LMC 3411 ACT GROUP

REDESIGNING NETX IMAGE REPOSITORY

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Georgia Tech's NetX image portal is intended to function as a large database of assets that Georgia Tech affiliates can modify and share across their relevant platforms. However, the database's unintuitive information architecture and asset categorization prevents it from wide use among the greater Georgia Tech community.

As student researchers working with GT Institute Communications in conjunction with LMC 3411, our focus is to better understand how users expect to navigate a large image database.

Our research will relay a digital asset management space that would better suit intended use. Thus, this study will define what information architecture would be most conducive to expanding its user base and increasing efficiency of use.

Background

Our study will utilize current media repository research to demonstrate an ideal architecture for NetX. Existing research already defines accessible information architecture and user interface (UI). However, there is a lack of research regarding intuitive photo sorting categories, likely due to the large discrepancies between website audiences across varied platforms.

User Experience

Experts specializing in user experience (UX) agree that UI can be distilled down to a few key attributes: intuitiveness, consistency, and aesthetics. These design patterns target the user's luxury, often attempting to reduce cognitive load. Nick Babich, an expert with industry UX experience, says it is the designer's job to make interacting with an interface comfortable and intuitive. For example, a Graphical User Interface (GUI) that is visually pleasing will be easier to interact with compared to an interface that is cluttered and visually confusing.

The buttons and controls should be positioned in a way that is cohesive with the overall visual design. The size of the buttons and controls should also be appropriate. Consistently sized user interfaces make products easier to learn and use and reduce the risk of user error.

According to *The Law of UX*, a website dedicated to outlining ideal UX principles, "Users often perceive aesthetically pleasing design as design that is more usable" (Moran, 2017). In a 1997 study by Kurosu and Kassimura, its findings demonstrated that a pleasing appearance can enhance a user's perception of usability, regardless of whether the design actually makes the system easier to use. This claim, that aesthetics are more important than an actual workable interface, creates an interesting dichotomy between these two aspects of UI design. Essentially, the designer's job is to find a balance between interface intuition and visual design.

Photo Categorization

Prior research into how people leverage digital tools to categorize their digital photos found that people generally stick to the most simple browsing features, such as image search and user created folders (Rodden & Wood, 2003). More advanced features were largely ignored in comparison due to the apparent challenge in understanding them.

The most common tools are the most necessary components within an information architecture. Additionally, the study observed how users organized their photos. Initially, most users identified photos as either good or bad, bad being defined by technical deficiency and lack of visual interest. The next most popular methodology was sorting photos based on events, such as holidays, or seasons.

Interestingly, less effort or mental categorization went into photos taken more recently, as the user can more easily bring to mind the photo's context. The value of sorting becomes greater to the user as the age of the picture increases. How users sort photos, both functionally and conceptually, is extremely important when implementing proper UI and UX for a photo hosting website like NetX.

Card Sorting

However, websites with predetermined sorting categories for its content need a way to choose optimal and predictable categories. One of the most effective ways to do so is through a card sort. In "Card Sorting in Product Design", Babich explains that card sorting is a research technique that is primarily used to uncover how groups of people process information (2022).

Through open card sorting, the researcher will provide an assortment of index cards, digitally or physically, that participants are asked to group into categories that they label based on their own thought process. According to "Card Sorting: How To Get Started", while the amount of cards can vary, digital card sorting researchers should "limit the amount of cards to 50" (Fitz-Patrick, 2022). The participants are then asked to explain their choices so that the interviewer can further understand the way each individual thinks. This individual data is then analyzed in order to identify trends across users, helping determine the most useful categories for a photo repository.

Being highly aware of the way intended users naturally and mentally categorize items through card sorting enables companies to make their UI designs more predictable. In doing so, their audience can have a better experience with the interface. Card sorting can also be done with only text, images, or a mix of both.

According to a study comparing these different methods, image-only card sorting was found to be the easiest of the three (Sauro & Lewis, 2023). This increased ease of sorting will be helpful in an asynchronous card sort where testers lack the ability to ask a researcher a clarifying question.

While there are clear, salient characteristics of good UI/UX design and effective card sorting exercises, research about photo categorization in a digital architecture is still a budding field and lacks specific identification of traits.

Additionally, difficulty arises as different websites require different architectures, and one sorting method will not be applicable for all uses. Our research will contribute new evidence in the wider field of asset organization in a digital architecture, but its particular usefulness is intrinsically linked to Georgia Tech and the NetX Digital Asset Management system.

Methods

Our team aims to answer our research question by conducting an open card sort study. Participants will be shown twenty photos pulled from the Georgia Tech NetX portal and asked to create appropriate categories relating the images.

Aim

- Identify the common ways users categorize the images in the NetX portal based on patterns observed in a card sorting activity.
- Use data collected from individual interviews to evaluate the efficiency of the NetX portal's information architecture.
- Report and present recommendations to increase the NetX image portal's usability and improve the site's architecture.

Objectives

- Perform secondary source research to examine existing consensus on the best way to categorize images and design a user experience for efficient use.
- Analyze results from the card sort exercise to determine consistent image categorizations among participants.
- Examine the navigation choices participants make when locating specific types of photos within the existing architecture.
- Design a new information architecture based on existing research and findings from our study.
- Present an explanation of our new design to stakeholders.

Study Setting

The study will be performed remotely. The card sort activity will be presented asynchronously. Follow up interviews will be conducted on Zoom or in person.

Study Design

First, we will locate potential participants and ask them to complete our screener. Based on these results, we will decide who will participate in the study based upon our

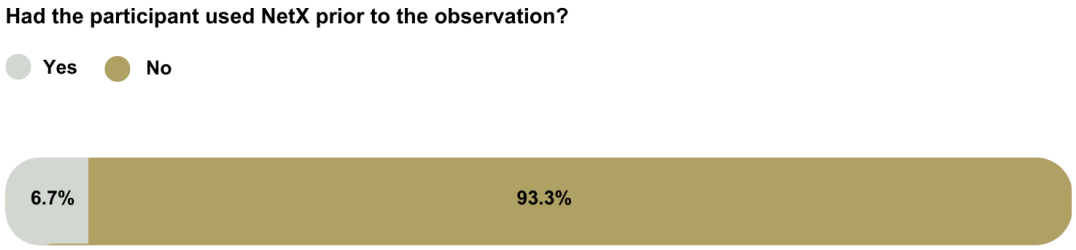
inclusion/exclusion criteria. This will be based on their professional experience with UI/UX design and their usage of social media.

Once we have our participants selected, we will schedule a time for them to complete an asynchronous card sorting exercise with twenty photos from the NetX portal. This card sort will be open, allowing the participants to create their own categories. An open card sort is best for identifying the most natural ways that participants group photos as the categories will be free from any bias that may come from study designers.

The results of this activity will then allow us to examine the common groupings that users made. This will allow us to define categories for the proposed information architecture of the NetX portal.

Following this, we will schedule synchronous interviews with participants where we will examine how they navigate the existing architecture in NetX to perform certain tasks: interpret graphic buttons in the homepage interface, identify a particular kind of asset uploaded over a particular period of time, and save assets to collections for future reference. This will also assess what aspects of the existing architecture work, and what aspects are deficient. The live interview setting is most conducive to determining what is effective about the current information architecture as well as asking clarifying questions about their card sort to further explore their decisions.

The qualitative results will be coded and analyzed, enabling us to identify the trends and outliers among our participants' user experiences in NetX. These findings will inform our redesign of the architecture, keeping and expanding on elements that work, and altering the elements that are unintuitive.



Data compiled from screener

Field Methods

Card Sorting

We will have our participants use the software OptimalSort to conduct the card sorting. OptimalSort enables our testers to easily participate in a digital, asynchronous, open card sort. Additionally, OptimalSort will automatically compile data based on how the participants categorize the visual assets. In our open card sort, participants will organize twenty photos based on categorizations that they feel best link the photos presented to them.

NetX User Interviews

We will interview participants as they interact with the NetX portal. In this interview we will follow a script in which we will prompt the users with various scenarios that require them to interface with the existing architecture. First, we will ask questions about the user interface, such as whether the user can identify the function of various buttons and controls on the homepage. We will also ask for their impressions of the website as a whole to gauge their more general thoughts about its visual design and information architecture. Following these questions, we will ask them to navigate the site to find a particular kind of visual asset. This prompt will involve utilizing NetX's current asset categorizations, and will offer comparative data about NetX's categorizations and the common categorizations collected in our card sort. We will then ask users to attempt to save visual assets to a collection that they can use as a later reference, which engages some of the more advanced features of NetX. Finally, we will allow the participant to offer their closing thoughts about NetX and the ways they believe it could be improved.

Participants

The participants in our study will be current members of the Georgia Tech community. Our inclusion and exclusion criteria are as follows:

Inclusion - ***each member of the study must meet the following criterion:***

- Have a Georgia Tech affiliated email (gatech.edu), so they can access the NetX image portal
- Use social media for personal, educational, promotional, or other purposes
- Have no professional experience in UI/UX design
- Have use for Georgia Tech visual assets
- Completed consent form with all criteria met
- Willing to have their screen recorded during the interview

Our ideal participant is a Georgia Tech student who has run a Georgia Tech affiliated social media account and does not have professional experience with UI/UX.

Sample Size

Our team aims to interview fifteen individuals with every team member conducting at least one interview, and some members conducting more than one interview. We decided this was an appropriate study size for the scope of our project. This study size enables us to conduct in-depth user tests and interviews with our participants, while also granting our team adequate time for data analysis.

Sample Selection

The sample group for this study will be individuals that team members know personally, that have affiliations with Georgia Tech clubs. Time constraints of the study made leveraging our existing connections the most effective approach.

Data Analysis

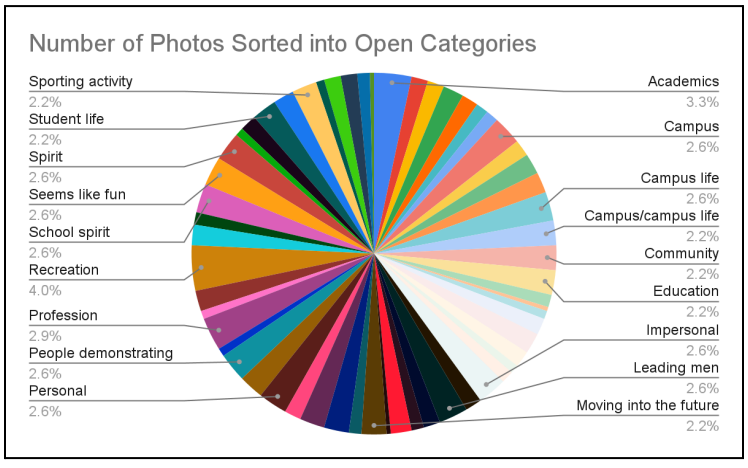
We will examine trends that emerge in the asset categorizations created during the card sort activity. We will consolidate the data into fewer, broader asset categories made up of related subcategories. Using this information, we can draw conclusions about how the Georgia Tech community naturally groups visual assets, informing our recommendations.

Following our participant interviews, we will analyze which existing NetX categories and navigation tools users found most easy to use. Using thematic analysis and data coding, we can transform our qualitative information into substantive quantitative material, and identify qualitative patterns presented by subjects. We will make informed generalizations about how testers interacted with the site, and root our recommendations in this data.

Results & Discussion

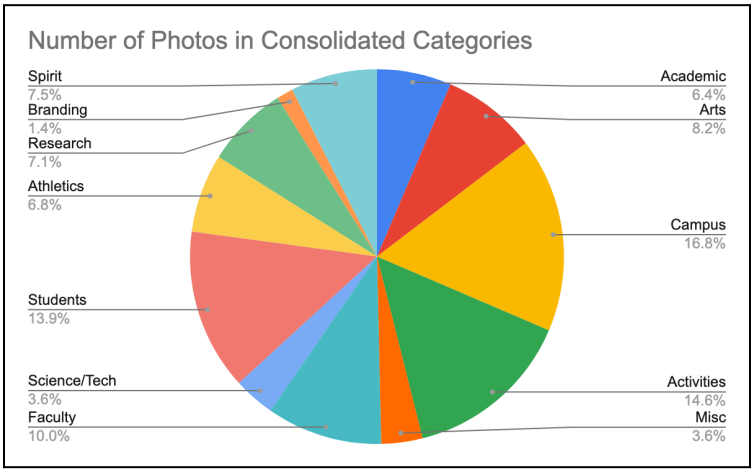
Card Sorting Results

Before coding and analyzing our interview transcripts, we first analyzed the results of our asynchronous card sort activity. Our approach to this data involved listing all of the individual categories that our users created. The results of this card sort were 58 unique categories. The graphic to the right showcases all of these initial categories with the distribution of card sort photos:



These numerous categories have a lot of overlap. In order to consolidate these categories, we began working through common patterns that would indicate a relationship between categories. For example, categories such as “Student Life” and “Campus Life” could be combined

without comprising the user's intent. However, some of the less obviously related categories required further interpretive work, such as "People demonstrating actions to the camera" and "Moving into the future". With a target of consolidating to 12 major categories, these 58 categories were synthesized. The resulting categories can be seen in the figure on the right:



These categories encapsulate the common patterns of thinking among our participants during the card sort activity, and result in a set of simple and intuitive ways to categorize photos within a Digital Asset Management system.

Interview Results

Our team coded the qualitative information from our interviews in order to obtain quantitative material to analyze. Using our interview notes, we established five themes that correspond to the information architecture and insights that defined our participants' interactions with the NetX Image Portal. Within each of these themes, we were able to draw generalizations and conclusions about the user experience of NetX.

We summarize the relevant sentiments our participants expressed towards these five themes in the following sections. However, the figure below defines the three most enlightening generalizations that helped inform our recommendations.

Search bar was improperly labeled.

57%

Missed the search bar functionality in its entirety

Home page contained unintuitive options.

69%

Noted a lack of categories presented by default on the home screen.

Keyword search didn't give relevant results.

69%

Commented on an issue with the search functionality

Button Labeling

With respect to NetX's button labeling, subjects generally found it unintuitive and confusing. Our first interview scenario asked participants to interpret the function of the pencil icon on the home screen, and only about 46% of participants correctly identified this function. This suggests that the pencil "edit" icon does not accurately convey the ability to modify the home

page to a user's liking, and could be improved with a new icon or label. Five buttons make up the sidebar of the portal, and participants had an even harder time interpreting these icons. 85.7% of participants confused the Collections and Folder icons, and 86.7% of participants could not deduce the purpose of the Tools icon. This data suggests that the current iconic labeling used on the site does not effectively communicate the various functions of important buttons.

Homepage Layout

Regarding the homepage layout, participants generally found the homepage layout to be somewhat useful, but lacking specific categories and functionality. For example, 46.6% of subjects reported that the homepage overall included useful information, but 69.2% of subjects noted a lack of default categories present on the home screen. This suggests that while the existing “Latest Uploads” and “Most Viewed” collections on home have use, users would like more folders presented on the landing page. When it came to expected features, 53.8% of participants expected to see the specific collection they created appear on the home screen. In general, users felt the home screen could be more personalized and include more default categories for asset searching.

UI Usability/Design

Participants generally felt that the overall UI usability/design of the NetX portal was adequate, but in need of many easy improvements. For example, when navigating the folders in search of assets, 61.5% of participants switched their default view to “tile view” to increase the visibility of asset thumbnails. Numerous participants made comments on the small size of the default thumbnails which make scanning the results difficult. Most participants felt that tile view should be the default setting.

Additionally, when searching for a photo of Buzz, 33.3% of participants initially navigated to Collections rather than Folders. The lack of differentiation between Collections and Folders and the poor asset preview functionality have straightforward solutions that would immediately improve the UI design.

Filter & Search

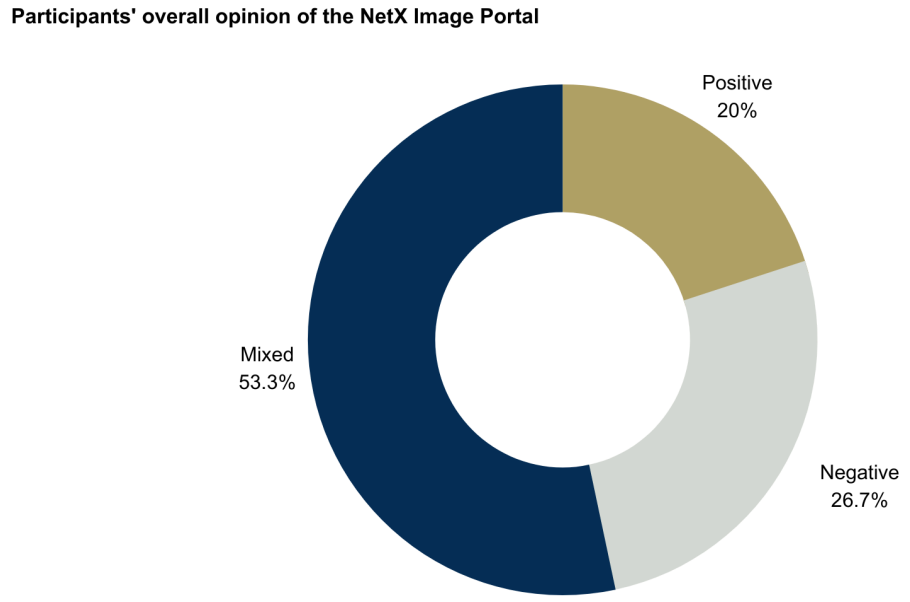
In terms of filter usability, participants felt that tags and filters were unhelpful in their current state due to poor metadata. A majority of users attempted to filter the folder contents when looking for a specific photo, with 56.3% engaging with the filter dropdown.

Most of these users attempted to sort by name or tag to find the photo they were looking for, but found that the result was generally unhelpful due to imprecise tagging. 25% of users attempted to view tags to get an idea of the photos that were in a folder, but most experienced difficulty as they could not discern which tags were actually present in the folder, nor how the photos were sorted by tag. It seems clear that the existing implementation of the filter and tags are hurt by imprecise metadata and naming, and an inability to view all tags in a folder.

When it comes to the keyword search bar, of the participants who used the function, 69.2% made note of an issue with the search functionality. Additionally, 23.1% of participants attempted to perform a keyword search with multiple keywords, separated by spaces, failing to recognize the need for quotations or commas to delineate keywords. 36.4% of all participants originally did not notice the search bar. A redesigned search bar with increased visual clarity and greater transparency with respect to multiple keyword searches would greatly improve the site.

Overall User Experience

The overall reception to the NetX website was mixed, bordering on poor. Only 20.0% rating the website positively. Most suggestions from participants dealt with the navigation and architecture of the site, as there were many instances of subjects getting lost and frustrated while looking for a photo. Another recurring qualm was that the folder categories were not especially illuminating.



Recommendations

Homepage Refresh

Based on the interview, we recommend the removal of the Most Viewed and Latest Uploads from the front page section as these categories do not provide visual information about the assets within them. A homepage which features the twelve major categories we collected from our card sort activity will allow users to immediately limit the scope of their asset search according to valuable visual information.

Keyword Search Bar Prioritization

Users utilized the keyword search bar to quickly filter assets according to specific categorizations. However, the search bar's lack of visual emphasis betrays its importance as a navigation tool. 57% of participants said that they struggled to locate the search bar, or missed it altogether, during their first interaction with the site in the participant interview portion of the study. We can address the lack of visual clarity surrounding the search bar by outlining the search bar and increasing its width.

While the keyword search bar proved to be one of the most useful tools on the site, 69% of participants reported significant limitations with its functionality. The keyword search bar should be able to filter results according to user input within the scope of the folder navigation system. Currently, searching by keyword while in a folder takes the user out of the folder and displays every asset on the site that shares the imputed keyword. Also, while the search bar allows more than one keyword input at a time, it uses comma separated lists to perform this function and does not alert the user of this specific way to separate terms.

Tagging Procedure

Currently, NetX does not standardize the keywords that can be used to tag its photos, or the number of keywords a photo must possess. This can create a random component to the search function that hinders usability. In order to preserve keyword specificity while also standardizing the cataloging system within the site, our team recommends what we've termed a Dual Keyword Photo Tagging system. Any user who would like to upload a photo to NetX must tag his photo from one of the twelve major categories collected from our card sort, as well as one sub-category tag (We imagine a site having 24-50 subcategories).

The user will then be able to add any number of additional tags that they would like to accommodate desired specificity,, but they do not need any additional tags other than the major tag and the minor tag.

In order to address the confusion participants had with determining what tags were available to them, a specific tag navigation dropdown will make clear all of the sub-tags that are present within the major category folder.

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