Bryant Huang, Adam Katz,
Marcos Gonzalez Carrasco

User Interfaces Case Study Documentation

Main Objective

The main objective of our system is to create an application that enables users to sort their tasks, whether these are short or long term tasks. We wanted to create an application that enabled users to organize their priorities correctly to optimize the manner with which they tackle their daily activities. The users of our application are very busy people and don't have time to waste in figuring out what they need to finish for each part of their busy lives. We need something that is very flexible to the user's needs and the most essential part is an intuitive user interface. Organizing tasks in a conducive visual manner does not require great computing power or algorithms - solely an interface that a user can seamlessly interact with. We need features of adding and sorting tasks, including the ability to categorize these tasks together and even create new categories of tasks. To keep organized, there also needs to be the option to archive tasks and lists upon completion, or if the user simply wants to delete something.

Personas and Use Cases

As touched on in the above analysis, the focus of this application is on the different personas that can use our products. In our previous persona analysis, we focused on several in particular, including a student athlete, a software engineer, and a busy mom.

The student athlete is a college basketball player that is trying to graduate with a degree and then play professional basketball. With games, meetings, and practices in additional to a tough academic schedule, he needs a tool that will help him make sure he stays on top of all of these tasks. No missed assignments and no missed practices is a must - he values both a lot.

Our software engineer persona has a goal of advancing in his company to high leadership positions. He is taking on a lot of extra work to show his drive and needs a tool to manage his meetings and tasks he needs to accomplish. Professional advancement is his number one priority, and he needs to stay organized and not miss a single step at work.

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Our busy mother has 4 kids in elementary to high school and wants to make sure that she is the best parent possible. In addition, she wants to stay in frequent touch with her friends in the city and meet up with them frequently when she has the time. She needs something to help her organize her busy family and social life - there are too many tasks for her to remember.

All of these individuals are drastically different in terms of their daily responsibilities and long term goals, but we needed to create a product that each one of them can use to reach their unique goals. After completing the design and implementation of our task manager platform, we are confident that our product is conducive to fulfilling all of their needs. Expanding upon the capabilities discussed in the previous exercise, we also implemented additional features that make each one of our user's experiences better. There is the ability to invite collaborator on tasks, giving each one of these personas the opportunity to effectively organize their team-based activities as well. Our software engineer can invite others to project tasks, our student athlete can receive an invite to team practice, and our busy mother can invite her friends out to lunch.

To demonstrate the intense thought process behind prototyping this application, below details a specific use case for each of the personas mentioned above:

Our busy mother would have a home task managing screen that sorts her responsibilities into categories by each of her children, her social commitments, and other familial responsibilities. For example, under the category for her daughter Britney she could put "Sign up for Soccer", "Call Teacher", and "Buy Soccer cleats". If she realizes she actually needs to call her son's teacher instead, she would drag and drop that task over to her son's column. In a social column, she could write "Ask ladies for Brunch" - and with the weekend coming up, this deadline could be in red. When she's finished, she simply checks each of these off and they disappear.

Our software engineer would sort his tasks with the following categories -"Work Milestones", "Meetings", "Networking", as he is trying to advance in his career as a software engineer but still has to keep up with the weekly sprints of programming and design that are part of his job description. "Finish JUnit testing", "Add third party library functionality", and "Implement Database API" could be added under "Work milestones", and then "Talk to Senior Product Manager", "Schedule talk with VP" could be under Networking. And of course, "schedule product progress meeting" could be placed under meetings. It would be simple for him to add an additional list with his responsibilities

outside of work as well, simply clicking our add button to insert another list for his personal tasks.

Our student athlete can sort his tasks by class and also have separate columns for basketball and professional aspirations. Maybe he has some meetings with agents and different sports brands that he needs to remember, and these can be put under “Professional”. His coach tells him to bring extra water to practice, so he makes a note of it on the site and sets a deadline of today so he remembers to put it in his bag before he leaves for practice. After every class, he inputs his homework into the respective category and checks it off when it is done.

Analysis of Similar Products

Prior to prototyping and implementing our task manager, we took inspiration from established products in the market and did some analysis of design principles, heuristics, and patterns. Below details how we believe competitors like Trello or Todoist confirm to Nielsen’s heuristics and Van Duyne’s design patterns. We analyze 10 total points for each product, the first 5 principles for each being the Neilsen heuristics (denoted with “N”), and the following 5 principles being Van Duyne’s patterns.

Trello Analysis

1. **N1:** When you click “Butler”, the application displays a “one moment, powering up” message before a more intuitive user interface loads with additional features that helps explains the features of the website.
2. **N5:** Each time “Add a card” is clicked, there is an option to either submit or cancel after the action. This helps the user exit if the link is accidently clicked.
3. **N8:** The interface is a simple background with columns, each of which contains cards. The user chooses to add/delete columns as well as to add/delete cards.
4. **N10:** There is an information button that shows an intro to Trello and also how to use it, in addition to different tips and also offers to look at different pricing models.
5. **N9:** Help users recognize, diagnoze, and recover from errors: On the login screen, there is an error that is triggered when a user tries to create a new account with an already established account - it will remind the user to login or try to recover a lost password.

6. **B1:** Multiple ways to navigate: There is a main task bar at the top of the application. Navigation is very easy to do. Search bar, home bar, and info button are all at the top header bar of the page.
7. **B3:** Hierarchical organization: The page is sorted by type of tasks, with these tasks being the title of each column. Within these columns are then different tasks that are children of a greater umbrella category that they are under. But the main page gets sorted into different columns, and then under these columns/categories, then there are further nodes of tasks in each column.
8. **C2:** Up-front value proposition: The home page of the Trello site has all the information about the product and clearly shows what the site can offer through its multiple boards and teams that are displayed. Right away there is a sense of organization, which is what Trello mainly offers.
9. **D1:** Page Templates: Each Trello team page is the same template. Every page follows the same organization - multiple columns with tasks in each column.
10. **E1:** Site Branding: Each page has a minimalistic Trello logo in the middle of the header at the top of each page. It is consistent across all pages and isn't intrusive on the user's experience.

Todoist Analysis

1. **N2:** Below the "Get Started" part of the landing page, there is an example User Todoist with real example use cases. This makes it easier for the user to understand how/why one might use the website.
2. **N3**: The "Templates" section of Todoist gives the user access to a large selection of template designs. This gives them the freedom to choose how to best use Todoist to suit their needs.
3. **N7:** The "Features" section of Todoist has section demonstrating functionality of the website. When a user clicks on a button, the example image changes to best reflect that element of the website. This is flexible, because had it not changed, the user would not efficiently understand how the website operates.
4. **N8**: The entirety of the website design is simplistic and aesthetically pleasing. The Todoist designers have chosen a red-black-white color scheme, and left a lot of white space so that everything looks clean. Additionally, there is simplistic artwork and delineated/separate sections for user interface. It is very easy to look at and use.

5. **N9**: When a user attempts to sign-up for Todoist or login, a simple interface pops up. Users are clearly prompted to fill in Username, Email, and Password. If any of these fields are invalid (i.e. email is not in the form domain@host.com), a very simple and clean error message is displayed underneath the problematic field.
6. **B2:** Under the templates page, there is a tremendous amount of **browsable** content. It is organized by the type of Todoist use case, each of which are subsetted out into examples.
7. **C1**: When a user first lands on the Todoist website, they are provided with a clean landing page. The landing page is clean, has links to examples and functionality references, as well options to sign up or login. It is extremely appealing and features **potential content, branding, and navigation options**.
8. **D6**: When a user searches for “Todoist” on Google, Yahoo, or Bing, the first non-ad content is the Todoist homepage. Clearly the website has been optimized for search engines.
9. **E4:** At the bottom of each of the Todoist pages, there is a footer containing “Security”, “Privacy”, and “Terms”. When a user clicks on the Privacy button, a comprehensive list of how user privacy is conserved appears. This is similar for user security. Terms and Conditions seem to be all encompassing.
10. **K4:** Whenever a user can perform an action, it is presented on a clear red button. This is clearly differentiated from the white background of the website. They each have clear uses displayed on the button. For example, “Discover New Features”.

Previous Prototype and Current Version

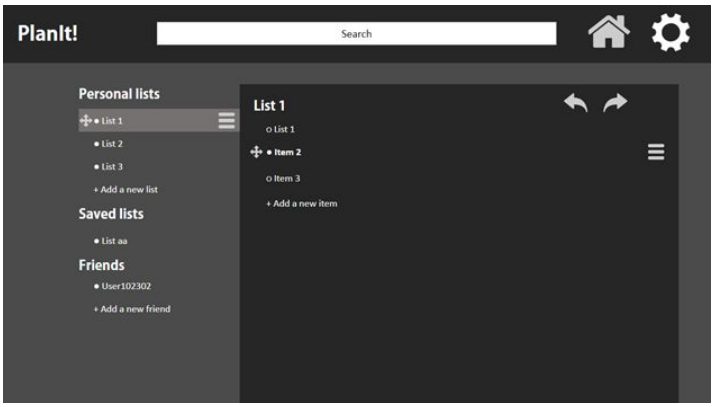
We had two previous prototypes from the last part of the lab. For the first one, it consisted of a very simple login and registration screen, which were very intuitive to the non registered users. For the registered users portion, there was a side menu that held a menu of all the lists that the user created - a single list could be selected at a time to view, edit, and add tasks to the list. The interface was very clean cut and organized, both positive takeaways from the prototype as we didn’t want to create too much unnecessary content for the user to interact with.

Our second prototype had a similarly designed non registered user portion - there were clear login and registration screens. Instead of a design by multiple lists, the task manager dashboard had a structure more like a database. There were two sections,

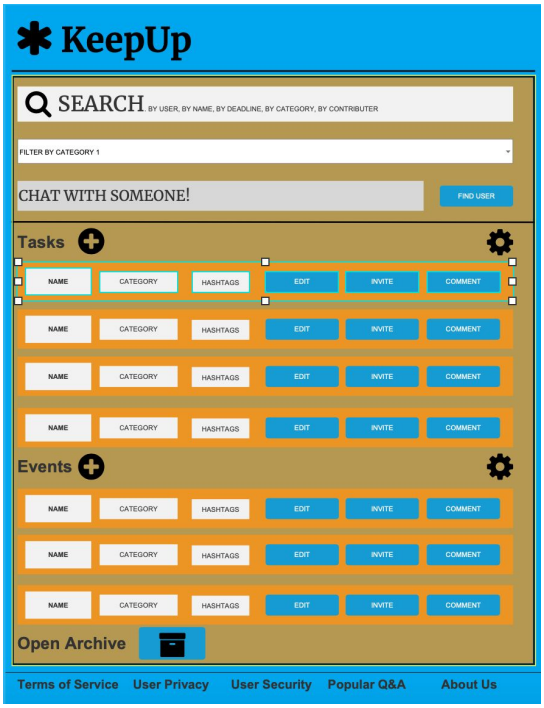
one named “Tasks” and the other named “Events”. Within each of these were individually listed tasks with category names. It was a single page where everything could be viewed at once, and there were clear buttons to make edits to the content.

Below are captures from the main page of both prototypes:

#1



#2



However, we found flaws with the user experience with both prototypes, primarily with the organization of the tasks and events. With the first prototype, we weren’t able to view all the events at once, but rather had to click through different lists to be able to gain a holistic understanding of what all the tasks were. With the second prototype, we were able to view all the events at once, but they were all gathered into a single list, which made visual distinction of the different categories very difficult. These flaws would confuse users and lead them directly to our competitors, so the main dashboard was our priority for our revised design. With both our prototypes, we also found flaws with the fact that the screen was too crowded with unnecessary information that drew attention away from the user’s key information. We fixed this information by replacing words with more icons, and implementing modals that would only show additional information when necessary. This way when any of our users are interacting with the

platform at any given moment, they only see what they want to focus on, which is the lists of all their tasks in an organized manner.

Regarding the non registered users screen, we also added more information regarding our product that was lacking, and made it more appealing visually as to increase the click-through rate of new or exploring users. The screen now includes a screencap of the product as well as an impactful product statement and eye-catching sign up links.

Once the user logs in or signs up, he/she is brought to a beautifully clean interface with a thoughtful color scheme. The dashboard is a horizontally scrollable column of “Categories”, the various different categories that each user can organize their tasks into, such as “work”, “home”, “health”. Each column is titled by one of these names, and then each holds cards which represent tasks, and these tasks are stacked vertically within each column. The user is then able to edit the card, like it, share it, invite collaborators, archive it, and move it to a different column or move its order within the column. We introduced the feature to edit the cards - where the user can change the name, date, and even the color-coded priority of each individual task.

There are easily identifiable buttons to both add new tasks and add new columns as well - new columns are added to the beginning of the list so the user can confirm the addition easily. New tasks are added to the bottom of each column, as we assume previously created tasks take priority over the newer ones. Prior to deleting and columns or tasks, we have confirmation screens that appear so the user can click out of the choice if it was an accident or if his/her mind has changed.

Here are a couple screen caps of our prototype (Note: Our final implementation has some minor differences to further improve the interface. These were prototypes from the first phase presented in the lab session)

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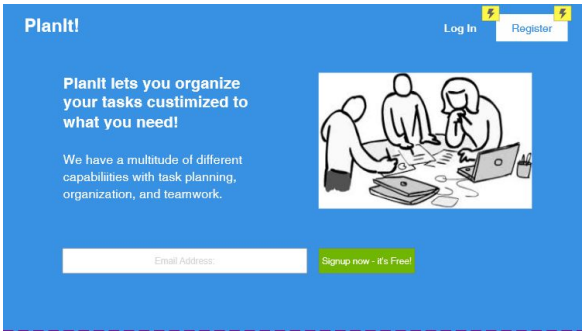

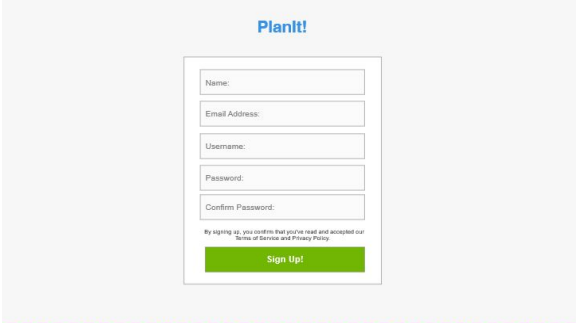

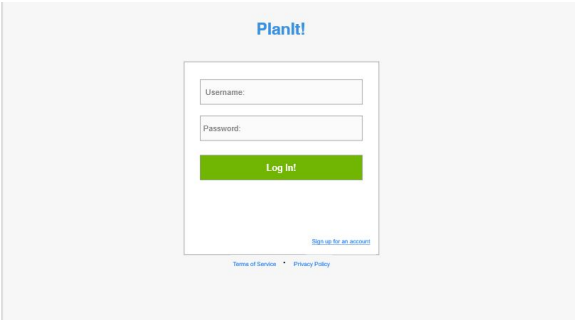

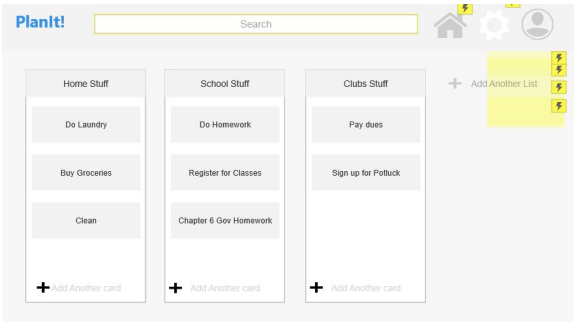

Below we describe specifically how our design is a prime example of using Nielsen's heuristics and Van Duyne's design patterns.

Nielsen's heuristics

1. Visibility of system status: the webpage clearly shows that you need an account when you first enter it. Each column is just a list of simple tasks with a very visible priority. Every change is extremely easy to see, such as adding a new card, adding a new column, editing a card or liking a card

2. Match between system and the real world: the closest real-world parallel that can be derived from this is post-it notes. Each column can be a single post-it note with various tasks the user can write on them, which can be rearranged. Of course, this site offers way more functionality as well as the helpful ability to edit the notes

3. User control and freedom: the user can add cards, rename cards, change the date and priority of cards, rearrange cards, rearrange columns, create new columns and more, all done with intuitive inputs

4. Consistency and standards: all of the columns follow the same format, with the data within them being the only thing that changes

5. Error prevention: errors are prevented mostly by not allowing erroneous inputs, either with popup alerts or dropdown menus with the accepted values, and having an intuitive design that wouldn't cause many issues. Certain input fields also have a placeholder value, telling the user about the expected format

6. Recognition rather than recall: the icons the user can interact with clearly represent an action, like an X meaning "close" or "delete", a pencil writing on paper meaning "edit" or a thumbs up meaning "like". These are things an average user would be able to identify at a glance

7. Flexibility and efficiency of use: the user has many options as to how to customize and arrange their lists. Adding new items is a quick and simple process, which should definitely make the experience more efficient for users

8. Aesthetic and minimalist design: the site doesn't flood the user with unnecessary clutter but also doesn't have too much empty space, which leads to an aesthetically pleasing website that is simple but flexible

9. Help users recognize, diagnose, and recover from errors: there are very few errors that can take place in this site, but for those that do exist, a popup with what went wrong and how to solve it shows up. For example, when entering the wrong format for the date and time of a card, a popup shows the format to the user

10. Help and documentation: these things do not exist in this 4 page website, but in a full-fledged version they would be found within the options menu

Van Duyne Design Patterns

1. B4 - within the PlanIt task navigator, related tasks are grouped together. This makes it easy for the user to use - rather than having to scroll through a concatenated list of all they have to accomplish, they can target & focus on specific categories.
2. C1 - PlanIt has a central landing page, from which all currently implemented functionality can be reached. Sign up & login pages are both clearly marked, as

well as an introduction & description of the Plan It system. Branding (in terms of color palette & logo) is present as well.

3. C2 - Similar to C1, the landing page of PlanIt displays its value proposition. New, unregistered, users will immediately be aware of the functionality the system provides. In addition, there is an image to cement (& visually indicate) what the PlanIt system offers.
4. H2 - both login & sign-up functionality has been implemented. They can be reached from the same landing page.
5. H9 - users can direct manipulate the order of columns & the order of cards within each column. This makes it easier for the user to prioritize which parts of their lives they would like to use PlanIt for first.
6. I5 - the space for the columns is fixed in width. Adding more columns wraps around; a user can move their mouse to the right or left to move change their point of view. There is no confusion regarding expanding/shrinking windows or interaction points.
7. K4 - All points of interactions have been made into action buttons. It is clear what functionality has been implemented & not, & what users are supposed are able to interact with. Buttons are very clearly interactable.
8. K12 - When users attempt to make a new card or a new column (or when they try & login/signup), inputting an invalid result will throw an error. That error is displayed the user as well as an alert issued, & it is clear that the user must fix that error in order to proceed.
9. L5 - we reuse the images of the priority levels in order 1) prevent users from having to download a tremendous number of images and 2) to make task cards more visually appealing. Had we not done this, there would have to custom images for each task, which would be nearly impossible & would be computationally difficult.

Technology Used

HTML and CSS for building the web visualization of our prototype and making it visually appealing. Javascript and JQuery to complete the implementation of all the events required following user interaction with our webpages. Bootstrap was used in some parts for pre-designed CSS styles.