digging deeper into an industry, an organization, competitors, or similar products, and also the client’s perspective of what the research problem is, their context, perceptions, internal conflicts or interplays, and so on.” (Stickdorn et al., 2021, pg 118)
   - Secondary Research
     Secondary research, sometimes referred to as desk research, is the “collection, synthesis, and summary of existing research… The main idea is to check whether research regarding a topic already exists” (Stickdorn et al., 2021, pg 119)

2. Self-ethnographic Approaches
   - Service Safari
     “During a service safari, people are asked to go out ‘into the wild’ and explore examples of what they think are good and bad service experiences… As people are being asked to record their experiences, they need to be provided with some method of doing so; a dictaphone, a small video camera, or even just a notebook
and pen.” (Stickdorn & Schneider, 2010, pg 154) This is different from market research of existing related products because you are solely looking at the experience from the customer’s point of view, and the experiences you are exploring do not have to be related to the field you are working in. Any service can be analyzed to identify good and bad aspects of a service in general. This method “allows people to develop an understanding of the common needs customers have, and the common problems that they encounter” in a personal way, without needing direct access to users.

3. Participant Approaches
   - Stakeholder Interviews
     These interviews are based on interpretive, qualitative research methods, adapted for social media. One is with park rangers who have worked in, and are very familiar with, at least one National Park. Since the rangers are up close and personal with guests and the operation everyday, they have insights that others lack concerning what people should know when they visit a park, and what people do while they are there. Other surveys have been completed from previous projects with hikers of various skill levels that will also be consulted. The information gathered here is useful in supporting design decisions.

4. Non-participant Approaches
   This is the only approach category that will not be used for this project due to lack of resources and the concern of obtaining consent from research subjects. This category would usually include such methods as: 1) tracking mobile data, which could be done with the general consent of the user, 2) observing activity or use of the product in public without interacting with the participant.
5. Co-Creative Approaches
   - Co-creative Workshop ( personas and journey map scenarios)
     A co-creative workshop is usually held with knowledgeable stakeholders that are close to the experience being built in some way; for example, frontline workers like cashiers at a store would be very knowledgeable in helping to make personas of the customers. However, the customers or users can participate as well. For this project the workshop is with potential users who will establish their own personas and work through two short scenarios, sharing their experience and finding where their stress points were together. This will help confirm what real trip-planners or those interested in the National Parks would want and need while looking at the website first-hand.

Ideation and Prototyping
The brainstorming portion of this process will take place during the co-creative workshop, along with afterwards using research as a guide. It will include a table of options made to evaluate which modifications to implement. Consideration will be taken regarding the psychological needs met by the modification, as is explained in “How Gamification Motivates: An Experimental Study of the Effects of Specific Game Design Elements on Psychological Need Satisfaction,” and expanded on in this paper’s research. This is also found in the evaluation of TripAdvisor’s gamification of their website, done by Marianna Sigala. The most promising changes will be prototyped, which helps to decide how they would be implemented and if they are feasible.

Implementation Results
The chosen improvements will be implemented in the website. Coding for functional changes and additional features will be written with HTML, CSS, and Javascript. Any updated graphics will be made with Adobe Creative Suite programs (Photoshop, Illustrator, etc.).
First and foremost, this website is for the outdoor community, whether that be newcomers or seasoned outdoorsmen, old and young, locals or tourists, low income or high income. According to the “2021 Outdoor Participation Trends Report” done by the Outdoor Foundation, “In 2020, 53 percent of Americans ages 6 and over participated in outdoor recreation at least once, the highest participation rate on record.” This increase was influenced by the COVID-19 pandemic, as “outdoor spaces became places of refuge to safely socialize, improve physical and mental health, connect with family and recover from screen fatigue.” (“2021 Outdoor Participation Trends Report”)

“The outdoor industry and its partners are positioned to champion new ways to engage outdoor participants and invest in making the outdoors accessible and welcoming to all Americans.”

- 2021 Outdoor Participation Trends Report by Outdoor Foundation

Below is a graph by the Outdoor Foundation showing outdoor participants’ demographics.
The question is how to keep new participants engaged. As the Outdoor Industry Association’s 2021 Special Report: The New Outdoor Participant (Covid And Beyond) states, “about one-quarter of new participants say they don’t want to continue their outdoor activities.” The report also highlights that “A lack of information about where to go, how to participate, and whom to participate with can be a barrier to trying new outdoor activities. Providing this kind of information could keep new participants engaged and attract others.” This information is found by most participants (47%) through previous knowledge. However, more than half of participants need guidance from other sources, like friends and family, social media, online searches, and retail/brand websites.

The United States National Parks

The United States National Parks started in 1872 when “Congress established Yellowstone National Park in the Territories of Montana and Wyoming ‘as a public park or pleasuring-ground for the benefit and enjoyment of the people’ and placed it ‘under exclusive control of the Secretary of the Interior.’” (“Quick history”) It wasn’t until 1916 that “President Woodrow Wilson signed the act creating the National Park Service, a new federal bureau… responsible for
protecting the 35 national parks and monuments then managed by the department and those yet to be established.” (“Quick history”) Their mission is to preserve “natural and cultural resources and values… for the enjoyment, education, and inspiration of this and future generations.” (“About us”)

The National Park Service is now responsible for more than 400 locations, with a reported total of “297,115,406 recreation visits” in 2021. (“Visitation numbers”)

NPS Website

Figure 4, Screenshots of National Park Service Website (“Find a Park”, 2022)

The National Park Service does have a “Find a Park” page with a search bar and an interactive map on their website, separated by state. When you click on a state you are then brought to the next page, and can scroll down to see all of the NPS owned areas in that state. This may work to see what is nearby where you are already going, but the map can be difficult to read. From there, you can follow the link to the individual pages for each park.
On the individual park pages, you can find pictures and more information about parking, cost, activities, lodging, weather alerts, etc.. spread out over several more pages. However, the amount of information on each page is inconsistent and depends on the park and how much it offers online. Some essential things to check on this page are weather alerts, if reservations are required to visit the park, and seasonal road closure announcements.

No matter where their research began, the individual park’s NPS webpage is essential for anyone that is interested in visiting the park or is already planning a trip there, especially if reservations are required to visit.

Existing Third Party Websites

Figure 5, Screenshots of map on Google My Maps (“Map of U.S. National Parks”, 2015)

The interactive map in Figure 5, one of several on Google My Maps made by users, is helpful in visually looking at where the different parks are and finding a short description of them. However, you can only click on one park at a time, and then proceed to look up more information on your own.
Similarly, the Google Earth map for the National Parks shows pins on a map you can then click on, but instead of just a short description you can zoom into pictures of specific locations within the park. This is another visual aid for what it would be like in that location, but not information on how to get there, temperature conditions, reservations, or activities offered.

Figure 6, Screenshots from Google Earth
("National Parks of the United States")

Wikipedia, pictured below, has slightly more information at hand about each park, but their interactive map is separate and can not be viewed along with the facts in the same window.

Figure 7, Screenshots of the List of National Parks Wikipedia page ("List of national parks…")
The original “Peak of the Parks” website has a list view and interactive map of the National Parks, where you can click on each point on the map and make a box appear with an illustration and information on the park (activities/landmarks, entrance fee, camping, public transport, nearest airport, nearest bus/train, and the official website). Boxes appear next to each other so that you can compare the parks; the box disappears again when you click on the point again. This setup allows you to have a visual reference, like the third party references above, but have more quick reference information without opening more windows.

The target audience was for hikers and the outdoors community at large, with inspiration coming from young adults who want to explore. Social media was used to ask what hikers would want to know before going on a trip, like to the National Parks.
Previous Community Research

Research was also done with the intent to make a product that educates people on how to prepare for hiking trips. Questions were geared towards regular hikers (Figure A1, with “A” figures in the appendix of this paper) and outdoor industry members (Figure A2). This allowed for the creation of user personas (Figure A3.1-3.5) that led to focus on five key characteristics to instruct people, according to the user’s values.

While some want to know everything about a hike before they arrive to prepare for the specific conditions and location, others appreciate the adventure of the unexpected and therefore have to be prepared for whatever they encounter. Either way, safety is of the utmost importance. An interesting finding was the importance to many of efficiency when being able to prepare and execute outdoor activities, even seemingly ‘slow-paced’ ones, due to the stress and guilt of not completing other tasks and responsibilities in that time.

This research is still relevant; however, further research for Peak of the Parks revisions will open up perspectives to include not only hikers, but also casual visitors in order to lower the “barrier to trying new outdoor activities” as previously mentioned. (“2021 special report”)

Hiker’s want to be:

1) Safe
2) Efficient
3) Courteous
4) Comfortable
5) Earth-friend
### Self-ethnographic Approaches

**Service Safari**

**Morning Alarm (Apple iPhone)**
- Choice of Music - helps to personalize to taste, give variation, match mood
- Flexibility - can set to any time, one that repeats or alarms that turn on and off
  - Have to remember to set the alarm and have volume up/silent switch off

**Gas Station (7-Eleven)**
- Rewards by phone number, easy to remember and doesn’t need card, familiar
- Completely self-serve, don’t need help
  - Have to type in a lot of numbers for rewards account and card zipcode; takes more time

**Groceries (Publix)**
- Aisle signs for organization
- Choice of self-checkout or cashier
- Buy one get one frees
  - Self-checkout can be finicky with weight (if item is in bag or not after scanning)
  - Self-checkout, can’t type in barcode manually
  - Price at Publix is more expensive

**Private Park (Mickey’s Retreat)**
- Multiple facilities, showers, etc.
- No crowds, private access for company employees only, secure and safe
- Convenient location
- Socialization and physical activity
  - Hours hard to find on website
  - Need physical ID card or can’t get access

**Homework (Google Docs)**
- Work saves automatically (secure)
- Easy to download in different forms
- Can customize sharing options
- Familiar tool
  - Requires WiFi to save
  - Limited free memory space
  - Eye strain looking at a bright screen

**Book Flight**
- Google Flights
  - Can use low fare calendar, flexible dates
  - Checks multiple airlines at once
  - “Nonstop” filter
  - Anticipation of trip
  - Does not exclude all airlines (Southwest and JetBlue), requires previous knowledge/research to compare prices on other sites
  - Tedious to sift through material

**Gym (Apartment Complex)**
- Available 24 hours (except when cleaning)
- Sanitation wipes for health safety
- Physical activity
  - Only a trash can in one room (lacks convenience and efficiency)
- Limited equipment/capacity

**Dinner (Doordash)**
- Blanket delivery cover charge
- Different food all in one place
- Security, covers things that go wrong with refunds and updates on the order
- Filters to efficiently narrow choices
- Remembers addresses and orders
  - Tipping drivers beforehand does not reward, acts more like a bribe
  - Gated community, have to let in driver

**Board Game (Azul)**
- Appealing artwork
- Quick turns, active participation
- Smaller goals/wins in overarching game
- Socialization and puzzle-solving
  - Nontraditional rules, takes explaining

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_Figure 9, Results of Service Safari_
As discussed in the methods section of this paper, a service safari is the evaluation of any and/or all services that you encounter and looks at general examples of what makes a service good and bad, no matter the type of service. This information, listed in Figure 9, can be applied or avoided in another service's design. Many of these observations show the benefits of addressing the psychological needs discussed in our research thus far (competence, autonomy as decisional freedom, autonomy as task meaningfulness, and social relatedness).

Competence:

- Familiarity of services/tools used repeatedly (like Morning Alarm, Google Docs, Gas Station, Azul)
- Familiar functions of services/tools make them easier and more enjoyable to use (filters, organizing of aisles in grocery stores)
- Essential information easily available to use services effectively/competently (Mickey’s retreat hours)
- Services working competently or as intended (self-checkout at a grocery store)

Decisional Freedom

- Adding personality choices (music for alarms)
- Flexible availability to choose when service occurs (alarm time, 24 hour gym, online open source resources)
- Choice of activity or form of service (different facilities for different sports at a park, self checkout versus register checkout, choice of airlines)

Task Meaningfulness

- Having smaller objectives that make time meaningful, even if overall success is not reached (Azul)
Social Relatedness

- Providing a space or function to share experiences with other people (sharing a Google Doc, gathering at a park, playing a multiplayer game)
- Keeping interactions safe and avoiding unwanted interaction (exclusive access to park, self-serve gas and grocery check out, dropping off food at doorstep without interaction)
- Having enough capacity for desired number of people (size of gym, amount of equipment)

However, everything that makes an experience good or bad does not necessarily fit perfectly into these psychological needs, such as things that make an experience convenient. This could loosely be related to task meaningfulness as the task has to be worth the time and effort that it takes to do, or competence because if the service is meant to be convenient then it is working as it should. For example, I may want to go to a park and play volleyball but I only have an hour. If it’s five minutes away and I can play for 50 minutes, that convenience would make the service of that park worthwhile. But if it takes 20 minutes of driving, which means only 20 minutes of play, it probably isn’t worth using that park/service. I’d want to choose the convenient option. Therefore, the psychological needs addressed by each improvement will still be identified, but will not be the only factor in choosing what to implement.

Participant Approaches

Interviews

In order to arrange these interviews a post was made on an outdoors industry Facebook group called “Basecamp: Outdoor Jobs and More.” Multiple rangers and National Park enthusiasts
reached out, but the most extensive conversations were held with two rangers that have worked in multiple parks, Ranger K and Ranger M.

![Ranger K Summary]

**Figure 10, Summary of discussion with “Ranger K”**

With Ranger K., our discussion about the National Parks and what’s most important when visiting them mostly had to do with traffic and congestion. Since she herself likes having a more private experience of the outdoors for self-reflection and convenience purposes, she empathizes with guests who wished the same and suggested guests try local, less popular parks, as well as visiting popular parks in their off-season because they can be just as grand. It is also a stressor to have to get permits for these popular areas that have to restrict the number of people that visit them. This line of thinking aligns with the Sophie and Anna hiking personas made for a separate hiking-based service (Figure A3.3, A3.5) where it was previously observed that many people don’t want to have to have it all planned out, and the spontaneous aspect of outdoor travel is important to them.

This is balanced by the fact that other people will often go to a destination to see a certain landmark or wildlife in the parks. Ranger K. established that one of the most common questions asked of her was where they could see a waterfall or a bear, and these were probably the most liked things when they came up on the trail.
Ranger M observed the same thing, as many guests would also ask her where they would likely see wildlife. Our conversation with Ranger M, however, became more focused on how some guests are a little too spontaneous and come a little too uninformed. This makes it difficult to give good suggestions or be confident that they are prepared to safely navigate the activity that they wish to do. Her wish is that if people at least look into what kind of landscape and climate they are walking into (e.g. knowing if the nights get cold in the summer, having a jacket for higher altitudes, etc.) and what they may like (e.g. hiking in rolling hills, climbing a peak, seeing a waterfall, etc.) she can use that and find the perfect activities for them.

Co-creative Approaches

Co-Creative Workshop

Exercise #1: Participant Profiles

The first part of our co-creative workshop was making profiles for themselves in order to focus their thoughts concerning their own priorities and help in sharing the research later on. The participants had the option to make up their own names if they did not want to use their real
ones. If a participant was confused or stuck on how to fill out a portion of the template provided, I was able to guide them and ask questions that would help them express their profile details. The completed templates can be found in the appendix, Figure A4.1-4.5.

The interesting part of this workshop was incorporating the opinions of two non-Americans (“Ozidus” and Joe) who were coming from the topic with little previous knowledge. The Americans Kayleigh, Brian, and Autumn have visited at least one National Park before and have more context as to what a U.S. National Park is and what it may offer.

Figure 12, Summary of co-creative participants
Exercise #2: Personal Goals and Existing Online Resources

After establishing their profiles each participant chose a goal, or their driving reason for looking into the National Parks if they were planning a trip. It was explained that they would have 15 minutes to do an online search, trying to find information that would help them reach their goal. For example, if they already knew about a specific park they wanted to visit, they could exclusively try to learn more about that individual park. If they wanted to see a waterfall or a bear, they could try to find a park with a waterfall and a bear population.

Participants #1 and #2, Kayleigh and Brian, who are a married couple, decided to look for a scenic, onsite lodging destination with available food options. Ozidus (#3) wanted to find parks with educational offerings and ones that had accommodation and resources available for a partially sighted guest. Joe (#4) would be choosing an entire state to visit in the U.S. and would want to find a climate that he would enjoy (with a National Park or group of parks within the vicinity). Finally, Autumn (#5) knew that she would like to look into Yellowstone National Park.

For Participants #1 and #2, this 15-minute search was generally successful with current resources on the internet. Many articles and blogs made by other visitors had accounts of beautiful lodging at different National Parks, making it easy to find a highlight reel of possible

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**Figure 13, Journey map of Kayleigh and Brian’s exercise 1 (Participants #1+#2)**

For Participants #1 and #2, this 15-minute search was generally successful with current resources on the internet. Many articles and blogs made by other visitors had accounts of beautiful lodging at different National Parks, making it easy to find a highlight reel of possible
places to stay. One that stood out to participant #1 was a lodge at Olympic National Park; luckily there was a direct link to the official site, where more details could be found. Seeing the availability for the lodge was important to the participant as they have limited vacation times as a teacher, and this would be a driving factor of if they would choose this destination. Participant #2 on the other hand, who was focusing on food, had less success finding highlight lists similar to the lodging, and so would be more successful looking at specific locations after options were established. Once at the lodging sites, information on food offerings are usually easily available.

**Participant #3**

*Goal: Find a park with educational and accessible options*

*Result: Found some information but scattered and not enough*

**Figure 14. Journey map of “Ozidus” in exercise 1 (Participant #3)**

Participant #3 had trouble even deciding what to search for exactly, as specific searches on educational opportunities only seemed to bring up information on school field trips and such. Accessibility information was also inconsistent and few and far between. Unlike with participants one and two, top ten articles or lists from blogs were not helpful what-so-ever, as the lists seemed more geared towards family fun or unsubstantial accounts of trips and activities done (none of which were educational based). Only once skimming 15-20 different sites, did the participant find some resources and find the official sites for the parks. The participant noted that an important aspect of finding an appropriate location would be reviews from other visitors that could describe the effectiveness of accessibility measures, like the quality of audio tours.
Like participant #3, participant #4 (Joe) has very little background knowledge on the U.S. National Parks. In fact, he does not have a good grasp of every state’s general climate off the top of his head either. Starting this exercise slowly, his thought became to look at Wikipedia for general knowledge of the states (while looking at a map), and then where some of the National Parks are. Ruling out states narrowed down prospects, like deciding Florida would be too warm and humid, and Alaska would be too remote. Other factors like the parks’ proximity to urban centers ruled others. Next was consideration of landscape as the participant didn’t like caves, but does like coastal regions. In the end, the participant had an idea of what destinations may appeal to them, including Acadia National Park, North Cascades, or perhaps Olympic.

Both participant #3 and #4 did not seem to know the more well-known National Parks that many Americans would have on their bucket list or at least know as a passing reference.
On the other hand, participant #5 knew exactly where she wanted to go—Yellowstone National Park. This is a relatively popular and well-known park, featuring “Old Faithful,” a geyser that erupts about 20 times a day and always within a predictable 10-minute eruption window. The participant was quickly able to get to the official Yellowstone NPS website, which as we established in the literature review is the page that any potential visitor should go to in preparation for a trip. The participant reported that it was relatively easy to navigate the site, but could see how some pages are harder to find than many would like, and her familiarity with the site could be playing a part in how well she could navigate it.

Exercise #3: Discussing the Difference in the Product

After looking at other existing resources and seeing how they met (or did not meet) everyone’s goals in researching the National Parks, the participants collectively looked at the base product website of “Peak of the Parks.” We openly discussed how it related to what they saw from the other sites, what it does well, and what they believe could be improved, especially relating to fulfilling their individual goals from exercise #2. The following are some observations that were made during this discussion.
The Look: The visual view of the map is helpful to see groupings and where they are in relation to the rest of the country. However, there are no state lines to know for sure which state each park is in without clicking on it and looking at their information box; this is understandable due to visual clutter and does not necessarily need to be changed. It's very helpful to see the descriptions of selected parks side by side, as intended by the design. The color choices of some of the text is not necessarily friendly and accessible, and so a change and/or a high contrast mode would be helpful.

The Content: It would be helpful if the dots were labeled in some way, so that you could easily find which park was which to deselect them. Other additional information in each informational box that could be helpful is the average temperature or climate for the season, if there is lodging other than camping on-site, expanded list of interests or features, and recommended gear.

The Function: Filters and/or searches made by interest, activities, climate, popularity, etc. could be very valuable in efficiently finding appropriate parks for those who have less time and are less curious about looking at all of the parks. Other features could be very useful for the possibility of multi-park trips, including showing the distance inbetween parks, and the ability to change the order of the park boxes. The last suggested feature was the addition of comments or reviews from other people as to give some first-hand insight into what the park is like.

Overall, the reaction to the product was positive, especially compared to the official NPS interactive map (referenced in the literature review), despite desired improvements. The links to the official sites for each individual park were appreciated and confirmed as essential. The usefulness of this kind of map seems to be great for an overarching look at all of the parks, and
helps those who don't have much background knowledge, like the Wikipedia map helped Joe in his search. However, as of now, the content structure could be improved to more suit and include that demographic (true beginners), as it was originally built from a hiker or intermediate outdoor enthusiast's perspective. This aligns with the research done on the outdoor community in the sense that there seems to be a need for resources for beginners in order to help them get into the outdoor community and make it easier for them to continue doing outdoor activities, like visiting the U.S. National Parks.

Summary of Research Findings

Combining the research on service design and how psychological motivations can be addressed during gamification, this project is adopting a service design structure of research (desk, self-ethnographic, participant based, and co-creative), ideation and prototyping, and implementation, with an emphasis on addressing the psychological motivations of competence, autonomy, and social relatedness. Although our overarching goal is to make several user-centric improvements to the project “Peak of the Parks,” our specific goals were not predetermined, but driven by qualitative research findings and quantitative results found in existing reports- these results will drive our specific objectives and ideation in the next phase.

In the Outdoor reports, it’s evident that in recent years, due to the Covid 19 pandemic, there is an increase in new outdoor activity participants. However, this doesn’t necessarily mean that the increase will last. There is a need for resources that help these newcomers participate more and feel welcome and prepared to try new activities in new places, and not just word of mouth. The extent of the U.S. National Parks are immense, and can certainly be intimidating. While looking at existing resources, it is easy to believe that people could be easily dissuaded or frustrated with less than convenient services that are outdated and unintuitive (like the official
NPS “Find Your Park” section) or too basic to really evaluate if a park is worth visiting (like the Google Maps or Google Earth U.S. National Park maps).

Previous research into the needs of hikers, shown through the personas in A 3.1-3.5, found an emphasis on safety, courtesy, efficiency, comfort, and conservation. It was also found that some like to plan and prepare every detail, while others value the sense of exploration and discovery over all else, and so much prepare for a situation without specifics. These overall values are still valid, but more specific content changes could be considered to accommodate visitors who are not specifically hikers, and may be visiting the parks in a more casual way.

Thanks to a self-ethnographic service safari, we recognize that there are many ways to make a service more enjoyable and easier to use, while again addressing people’s psychological needs.

- To support people’s need for competence, in the meaning that the user is gaining knowledge as to be competent and the service is functioning correctly and meeting it;’s goal, a service can: 1) use familiar functions and set-ups that most people are used to, like aisles in a grocery store, 2) be familiar to the user as a whole, reusable, like getting used to using Google Docs repeatedly for assignments, 3) make essential information easily accessible, and 4) avoid malfunctions, errors, or contradicting information.

- To increase the user’s feeling of autonomy, both concerning task meaningfulness and decisional freedom, a service can: 1) allow for personalization (like music, colors, etc.), 2) have flexible and extensive availability, 3) have choice of activity or form of service (like different sports at a park, reading or listening to text, a map view or a list view), and 4) provide value in smaller tasks, beside from the overall objective.

- Finally, to address people’s need for social relatedness, a service can: 1) provide a space or function to easily share with other people, 2) ensure safe interactions and
prevent unwanted interactions, and 3) have enough capacity for the amount of people wanted or necessary.

Pertaining specifically to the U.S. National Parks and their visitors, and coming from a public-facing source (National Park Ranger M and Ranger K), many are drawn to the parks by certain activities, landmarks, or wildlife. Many could benefit from knowing the crowd levels of where they are visiting, the climate and weather conditions of the area, and what they actually need to do to prepare for the park and their activity. The co-creative workshop with potential visitors confirmed these interests, as well as highlighting the lack of gathered information on educational opportunities for families in the parks, as well as thorough descriptions of accessible resources, such as those for a partial-sighted visitor. Due to the fact that the international participants with less background information on the subject of National Parks had less success than those who have visited before, it can be confirmed that there is a need for resources that cater to beginners, or those with limited to no experience visiting the U.S. National Parks.

Overall, I believe that in order to serve the user’s best interest, improvements should:

1) make the setup and content more beginner or casual visitor friendly,

2) increase accessibility, and

3) introduce elements of park safety and preparation to the website.
Ideation and Prototyping:

While research reveals what is important to the audience and what the outdoor community may need in our product, it’s impossible to ignore the realities of what is possible for a revision regarding time and resources. The chart below summarizes possible improvements, based on research, what psychological need the improvement would address, the estimated impact of the improvement for the user experience, and the estimated effort it will take to implement the improvement. If the impact of the improvement, minus the effort level, is positive, the improvement is green. If it is equal or minus one or two, the improvement is yellow. If it’s -3 or more, the improvement is red and too difficult to achieve at this time.

The goal is for this structure to help decide which improvements would be more feasible and helpful to do within this improvement time period.

### Brainstorming Improvements

<table>
<thead>
<tr>
<th>Improvement</th>
<th>Goal</th>
<th>Research Evidence</th>
<th>Psychological Motivation</th>
<th>Impact Level (1-5)</th>
<th>Effort Level (1-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content Changes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expand Interests Section (like including more activities and wildlife)</td>
<td>Cater to more interests, Narrow Choices, Lower barrier of knowledge entry</td>
<td>Variety of participant interests observed, guests prioritize waterfalls or certain wildlife (relayed by Ranger K + M)</td>
<td>Competence</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Onsite Lodging</td>
<td>Cater to more interests</td>
<td>Some visitors prefer comfort lodging (co-creative workshop)</td>
<td>Competence</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Educational Opportunities + Accessibility Resources</td>
<td>Narrow Choices, Share Resources, Cater to more interests/priorities</td>
<td>Need for a resource that gathers this information (co-creative workshop)</td>
<td>Competence</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>-------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Climate according to season</td>
<td>Increased Preparedness, Narrow Choices, Lower barrier of knowledge entry</td>
<td>co-creative workshop suggestion, addressing Ranger M’s concerns</td>
<td>Competence</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Needed/Recommended gear</td>
<td>Increased preparedness, safety, Lower barrier of knowledge entry</td>
<td>concerns of Rangers, field experts, and convenient for beginners</td>
<td>Competence</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>People Illustrations</td>
<td>Integrate characters to relate to</td>
<td>Gamification research</td>
<td>Relatedness</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>‘Tips’ Page</td>
<td>Encourage preparedness, safety, lower barrier of Knowledge</td>
<td>safety concerns of Rangers, field experts, and convenient for beginners</td>
<td>Competence/Autonomy</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

**Design Changes**

<table>
<thead>
<tr>
<th>Name Labels on clicked park circles</th>
<th>Ease of Use, Lower barrier of knowledge entry</th>
<th>Observed Success, Co-creative workshop suggestion</th>
<th>Competence</th>
<th>5</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support multi park trip function (change order of boxes/ distance between)</td>
<td>Expanded Use/Functionality</td>
<td>Significant multi-park visitors, relayed by Rangers, co-creative suggestion</td>
<td>Competence/Autonomy</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Have a high contrast mode</td>
<td>Accessibility</td>
<td>Co-creative workshop suggestion, industry observation</td>
<td>Autonomy</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Improvement Option</td>
<td>Main Focus</td>
<td>Observed Success</td>
<td>Improvement Area</td>
<td>Competence</td>
<td>Autonomy</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>-------------------------</td>
<td>------------</td>
<td>----------</td>
</tr>
<tr>
<td>Add filter options and/or Add search options</td>
<td>Narrow Options, Ease of Use</td>
<td>Observed success (service safari), Co-creative workshop suggestion</td>
<td>Autonomy</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Add commenting or reviews</td>
<td>Additional Information/Opinions, social interaction</td>
<td>Observed success, Co-creative workshop suggestion</td>
<td>Relatedness</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Add social engagement (sharing)</td>
<td>Social interaction, sharing, ease of use</td>
<td>Observed Success</td>
<td>Relatedness</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>(minimal) How-To Directions/ Help</td>
<td>Ease of use, Lower barrier of knowledge entry</td>
<td>Observed success, Co-creative workshop suggestion</td>
<td>Competence/Autonomy</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Make map view more flexible (zoom in and out)</td>
<td>Ease of use, legibility/accessibility</td>
<td>Flexibility observed in service safari, Co-creative workshop suggestion</td>
<td>Competence/Autonomy</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Functional Changes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulling data from separate files to create park boxes</td>
<td>Ease of editing, keeping relevant information</td>
<td>Observed Success, need for up-to-date material</td>
<td>Competence</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

*Figure 17, Table of improvement possibilities*

It's one thing to lay out the options and estimate how much time and effort it will take, and another to choose and actually implement them. Let’s go back to the main things we’re working towards: 1) making the setup and content more beginner or casual visitor friendly, 2) increasing accessibility, and 3) introducing elements of park safety and preparation to the website. With the current available time for this improvement phase, there is time to do at least one improvement addressing each concern, with an effort level of 3 or less for each one.
The following choices were made:

1) Beginner-Friendly: Park Labels, Directions, “Tips” Page (see park safety)

2) Increasing Accessibility: High Contrast Button, Flexible View (zoom in/out)

3) Park Safety: “Tips” Page (with people illustrations)

It would also be recommended that when capacity allows, the next improvement to be implemented should be filters, and content updates, aligning with the options listed as green.

Prototyping the “Tips” Page

The main concern from this list is the “Tips” page, as this is a whole additional page that needs to be designed on the website. Thinking of topics that were discussed during research with Ranger K and Ranger M, as well as previous social media research, several topics were chosen to cover important “Things to Know” before traveling to the U.S. National Parks. The layout for this information and the extent of information on these topics was decided through sketches (pictured in Figure A5). It’s important to note that first sketches and notes never have to be perfect or clean; the design simply has to start from somewhere. Once more established, a mockup or more high fidelity prototype can be made. This was made in Figma (pictured below).

Figure 18, Image of Figma prototype of the “Tips” page for the website
When making the prototypes it's important to think about responsive design, or how the design will transfer to different devices. To test this I also created a layout for mobile and tablet. Upon doing this, I found that in the tablet view there was a merging of colors when stacking the categories (as pointed out in the black square in the picture below). Therefore, a solution was created by changing the color of the bottom button on each box, as to distinguish one from the other. Catching this at the prototype stage means one less piece of code that will have to be changed after the fact.

![Figure 19, Screenshot of the Figma prototype for mobile view (left) and tablet view (right)](image)

Note that while this helped get to a very similar model of the final product, things are never set in stone; if an error or problem is discovered, it’s ok to go back to the drawing board and iterate.

For example, the content for this page was written after making the prototype, and the final page, as you will see in the next section, has four categories instead of three. These types of changes can be made on the fly in small teams; however, a new visual for these changes can
be especially helpful when relaying this information to a technical team, large design team, or to other stakeholders as to avoid confusion.

Improving Map View

Directions
This improvement is quite straightforward and is similar to other sights and applications, so the design should afford an intuitive experience. A question mark icon will be added above the map that when clicked, will show an explanation of how to use the page. This will be used by those who are nervous to try using the page without guidance, while staying out of the way of people who would rather figure it out themselves. This decision was made upon the feedback of the co-creative workshop attendees, who said that they would likely not read the directions, but simple instruction would only be welcome for anyone who was not quick to pick up on the format.

Labels
Before, when you had multiple parks selected, you could not see anything reminding you of which park was which. Now, there will be labels near the dots on the map in order to distinguish one from the other with the park names. Because of concerns of covering other location points and not being able to access all of the park information, these labels were made to appear behind the location dots, oriented in a way to avoid overlap of other park names or park location dots when possible. Although the park names are relatively small on the map, the ability to zoom in on the map to read them will offset that drawback for now. This is especially important to cater to new visitors as some with more experience may be able to recognize the general location of parks while others would have no reference whatsoever as to where any of the parks are located.
High Contrast Option

This improvement is mostly based on accessibility after a discussion in the co-creative workshop on the issue of red dots on a green background, and how the original map could be difficult to distinguish. Clicking the high contrast button will change the map outline to a light silhouette so that the location dots will be easily distinguishable.

Sizing Flexibility

As mentioned in the previous improvements, the flexibility of zooming in and out of the map aids in the utilization of the other improvements, making it easier for people to read the labels on the map, zoom into crowded areas of the map on a phone screen, or zoom out to see the park in reference to more of the country. A plus and minus button below the map is a simplistic and intuitive indicator for zooming in and out, similar to hitting ‘ctrl’+’+’ or ‘ctrl’ + ‘-’ on your keyboard.

Implementation Results:

At the time of publication (May 2022), the “Peak of the Parks” website can be found at http://people.sunyit.edu/~cookkm/POTP/Intro.html. After completing the planned improvements, some visuals were altered to go with the new changes (See Figure A6). The color palette was slightly altered with a darker blue and the yellow was taken out due to visibility issues pointed out in the co-creative workshop. The logo at the top of the page was abbreviated and so the full logo was placed on the home page only, with an illustration to match the new “Tips” page people illustrations. This is meant to help the reader connect to the content through these characters. Looking at the screenshot pictures after launching, there is still improvement to be made in order to make this site more easily accessible, including making the page link names larger.
Figure 20, Screenshot of the map view (top) and map view with directions selected, the high contrast button clicked, and labels applied in PC view (bottom)
The map view, pictured above, had several improvements successfully implemented, with room for more. As seen, the labels for the park names are smaller when zoomed out, but can be made larger with the zoom in button. In all, this will make the map easier to use for inexperienced and experienced park visitors alike.

![Figure 21, Screenshots of map view in mobile view](image)

Responsive design is an important part of designing for the web, and so it is important that these improvements are also suitable for mobile view. The dropdown menu remained to navigate to each page, and you can see that it is easier to read the park labels while zoomed in in this view. However, the stroke weight of the location point does slightly overlap the label, and so as always, there is room to make changes later.
Finally, we have the creation of the “Tips” page, which hopes to give visitors a few reminders on safety precautions and generally how to prepare for their trip. This is a first step in addressing the park ranger’s fears of unprepared visitors, while also appealing to the anxiety of inexperienced hikers who want to be prepared, but don’t know how to get started. Again, this page was designed to be visible on the computer, tablet, and mobile.

Figure 22, Screenshot of “Tips” page in Pc view, with all four categories (Check Conditions, Come Prepared, Respect the Wild, and Share the Trail) expanded
Figure 23, Screenshots of mobile view (left) and tablet view (middle and right) of the “Tips” page

These improvements are meant to work towards the new goals established during research: making the site more intuitive to newcomers, making it more accessible, and encouraging preparedness and safety. Although there is more to do that could help to fulfill these goals further, it is important to realize that even small improvements are a step in the right direction.

Conclusion:

This project is meant to explore service design and adjacent fields and use techniques within those fields to do research, all in order to make user-centric edits on a specific project. Using a service design framework, five improvements were successfully chosen and implemented for the website “Peak of the Parks.” While the framework of service design is often described as fluid, and many steps happened simultaneously, the grouping of the stages (including the
delineation between different kinds of research) helped to organize and direct the process. It creates natural milestones that help to move the research and design process along.

It is a recurring theme to see research framed with the psychological needs of a user (competence, autonomy, and social relatedness); this helps to understand the motivation of the need. However, this does not give the full picture on what a user wants. By this I mean that a new feature can theoretically be meeting a core psychological need, but in practice is not what is most important to the user. It was also noted that some elements that added convenience or beauty may not have the strongest link to competence, autonomy, or relatedness, but may still be very important to the user. That is why it is useful to associate features to these general needs as an augment for the sake of understanding, but not as the main decision driver or only evidence towards proving its worth within the service or product. No matter how much information is gathered and coded, there is no substitute for the qualitative storytelling of users and hearing directly from them.

 Appropriately, next is a closer look at the co-creative workshop. This workshop was held with everyday users and took place after meeting with experienced professionals and hiking enthusiasts. The workshop shed light on a new perspective that could not be seen from inside the U.S. outdoor community; this is telling as to how part of the ‘barrier to entry’ mentioned in existing outdoor research may have formed. Without any background knowledge on what the U.S. National Parks are or what visiting them is like, it is difficult to even know what to search for and figure out what would be of interest. It proved that “Peak of the Parks” could be made into a tool more suited for newcomers, even though its initial goal was helping someone who did have previous information and was somewhat experienced. This research method acted as a confirmation of findings thus far, a place for direct questions to fill in information gaps, and a place to brainstorm solutions directly with stakeholders.
From the desk research, and confirmed by the co-creative workshop, it is clear that there is a need to cater more to an entry-level audience. This became the first specific goal or objective when moving forward with the improvements, followed by an increase in accessibility to cater to a more inclusive audience, as well as incorporating more information on safety and preparedness to address concerns of those in the U.S. National Parks every day (Ranger K and Ranger M). These goals could be used for not only deciding on improvements, but for guiding decisions yet to come until another reevaluation of user needs is deemed appropriate. Although these goals are now defined, note that specific user personas for this project are not established as they would be in many product development workflows. Instead, various participants and demographic information, as well as personas from a similar project, are referenced. Since the research influenced a shift in audience to pay equal attention to outdoor activity newcomers as enthusiasts, it may be wise to create these new personas in upcoming projects to help visualize what reactions more improvements may provoke, especially if testing opportunities are limited. However, if personas are established the possibility of adding to or editing these personas when faced with new research must be remembered and considered.

If continued, the next step would be to user-test these improvements and determine if these changes are affecting the user’s experience in the expected fashion. Remembering that the service design process can be like a scribble instead of a simple loop, user-testing may lead straight back to implementation, prototyping, or even back to more research again. Either way, the process seems appropriate for small iterative improvements like this project, or for large releases of a final product. In all, from the information gathered, this way of working does maintain a user-centric mindset and aid in the design and improvement of products that truly address the audience’s wants and needs, which hopefully, in this case, leads to a more enjoyable experience for members (new and old) of the outdoor community.
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Appendix

Figure A1: Social media post and responses, from previous research on hikers, February 2021

I could use everyone’s help for a project if you’ve ever gone hiking or wanted to do an outdoor activity:

1. What’s your experience level in the outdoors?
   - None
   - Beginner (gone a few times)
   - Intermediate (goes few times a year)
   - Advanced (the outdoors is my passion *hugs a tree*)

2. What are your favorite outdoors activities and when did you start?

3. What do you worry about when you go out on an outdoors day trip?

4. What do you wish other hikers knew on the trail?

5. How long would you spend preparing for an activity?

6. What is the best learning experience you’ve ever had? Your worst?

7. What’s your favorite animal?

Private message me or make comments- answer as few or as many questions as you want! Thanks

---

1) intermediate

2) climbing. I started taking it seriously fall 2017, but I don’t typically have the time, tools, or resources to climb frequently or outdoors.

3) I typically worry about other responsibilities that I put aside to go on trips. Weather and safety conditions after that.

4) I wish other hikers would know more conservation techniques. Don’t use muddy trails. Don’t step off trail.

5) if it was just me probably a few hours, but if other people were involved then probably a few days

6) best learning was probably wfa or swiftwater rescue. Worst might be getting stuck in storms/bad weather while on a trip.

7) favorite animal might be sharks or gators. One of the living fossils.

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Beginner, just walking or a light hike, animals (snakes, big cats). 4 no answer, minimally. worst did a 5 hour hike without water, best: light hiking and enjoy a nice view, cats
1. Intermediate

2. My first hike was 2016, otherwise if you are counting it, most of my outdoor activities were water sports or snowboarding, which I've done since I was 10 and prefer much more than hiking.

3. Running out of food

4. How much time it will take to finish the hike

5. Definitely 30m+. 1hr packing/getting ready

6. Best learning experience was hiking in the snow for the first time because I didn’t know what it would be like and it presents new challenges and rewards than hiking on dirt. Also a learning experience was my one 8 hour hike which taught me how important preparedness physically and mentally is.

7. Mountain lion!

1. What’s your experience level in the outdoors?  
- Intermediate (goes few times a year)

2. What are your favorite outdoors activities and when did you start?  
- Hiking - about 3/4 years ago  
- Cross country skiing - 19 years ago

3. What do you worry about when you go out on an outdoors day trip? Getting lost/not having phone service

4. What do you wish other hikers knew on the trail? Not sure

5. How long would you spend preparing for an activity? At most, 30 minutes

6. What is the best learning experience you’ve ever had? Your worst? Bring bandaids or a mini first aid kit

7. What’s your favorite animal? I can’t choose 😞 either dogs, pigs, or raccoons
Hi Kristal
1) I think I’m intermediate (but I’d still hug a tree 😊
2) Going to beach. Hiking, kayaking, SUP, outdoor sports. I started pretty young with beach and sports. After kids (age 30?) it was hiking, walking, kayaking, etc.
3) dressing appropriate (layers), water for drinking, having the trail/map, and my camera.
4) I just wish people “in general” would be more respectful. Quiet, take their trash, level of comfort, follow markers.
5) couple of hours
6) Best and worst, being over confident on a trail, which ended up being on cliff (where kids hit panic)...crying and panic insured. With the help of strangers who said “it’s worse to turn back around.” we made it to the top! PS- they are still in therapy from it 😂
6) a dog... In the wilderness? I’d like to see a moose 😊, I’ve seen Bison

Hey Kristal! My answers to your survey project -
1 advanced
2 running & hiking 10yrs, xc skiing 2yrs, climbing 4yrs, downhill skiing 2yrs
3 having enough water, weather changes, being too cold
4 not to litter, to pick up dog poop, bury their own poop, don’t walk on the delicate plants
5 usually 1-2 hours prepping and packing for most hikes, maybe 3-4 for multi-night or bigger trips. Also a lot of time spent researching places to go beforehand
6 best: trying new sports with friends is always worth it and not scary - I was nervous to try climbing at the ROC wall but my roommate made me go and I’m so glad I did! worst: learning my bivy bag is not waterproof and walking in the rain to a public bathroom to wait out the storm
7 I like mountain goats
Figure A2: Social media post and responses from outdoor guides, from previous research on hikers, 2021

#SeekingInformation
#forastory
#Question
Hi all!

I'm an information design grad student and could use some stories/opinions.

My questions:
1) What are some situations that you've witnessed that could have been avoided by informing hikers?
2) What are some key things as guides you wish new hikers already knew?
3) What were YOUR reasons for getting into outdoor activities? How old were you?

My idea is to make an interactive website that helps educate people in courtesy and safety in the outdoors. That way they feel comfortable and welcome and safe joining the community! This project idea came from all the press on increased rescues and stressed trail conditions, etc. due to people flooding to the outdoors during Covid, and friends I have brought out with no experience.

-10/10 would not recommend rolling up to a hike in flip flops at 5:30 p.m. and not referring to alltrails before hitting the trail. Even if it says "summit trail" and you drive 3/4 up the mountain, you will have a bad time 😔

Like Reply ty

... and always have some sort of charged flashlight no matter what

Like Reply ty

Dogs, drones and boom boxes in the wilderness...

Like Reply ty

In addition to what's already been mentioned...Lightning safety, altitude sickness, what to do around different wildlife, & cryptobiotic soil crust

Like Reply ty
Figure A3.1: Mike, Hiker persona from social media research from previous project, 2021

Mike

Mike used to be more active but still likes finding things to do with his family and friends.

Age: 57
Experience: Intermediate
Interests: walking, light hiking, photography

“I just wish people ‘in general’ would be more respectful... I also have to remember I may not be able to experience the outdoors the same way as when I was younger.” - Mike

Motivation:
- Beauty
- Curiosity
- Physical-Activity
- Socializing
- Pride
- Tranquility
- Independence

Worries:
- Time
- Safety/Security
- Comfort
- Conservation
- Courtesy
- Preparation

Key Qualities/Feelings:
- More worried about how to act than how to prepare
- Once got their family on the wrong trail but completed it anyway
- Values quiet, together-time, and a sense of accomplishment
- Wants structure even in the wild
- Needs a set of rules to follow and share

Preparation Time: couple hours

Figure A3.2: Brandon, Hiker persona from social media research from previous project, 2021

Brandon

Brandon goes on outdoor trips a couple times a year but often does not have the time.

Age: 26
Experience: Intermediate
Interests: hiking, climbing

“I worry about other responsibilities that I would put aside to go on trips- then weather and safety conditions.” - Brandon

Motivation:
- Beauty
- Curiosity
- Physical-Activity
- Socializing
- Pride
- Tranquility
- Independence

Worries:
- Time
- Safety/Security
- Comfort
- Conservation
- Courtesy
- Preparation

Key Qualities/Feelings:
- Goal-oriented
- Anxious
- Wants reassurance/justification for going out
- Needs to learn how to be efficient to enjoy free-time

Preparation Time: 30 minutes - 1hr
Figure A3.3: Sophie, Hiker persona from social media research from previous project, 2021

Sophie

Sophie is very outgoing and doesn’t like everything to be planned, but does want to be comfortable.

Age: 22
Experience: Intermediate
Interests: camping, photography, travel, hiking

“I try to find the best trails without looking at pictures of the best part so it’s a surprise.”
- Sophie

Motivation:
- Beauty
- Curiosity
- Physical-Activity
- Socializing
- Pride
- Tranquility
- Independence

Worries:
- Time
- Safety/Security
- Comfort
- Conservation
- Courtesy
- Preparation

Key Qualities/Feelings:
- free-spirited
- loves the rain and being away from job-stress
- seeks adventure through exploration
- needs to be self-reliant to enjoy any conditions

Preparation Time: few hours

Figure A3.4: Clara, Hiker persona from social media research from previous project, 2021

Clara

Clara leads trips or goes on them with her dog- she knows there’s always more to learn.

Age: 31
Experience: Advanced
Interests: hiking, snowboarding, water sports, backpacking

“Even hikers who are experienced can make mistakes if not experienced with a given environment.”
- Clara

Motivation:
- Beauty
- Curiosity
- Physical-Activity
- Socializing
- Pride
- Tranquility
- Independence

Worries:
- Time
- Safety/Security
- Comfort
- Conservation
- Courtesy
- Preparation

Key Qualities/Feelings:
- confident
- wants to learn more/ be reminded
- wants to share their passion with friends/clients
- needs help preparing people so she can enjoy herself too

Preparation Time: few hours/few days
Figure A3.5: Anna, Hiker persona from social media research from previous project, 2021

Anna has gone hiking once or twice in her life on a whim when her friends were bored.

Age: 19
Experience: Beginner
Interests: views, beaches, friends

“10/10 would not recommend rolling up to a summit hike in flip flops at 5:30 p.m. and not referring to a map before you hit the trail.”
- Anna

Motivation:
Beauty | Curiosity | Physical Activity | Socializing | Pride | Tranquility | Independence

Worries:
Time | Safety/Security | Comfort | Conservation | Courtesy | Preparation

Key Qualities/Feelings:
- spontaneous
- is willing to fail to learn - changed preparedness after bad experience
- wants to be more prepared
- scared of weather, animals needs the know-how/resources to avoid
- needs practice in being self-reliant

Preparation Time: 30 minutes max.

Figure A4.1: Template adopted for use in co-creative workshop, profile of participant Kayleigh

Kayleigh

Name: Kayleigh
Bio: teacher
Went to parks when younger

Age: 17
Experience: Beginner to Intermediate
Interests: Nature walking, History, etc

Let’s go on an adventure! (with a comfy bed)

Motivation:
Beauty | Curiosity | Physical Activity | Socializing | Pride | Tranquility | Independence

Worries:
Time | Safety/Security | Transportation | Cost | Age Appropriate | Weather | Comfort | Conservation | Preparation/Packing | Knowledge | Pet-Friendly | Other

Key Qualities/Feelings:
- Excited, Curious
- Easily overwhelmed by conflicting information

Preparation Time: 1 hour
Figure A4.2: Template adopted for use in co-creative workshop; profile of participant Brian

Figure A4.3: Template adopted for use in co-creative workshop, profile of participant going under the name Ozidus
Figure A4.4: Template adopted for use in co-creative workshop, profile of participant Joe

Quote: "I tend to prefer areas which are quiet and away from crowds, with either lots of nature or history to them - preferably both."

Motivation:
- Beauty
- Curiosity
- Physical Activity
- Socializing
- Pride
- Tranquility
- Independence

Worries:
- Time
- Safety/Security
- Transportation
- Cost
- Age-Appropriate
- Weather
- Comfort
- Conservation
- Preparation/Packing
- Knowledge
- Pet-friendly
- Other

Key Qualities/Feelings:
- Mostly spur of the moment, wouldn't need more than hour at most

Preparation Time: 1-2 hours?

Name: Joe
Bio: University student, enjoys going to parks both alone and in groups
Age: 21
Experience: Intermediate
Interests: Walking, Nature (Birdwatching), Dog-walking

Figure A4.5: Template adopted for use in co-creative workshop, profile of participant Autumn

Quote: "need to know the average windspeed or be swept away"

Motivation:
- Beauty
- Curiosity
- Physical Activity
- Socializing
- Pride
- Tranquility
- Independence

Worries:
- Time
- Safety/Security
- Transportation
- Cost
- Age-Appropriate
- Weather
- Comfort
- Conservation
- Preparation/Packing
- Knowledge
- Pet-friendly
- Other

Key Qualities/Feelings:
- Easily overwhelmed by people
- Curious
- Slow-paced

Preparation Time: 1-2 hours?
Figure A5: Sketches for brainstorming the layout and content structure of the “Tips” page
Figure A6: Screenshot of the new Home Page for “Peak of the Parks”

Hello, my name is Krista Memo Gove, and I’m an outdoor enthusiast and designer from East Long, NY. I was in Sarasota, FL when the pandemic hit and we were all stuck inside to avoid being cooped up. I started making illustrations of every US National Park from my own experiences planning trips to a National Park, especially when I was in college without a car. I would have to spend every few hours on a map to plan my trip. Now, I have a map where I can research all the information about the parks for my future visits. I hope that this website helps you find your next adventure as well!

“Peak of the Parks” gathers overview information about all of the United States National Parks from the National Park Service website and related sites into a single page where you can compare them. OPERATIONS MAY BE ADJUSTED AND IMPACTED BY COVID-19. If you decide to visit, please go to the official site links for updated and more extensive information.
Vita

Krista Marie Cook was born on April 3rd, 1997 and grew up in East Islip, N.Y. Krista received a B.S. in Electronic Arts from Rensselaer Polytechnic Institute in 2019 as a Liberty League Scholar Athlete on the RPI Dean’s Honor List, with a concentration in Animation and Algorithmic Art. During this time, she was an undergraduate researcher on “The Mandarin Project” making an AI-assisted language learning game, completed a co-op at Walt Disney World, and exhibited an undergraduate thesis project at the Arts Center of the Capital Region in Troy, N.Y. titled “Their Growth, Our Gain” within the exhibition “Still Rendering.” After graduation, Krista worked as a freelance designer and producer, including for the 2021 LavaCon Conference. Upon earning her M.S. in Information Design and Technology, she will be continuing production work and seeking design work focused on building user-centric products and services.