



# iOS Application Redesign Report

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Spring 2018

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# Executive Summary

## Overview and Methods

This report summarizes the results of a redesign focused on the sports application, Thuuz. The application was redesigned based off the data found through our user research, which suggested the application was providing users with an unsatisfactory experience. The target population for the application was determined based on the competitive analysis, which examined both direct and indirect competitors for Thuuz. Interviews and surveys were conducted to further understand our target users and the role of sports and technology in their lives. Furthermore, usability tasks were conducted on the target users to evaluate and determine the pain points of Thuuz's current interface. The results of these tasks were used in the redesign process, in which we evaluated the pain points to establish redesign targets to alleviate some of those issues. Lastly, we evaluated our redesigns to determine whether they resolved the issues initially identified in our user research, and whether it met the needs of our target users.

## Findings

Through our methods, we were able to determine that Thuuz was providing users with an unsatisfactory user experience. Through our interviews & survey, we determined that our users wanted a quick and easy way to access sports information. This was not the case for Thuuz since our users were having a hard time dealing with the confusing navigation, as well as the following set of problems identified through the usability tasks.

- **Lack of System Feedback**
- **Misuse & Bad Representation of Buttons & Fonts**
- **Non-intuitive & Counterintuitive Interactions**
- **Information overload**

Through the evaluation of our redesign process, we wanted to fix the issues brought forth in the usability tasks and we evaluated each problem and produced a corresponding solution for each issue.

- **Present the right information**
- **Visual Consistency of Elements**
- **Make Navigations Clear & Simple**
- **Emphasize "Excitement Score"**

Finally, in our heuristic evaluation of our end-product, we found that it satisfies most of Nielsen's Heuristics, and overall provides solutions for the pain points identified above. Nonetheless, we feel that although we have improved the display of the "excitement score", there could be better ways in which this feature can be realized and our solution is just the beginning.

## **Conclusion**

Although Thuuz has its glaring issues, it has the potential to be a competitive sports application due to its unique features. In addition, it is important to note that the redesign of this application was based on the results of our user research and the overall user needs identified in our processes. As a result, the end-product is a reflection of the user research along with the application of standard Human-Computer interaction guidelines.

# Introduction

Busy people can be sports fans too. They should not have to choose between their daily responsibilities and quenching their sports thirsts.

Enter Thuuz.

Thuuz is revolutionizing the way fans experience their favorite sports. Using proprietary technology, the company has created algorithms that calculate the objective excitement of every moment in every game, and it delivers these moments to people all over the world.

The Thuuz mobile application provides sports fans access to all the latest scores and highlights for their favorite sports. This is done through the display of the excitement score, game results and statistics. However, Thuuz's main goal is to provide quick access to the most relevant and interesting information of games. The application does this by displaying excitement scores to the users, which keep track of how exciting a game is and displays this through a numeric value. The excitement score is essentially the core of the application and what sets it apart from other sports applications. However, despite the usefulness of the content the app provides and the uniqueness of the excitement score, there are several issues and inconsistencies throughout the app that makes it difficult to use, and time consuming.

This report will address the various methods, findings, and results of the redesign of the application. The report contains detailed information of each method of evaluation with supporting evidence from user research. In addition, this report will also address the evaluation of the redesigns, to determine whether the end product has satisfied and provided our users with a better experience than what was reported in the original design of the application.

# Competitive Analysis

## Overview

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There are currently many options available for all kinds of sports fans, and each of the options has its unique features and characteristics to better serve its users. We understand that Thuuz is not created as a replacement to any of these options, but understanding how current competitors of Thuuz function can assist us in our redesign.

### Our Product: Thuuz Mobile App

- **URL:** <http://www.thuuz.com/apps/>
- **Description:** The Thuuz mobile application allows sports fans to watch and receive notifications of live games and game scores. The app also highlights excitement scores for each game, how interesting the game was and even when the interesting parts happened in the game.

We identified four main competitors of Thuuz across multiple industries and media, since mobile applications are not the only ways that people can enjoy sports. We also hope to integrate some useful features from other platforms to not limit the scope of our redesign. Here are the direct and indirect competitors we identified:

- Direct Competitors
  - The ESPN Mobile App
  - theScore App
- Indirect Competitors
  - The NBA Official Website
  - The ESPN TV Channel

## Direct Competitors

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### Direct Competitor: ESPN Mobile App

- **URL:** <http://www.espn.com/espn/apps/espn>
- **Description:** The ESPN mobile application allows sports fans to watch live games and highlights from previous games. The app sends notifications of news and allows users to stay up to date with scores and player stats.
- **Problem addressed:** We want to make the Thuuz app clearer so that users understand what they are looking at in the moment, rather than struggling to understand. The excitement scores and game information should be easily distinguished by the user. The ESPN app does a better job at doing so than Thuuz. When showing scores, ESPN adds

the team logo next to the name in order to make them recognizable to users in addition to fading out the name of the losing team. Thuuz just has the names and scores placed next to each other, forcing users to look closely and carefully. The excitement score is also next to the game but gives no indication of it being an excitement score.

- **Functionality/Feature Set:** ESPN and Thuuz are both sports mobile applications that place a large emphasis on being able to allow users to watch games live. In order to watch live games, the apps have users sign in with their TV providers and will be given notifications for games they are interested in watching. The two apps are similar in terms of their sign in processes: when users first create an account, they can choose teams from different sports to 'Like' and then get news and updates regarding these teams. Both apps show scores from live and previous games as well. The ESPN app provides a wider range of functionalities compared to the Thuuz app. Users can read news articles and watch highlight clips from games, listen to podcasts, and check team rankings and scores. Thuuz, on the other hand, solely focuses more on the excitement score, along with scores from games.
- **User Base:** Both apps are targeted towards sports fans from all areas. They make sure to include all kinds of teams, from women's tennis to men's cricket. Both apps are very inclusive to their sports user base.
- **Other Similarities/Differences:** The ESPN app consists of its red and white logo color, making the application easy to look at and read. Thuuz also utilizes its logo colors in its excitement scores on the app, but its dark gray background makes the app difficult to look at.

#### Direct Competitor: theScore

- **URL:** <https://www.thescore.com/>
- **Description:** theScore is a website dedicated to providing its audience with sports news trending on social media sites such as Twitter and Instagram. The website also presents sports news through the traditional news article layout, in which readers can leave comments. This service has an application with the same name, which provides the user with added functionality such as signing up for a profile, keeping track of scores, and saving their favorite teams.
- **Problem Addressed:** The essential problem that we have encountered with Thuuz is that it is very hard to unpack information because the layout of the application hides the "excitement score", which is the essence of the application itself. Consequently, because it is hidden and hard to tell what the excitement score even is, it comes across as a normal sports application that is hard to read. On the other hand, theScore unpacks their information in a clear way for the user to understand statistics of the games. The dates are arranged chronologically and change in the expected manner when the user switches view. For example, there is a tab that says "April 11", "Today", and then "April 13". When the user swipes left, the order switches to "Today", "April 13", and "April 14". In Thuuz, the tab labels are confusing and do not appear to change in a chronological order, although it is actually doing so in a complicated way. For example, the order of tabs is "Earlier", "Live",

and “Later”. When we swipe left, we expect the tab label to be “Later” since we know the tab titles. However, it changes to “tomorrow” which the user might not expect.

Nonetheless, the layout is very similar to Thuuz’s with the exception being that theScore has a more modern feel to the overall layout. Thuuz provides a dull experience for the user due to the misguided color scheme and confusing tab layouts.

- **Functionality/Feature Set:** The initial functionality of theScore is very similar to the way Thuuz works. When the user opens both theScore and Thuuz applications for the first time, they ask the user for a set of preferences which are almost identical to each other. For example, both applications ask the user to save their favorite teams, enter their location for news about local teams, and to make a profile to save their preferences. Both applications allow the user to sort through a variety of sports and teams they may want to view more information about. However, that is as far as the similarities go. Thuuz focuses more on displaying statistics in a simplistic and quick manner, whereas theScore focuses more on giving in-depth analysis of the game’s statistics. Thuuz attempts to display the excitement score of the matches through a simplistic graph which is lacking in detail and hard to decode. However, as mentioned before, it is not very obvious to the user that this is the excitement score, as there is no distinguishing detail that may allow the user to figure this information out. In addition, theScore has news articles that users can read, which Thuuz does not have.
- **User base:** The user base for both theScore and Thuuz includes any sports fan that wants to stay in the loop about what is happening in their favorite sports. Thuuz seems to be an app that the user can quickly use to look at statistics and future matches without getting distracted by other features. It is geared for users that do not have the time to watch highlight videos or read articles. theScore, however, seems to be an app where users can spend more time since it does have articles to read on several sports leagues and teams.
- **Other similarities/differences:** The main difference between Thuuz and theScore is that Thuuz has a unique approach to displaying matches for the user. Thuuz attempts to show the engagement score of a match, which is something that theScore does not do. Overall, theScore is an application that solely focuses on presenting facts. Thuuz wants to provide more than just the facts by adding an exciting feature that will tune in viewers to “exciting” games based off what the app is telling them. However, as mentioned before, because the excitement score gets lost in the confusing interface, it comes off as a weak competitor to other sports apps such as theScore, since both focus on presenting statistics.

## Indirect Competitors

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### Indirect Competitor: NBA Official Website

- **URL:** <http://www.nba.com>
- **Description:** The NBA official website mainly serves for the National Basketball Association (NBA), as well as other basketball-related leagues such as the Women's National Basketball League and the NBA Development League. They keep track of the NBA games through the preseason, regular season, and the postseason. The website offers people live updates of the various NBA games, player status, team statistics and game reviews. They also offer news about the league and other functionalities like souvenir shopping. In summary, the NBA website is a great place for NBA watchers to receive information.
- **The problem addressed:** As the official website for the NBA, nba.com serves as the largest information platform for the NBA. The website specifically faces the audiences who watch NBA basketball games, and it covers holistic information relating to the NBA league. In contrast to the general sports information in Thuuz, the NBA official website mainly concentrates on the basketball leagues and satisfy the users who are interested in the NBA games. However, Thuuz can solve one of the issues that the NBA official website cannot, which is helping people efficiently spend time by notifying them of the most exciting points during games.
- **Functionality/Feature Set:** The NBA official website offers comprehensive information about the NBA. The major function is to help people who watch NBA have a complete experience. Before each game, the user can watch the previous matchups of two teams, view each player's status, and read the pregame reports. During the game, the user can switch to live streaming to watch the game or check the play-by-play updates. After the game, the website offers a game summary, highlight replays, and various interviews. In addition, the website has an online shopping feature named "e-shop" to let fans purchase souvenirs. Compared with the NBA official website, Thuuz focuses on presenting live games. It allows the users to know when they should watch the games, rather than staying on the webpage and watch the complete game.
- **User Base:** The users of the NBA official website are mostly NBA watchers, and a lot of them are NBA fans. Every time they log into the website, they expect to see the news and game updates about the NBA. Many web users support their local NBA team, and they may want to purchase the team souvenirs in the online shop. The users of Thuuz are not as concentrated as the users of NBA website. They are interested in various sports. Thuuz does not only support the NBA games, but also other types of sports. The coverage of Thuuz determines that the app can attract more users than only basketball watchers.
- **Other Similarities/Differences:** One similarity is that both the NBA official website and Thuuz use the user account system, so each user can choose their favorite teams and receive information related to those teams. A difference is that, since the NBA official website is web-based, it cannot alert the users to a specific game and status update. Thuuz considers the automatic alerting one of the main functionalities of the app.

Another difference is that the NBA official website contains a lot of commercials and has the feature of online shopping. Thuuz has less online business in its app.

### Indirect Competitor: ESPN TV Channel

- **URL:** Not Applicable
- **Description:** Entertainment and Sports Programming Network (ESPN) is a U.S-based global cable and satellite sports television channel owned by ESPN Inc. It is one of the most successful Sports Networks and Sports TV Channel in the United State. It covers many fields of sport including Basketball, American Football, Golf, Baseball, Soccer and so on. It telecasts the games from many professional leagues (NFL, NBA, MLB), college leagues (NCAA), and international tournaments. To be different from the ESPN mobile app, the ESPN channel requires people to purchase certain television programs to receive this channel.
- **Problem addressed:** Telecasting live sports games is one of the main functionalities of ESPN. People can watch different sports games on ESPN. ESPN's game analysts predict and compare the attractiveness of games and select the games with greater attraction to the public. ESPN also helps people update the information. It offers the news program to report the daily games results, and interviews the sports analysts to give the audiences a fully understanding of the games. However, even if the ESPN company developed the mobile app to allow the online streaming of the games, the TV channel is still limited by its medium. To many people, they can only watch TV at home, especially during the spare time. Enjoying the sports games with family might be a great choice for most of us, but many people cannot spend a long time watching television every day and the restrictions of the cable television decelerates ESPN's development.
- **Functionality/Feature Set:** The users cannot decide ESPN's scheduling and contents. People need to follow how ESPN presents their shows. The user can watch live telecasting such as "*Baseball Tonight*" and "*College Gameday*", and ESPN offers sports news such as "*SportsCenter*". In addition, ESPN offers a replay feature for previous games. However, since it is a TV channel, it does not offer the textual summary and analysis of the games. Users cannot freely search the information they need. Compared with the ESPN mobile app in which users can access the shows by searching, the TV audiences need to wait for the specific shows to fetch the specific information.
- **User Base:** For ESPN, most of the users are traditional TV audiences. These people consider the TV as their first choice to gain information. They would watch the news on time every day to stay up to date. A lot of them are not used to the internet, and some of them may have plenty of rest time to watch television. However, the user base of ESPN is not limited to the people above. If it telecasts some spotlighting games, such as NBA championship games, it would attract a lot of people to bring their families and to watch the live casting. In contrast to ESPN, the audiences for Thuuz tend to be younger. Those people are more familiar with the Internet and mobile devices, and they spend more time working than watching television. Since they have less available time, they want to watch

the most important moments in a game. The app which reduces the time of watching unexciting games can be attractive to this user group.

- **Other Similarities/Differences:** Thuuz and ESPN are different in four ways. Firstly, Thuuz is a customer-data based mobile app, while the ESPN channel is a TV channel. Secondly, Thuuz focuses on the exciting point of the game and allows the user to access the game at the most important moment; the ESPN channel wants the users to watch the whole game to guarantee popularity. Thirdly, Thuuz offers statistics and graphical summaries to allow the users get game information, while the ESPN channel uses news reports to summarize the game. Lastly, the mobile app allows users to freely access all the resources, while the ESPN channel only allows people to follow agendas set by the channel.

# User Research

## User Populations

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The users that we are primarily targeting are sports fans or people that pay attention to sporting events in general. These users could be interested in a variety of different sports and have different ways of acquiring information of the sports or teams that interest them. Ideally, these users have experience in using technology and have acquired their sports news on applications and online websites.

We expected users in our study to range from 18-40 years old, the ideal range for students and working professionals. It is around these ages that people have less time to focus on hobbies (in this case sporting events) due to school or jobs. Due to this lack of time, they need to put in effort to create time to keep up with game scores and team news. Our ideal users will try to remedy this issue by finding ways to get news and updates in a quick and clear manner, primarily trying to find information on the sport/team/game they are interested in.

## Methods

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In order to find more information on the type of user that would use the Thuuz mobile app, our team conducted ten interviews, as well and sent out a survey hosted on Google Forms. We then compiled and analyzed the information to find what users want and expect from sports, mobile apps, and more.

Over the course of one week, our team was able to interview ten people. The interviewees were selected from team members' friends, family and acquaintances. The only requirement we had for our interviewees was to have some kind of exposure to sports in the past decade. Once selected, two team members conducted the interview, one acting as note-taker and the other as facilitator. Our interviews were structured to be about 25-35 minutes long, with ten key questions and one free-form question at the end. Team members followed an interview protocol, first asking interviewees to read and sign a consent form. Afterwards we made small talk with the interviewee before getting into the official questions. These questions ranged from broad inquiries about their relationship to sports, their sports viewing patterns, their technology use patterns and more. The interviews were semi-structured, team members followed the questions on the protocol, but could also inquire more depending on the answers provided.

A survey was created and sent out after our interviews were completed. The survey consisted of 24 questions, some multiple choice and others short answers. We expected participants to complete the survey in about ten minutes. Team members shared the survey via social media (primarily Facebook) and it was closed 48 hours later after receiving 25 responses.

After completing the interviews and surveys, our team gathered for a two-hour meeting where we analyzed all of our newfound data. We created an affinity diagram to find the key characteristics that our participants had. These characteristics allowed us to shape potential

Thuuuz users. This information was taken into consideration when we started brainstorming ideas for the app redesign.

## Findings

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After our research and data analysis, our team was able to put together some of the key characteristics that are participants had in regards to sports and technology.

We found that many of our participants do not believe that their responsibilities get in the way of them watching/enjoying sports. This finding contradicted our team's initial hypothesis that people struggle to find time to stay up-to-date with sports news. When it came to participants' live game habits, we learned that a few of them had difficulty watching games live due to interferences, some only had an interest in the highlights, and others did not have the capacity to watch a full game or don't think watching the entire game is a necessity. Along with their stance on live games, we asked participants if they have ever experienced "Fear of Missing Out" (FOMO) in regards to sports. About half of the participants stated that they have experienced FOMO, saying that they dislike missing major games or championships.

After getting information about the participants' sports habits, we received information on their social media/technology habits. We found that when participants miss a game or want to stay up-to-date with sports, they mainly utilize TV channels and mobile apps to acquire information. The most obvious and popular were the ESPN app and channel. Participants also expressed interest and use of the Yahoo Sports app, Bleacher Report, NBC Sports and Fox sports apps. Along with sports-related apps, several participants stated that they use social media platforms such as Facebook and Twitter to find sports news. They used the "Now Trending" sections to see what other people have to say about games. In addition, participants used group messaging apps (such as Facebook Messenger) to share thoughts and news with friends and family.

In regards to sports-related apps, our team was interested in how satisfied users are with their services, what they wished could be improved and how much time they spent on the application. Many of our participants using these apps thought they were fast and easy to use. They enjoy being able to "Favorite" their favorite teams and keep track of them. Being able to receive quick live updates, stats and highlights are also all desirable. Participants also expressed a need to get information as quickly as possible and to filter out any unnecessary information. They like apps that are more customizable to their interests. When it came to the time spent on the apps, many of our participants revealed to be on the apps for more than 15 minutes.

The information we gathered from our participants allowed us to reevaluate our target audience and start thinking of ways to create a redesign that fits the needs and characteristics of our audience.

# Usability Evaluations

## Usability Tests

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To find the issues of Thuuz's old interface, our team conducted usability tests. We planned on using the data gathered from these usability tests to redesign the application so it could have a better user experience. We selected 4 representative tasks to cover the main functionalities of Thuuz and composed a task document for each task (**See Appendix A.5**). One purpose of the usability test is to closely observe real-life people using the software. Those users can offer the most specific and detailed feedback regarding the interactions. By implementing usability test, we gather usability issues of Thuuz from the perspectives of first-time users. Another purpose of the usability test is to find some typical patterns shared by users, especially when they face an unfamiliar interface. What do they first consider to achieve certain goals? What are the common mistakes they made during the usability test? We can identify a bad interaction design if many people make the same mistake in the same place.

During the usability test, we followed the "think-aloud protocol" that enables users to explain what they are doing as they go. Facilitators are restrained. In this way, we can gain direct feedback from users. Think-aloud protocol helps us comprehend the reasons behind user's actions. Furthermore, it helps us find out which actions are intuitive to users when they want to complete specific tasks. These feedbacks are meaningful to the redesigns.

While users were doing the usability test, we recorded their thoughts, actions, and reactions. For each test participants, we summarized his/her usability metrics. Our team extracted and categorized the usability issues from documents. The identification of such issues can support our team to design a better user interface for Thuuz.

## Cognitive Walkthrough

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Our team conducted a cognitive walkthrough of Thuuz. The purpose of Cognitive Walkthrough is to understand the learnability of the software and to identify the usability issues in the original design. During the cognitive walkthrough, we focused on the dynamic interaction between users and the interface and tested the comprehensibility of walkthrough tasks using the current Thuuz app. Cognitive walkthrough is also effective in identifying cognitive problems, such as ambiguous navigations and confusing signifiers. In addition, compared with other types of usability evaluations, cognitive walkthrough is considered as a lightweight and efficient approach.

We had three cognitive walkthroughs tasks to fulfill (**See Appendix A.4**). For each task, we designed the reasonable working processes and ideal paths for each task. In every step, our team needs to answer four questions to describe its intuitiveness and feasibility:

1. Will the user realistically be trying to do this action?
2. Will users see the control for the action?

3. Once users see the control, will they recognize that it does what they want?

4. After the action is taken, is the feedback appropriate?

We needed to answer each question based on our user experience and write a sentence to explain why we could or could not solve the question. There exists certain usability issue if assumptions cannot be satisfied by real actions. In the cognitive walkthrough, we tested the user-friendliness of Thuuz as experts and identified issues which are hard to discover by first-time users.

## Findings

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After conducting the usability tests and the cognitive walkthrough, our team identified usability issues for Thuuz in multiple categories. In addition to the misuse and inconsistency of the application's visual elements, including font, color and sizing, we also discovered how certain navigation logics and layouts can be confusing for the target users of Thuuz.

- **Lack of System Feedback** - One of the biggest problems that Thuuz has is about visibility - it simply fails to provide an adequate amount of communication between the user and in-app elements. Specifically, very few reasons or justifications are provided when the user is asked to complete certain actions, and not enough response is displayed after the users' actions.

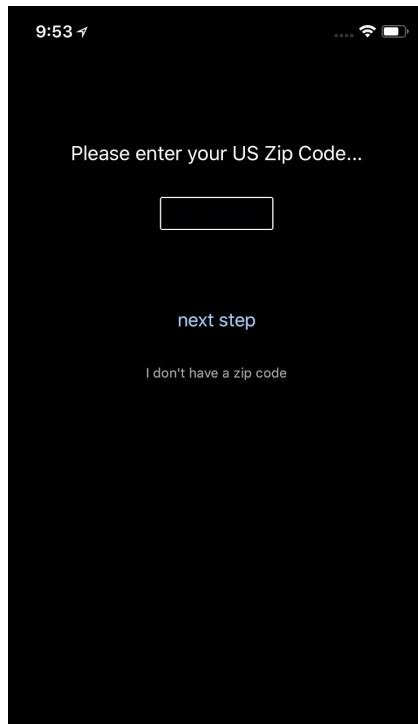


Figure 1

- An example of how the application provides inadequate justification for actions is in the setup process. When prompted for location access to select a TV provider, the user has the option to deny and skip to the next page. However, the application immediately asks the user for a zip code, without providing any reason, when the user chooses to skip (Figure 1). Some of our participants reported that they feel confused when the application asks them for a zip code after they have just denied location access. What's worse, the users cannot go back to the previous step, since the only options in this page are "enter a zip code" and "I don't have a zip code".
- When users do figure out which actions to take, Thuuz can still puzzle its users by not providing enough affirmation or followup information. For instance, when the users select certain teams of a specific sport and taps "Done" when setting up team preferences, the application immediately returns to the previous page of all sports, and no confirmation is provided on whether the selected teams are correctly added. We observed some of our participants repeatedly visiting the teams page just to confirm the teams they have selected were correctly added. Similar problems also occurred when users follow friends. After following another user, the user can only see the application confirming the following relationship. No further updates about that particular user are provided.
- ***Misuse and Bad Representation of Buttons and Fonts*** - In terms of presenting different elements in the application, the placement of buttons and selection of typography are also negatively influencing the user experience of Thuuz. Our participants claimed that button shapes, font sizes, color selection, positioning and font capitalization can make things hard to find or irritating.

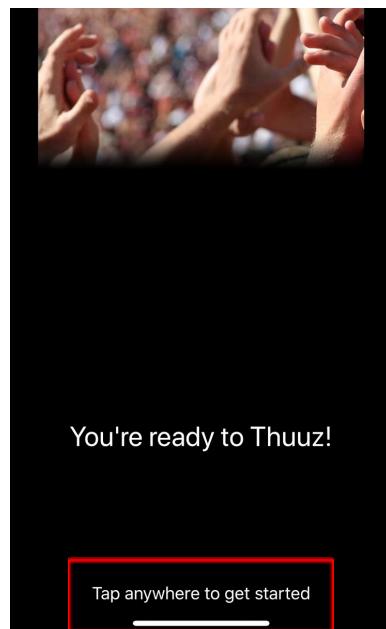


Figure 2

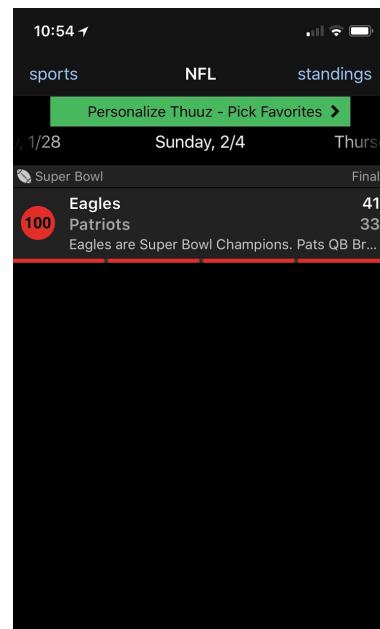


Figure 3

- The sizing and presentation of actions, combined with the choice of typography, makes the user experience unsatisfactory. Such combinations make erroneous input more likely to happen. For instance, the very first page that Thuuz uses to greet its first-time users has the instruction “tap anywhere to get set up...” at the very bottom of the screen. It is displayed in a minuscule font size and, when using an iPhone X, is extremely close to the home bar at the bottom of the screen (Figure 2). Some of our participants struggled multiple times in the setup process because the instruction is hard to find and conflicts with system navigations. In subsequent pages of the setup process, the users would not see any clearly shaped buttons on the page. Instead, available options are displayed as lines of text in small fonts. Such options are also often closely placed on the screen, meaning that the users are more likely to misselect.
  - Inconsistencies in the use of color and capitalization also make the user experience of Thuuz undesirable. Although the specific functionalities of the application are not directly influenced, such inconsistencies contribute to user dissatisfaction and, as expressed by three of our participants, make them want to delete the application. During the team preference setup process, the user needs to choose a certain sport to select specific teams. The application does display icons for sports, but only the “local” icon is colored, while all other icons are in plain white. In addition, two options named “sports” and “standings” are displayed at the top of the home page (Figure 3). Unlike options in all other pages and, more importantly, in virtually all iOS applications, Thuuz had the two options all in lowercase. One of our users reported that this makes him feel as if the developers are not treating the application as seriously as they should.
- ***Non-intuitive and Counterintuitive Interactions*** - An intuitive interface can turn an average user into a loyal user, but a non-intuitive interface can repel even the most loyal users. During our usability tests, we found concerning issues with visceral navigation that manifested via user behavior and their verbal feedback.
  - The first task we had them do was to simply navigate through the initial application setup, which consisted of smaller subtasks such as turning on notifications, enabling location services, and selecting favorite teams. All of these subtasks are naturally trivial, but the issues we found within them are not. When the interface provided direct instructions, “Tap anywhere to continue,” users struggled to continue due to an undefined, limited area that was tappable (Figure 4). This resulted in dozens of erroneous taps, and led to minute cues of frustration. This is not an ideal emotion for users to feel upon a first impression, and sets them up for a bad experience. Once on the homepage, our users indicated they were confused about what to do next. When we had them perform other simple tasks, such as adding a new favorite team to their account, we found users going to the same incorrect page multiple times before finding the correct page, even when the control to navigate to the correct page was in plain sight.

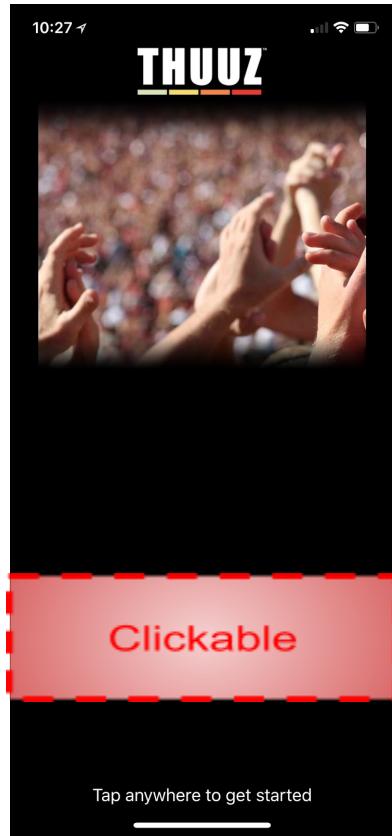


Figure 4

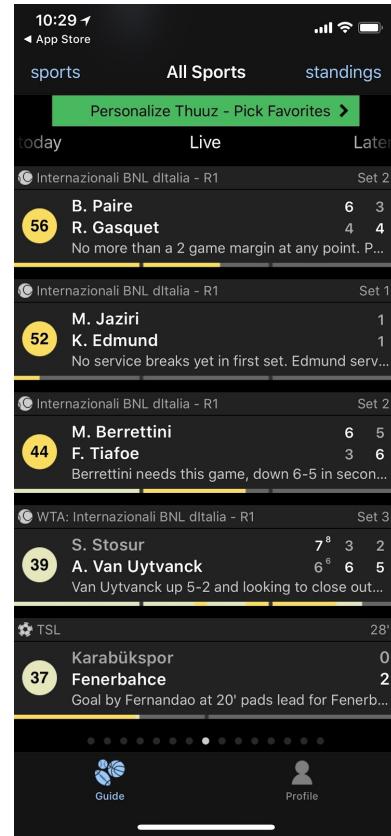


Figure 5

- Additionally, there were surface issues with the navigational flow. The only two sections in the bottom navigation bar, which remains visible in all interface views, are “Guide” and “Profile.” In our cognitive walkthrough, we found these words to be problematic (Figure 5). While technically accurate - the Guide button takes the user to a guide and the Profile button takes users to an interface to manage their profile - the word selection for this feature is so essential to the user’s ability to navigate through the application that they need to be more than technically accurate. The application would have a much more intuitive experience if they were substituted by more recognizable synonyms. This finding was echoed in our usability tests when users surprisingly ignored the Profile button when asked to perform tasks related to their profile. Other smaller factors, such as font attributes and interface styling, collectively made a strong contribution to the application’s non-intuitive navigation. We plan to address all of these issues in our redesign phase.
- **Information Overload** - One of the most noticeable problems with the Thuuz mobile app experience is its inability to efficiently organize information in a manner that does not overwhelm users. Each interface view does a poor job of avoiding unnecessary information. This problem is only enhanced by unnecessary layers in the application that lead to additional views.

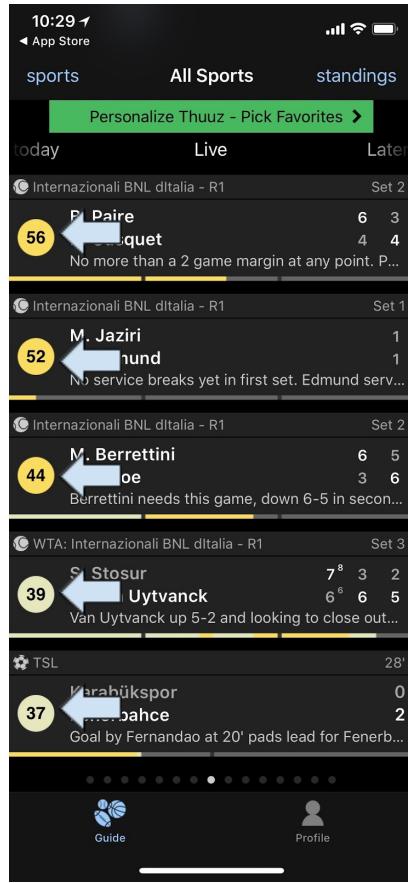


Figure 6

- In our cognitive walkthrough, we all identified the initial application setup as superfluous. When users are forced into a flow that is overloaded with information, it can lead to mistakes and negative emotions. We saw examples of this in our usability tests as users made their way through this step. To make matters worse, the homescreen, which follows the initial app setup and should be a relief, was specifically identified by our users as overwhelming. On that view, there are multiple poorly marked menu bars wrapped around a list of games that have many numbers inside of them. One of those numbers - the most prominent number - is the Thuuz excitement score (Figure 6). This excitement score is essential to the service that Thuuz offers, and yet was identified by our users as one of the leading contributions to this information overload. That is a serious problem.
- Another way in which users were overwhelmed with information overload is via the unnecessary layers of the application. Unlike many of their competitors, Thuuz has flows that go three, four, and even five layers deep. During both our cognitive walkthrough and usability tests, this problem was specifically identified in multiple areas of the app. For example, when users had to add a new favorite team to their profile, they had to tap four different action buttons that took them to four different views before they could select that new favorite team. Users were

confused in this process and frequently become lost along the way. In our redesign, we will attack this problem by prioritizing and highlighting important information, while compressing and reducing information that is expendable.

- **Other Issues** - In addition to the problems illustrated in the above sections, we also found issues that are either relatively insignificant or partially overlap with multiple sections. Here is a list of all the other issues:
  - Text entry boxes are sometimes not in the center of the screen
  - There are several similar looking pages with completely different goals
  - Users preferred plus icons instead of the “Add more” wording
  - Users are confused about why they have to set up an account when the initial steps suggested they had already created an account.
  - The application does not check whether the provided email is valid.
  - Some users are not sure of what the “check in” feature does
  - Some clickable options are greyed out

Based on our findings, we came up with the following recommendations to the new interactive system design:

- **Shorten the Setup Process** - The biggest issue of the setup pages is not the inconsistency of information or the specific wording. There simply are too many redundant actions and information, and they should be removed.
- **Simplify the Navigation Logic** - We believe that for an application that was purposely created to help people save time, the users should only make minimal taps to reach their goals. Unnecessary layers should be removed, and a few more shortcuts should be implemented for power users.
- **Focus Only on Necessary Information** - Providing a deluge of information can often scare the users and mask the most valuable parts. Only the most important and necessary information should be displayed. All other information should be either discarded or organized into sections that are only available upon request.
- **Increase the Frequency and Visibility of Feedback** - Feedback helps the user establish confidence and maintain control in the application. Visual feedback should be brisk yet clearly noticeable, and confirmations should be displayed before crucial, money-related or irreversible actions.
- **Conform to Modern iOS Design Guidelines** - Following Apple’s HCI and Design guidelines not only improves the aesthetics of the application, but also minimizes the learning curve for new users. Visual and interactive elements should conform to such standards, and a unified color scheme should be implemented.

# Suggested Redesigns

## Rationales

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Our redesign process for Thuuz's iOS application is mainly based on the pain points that we discovered during the identification of usability issues. As a result, here is a list of high-level goals that we are attempting to achieve with our redesign:

- **Present the Right Information:** Because our users were overwhelmed with the amount of information they were being presented, we decided it was best to prioritize and separate information in ways that would make sense to the user all while keeping in mind the goals of the application.
- **Visual Consistency of Elements:** The application's original design was inconsistent with its use of fonts, something our users strongly commented about in our usability tests. Our goal is to make sure all of our visual elements are consistent and that they appear the way a user would expect them to.
- **Make Navigations Clear and Simple:** Our users often times found themselves lost in the navigation and would find it hard to proceed with some of the usability tasks. In addition, taking certain steps, such as swiping on the main page produced unexpected results. As a result, we wanted to focus on a simple way for the users to navigate Thuuz's several pages without getting lost or confused when using the application.
- **Emphasize "Excitement Score":** Thuuz's excitement score is the most important part of their app. It is what the company markets the most when describing their distinguishing factor and what users come to the app for. Because of this, we want to center the app around the excitement score and focus on it more. Users should be able to easily find the score and understand what it is and what it means.

In addition, we also put heavy considerations on the visual and HCI design guidelines published by Apple. We believe that by having our redesign conform to such standards, the application would require minimal learning from its users since the interaction schemes would be familiar. As a result, conforming to the iOS 11 design standards is also one of our goals. Lastly, we curated our redesign so that it is not merely a visual improvement with a different set of color palette and graphics. The suggested new design features a completely different kind of navigation that can help the users complete their tasks with minimal layers involved. We also improved the organization of information so that the key elements are presented effectively and efficiently.

## Design Targets

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Our suggested redesign only covers several sections of the current application due to time and resource constraints. The chosen sections are based on the how frequently the feature would be accessed and how crucial it is to include the section so that the experience can be effectively visualized. Here are the sections that we included in our redesign prototypes:

- **Home/“Feed”**
- **Game Details**
- **Search**
- **Profile/“Me”**
- **Sports**
- **Setup/Help**

Note: The help pages would utilize a similar design with the setup pages. They would show the same content with different actions associated - in the setup pages, the user can go directly and “Get Started” with the application, while the help pages only allow the users to go back to the previous page. We designed the two sections in this way because such pages illustrate the key features of the application, which we believe is the right type of assistance to provide for our users.

We decided a few key features, interaction schemes and visual elements that our redesigns should have in our team meeting:

- **Card-like Presentation:** The Home/Feed page should utilize a card-like design that reduces the number of games displayed on a single page. Each card should feature a headline image or video to grasp the user’s visual attention. A short caption should also be displayed in case the users only want to glance through the most important information without tapping on any game.
- **One-button Navigation:** A new type of navigation should be utilized in most pages of the application. It is in the form of a circular button located at the bottom-right corner of the screen. Clicking on the button dims the rest of the screen and shows the panes that the users may choose from. When the user scrolls down on a page when the circular button is present, it should hide itself to save screen space. The button should appear again when the user makes a tap on the blank space of the screen or scrolls up.
- **News by Sports:** The sports page should allow the users to scroll through news, games, players and other information by different kinds of sports.
- **Minimalistic Setup and Help:** The setup and help pages should utilize a minimalistic design. There should be 5-6 pages, and each one contains one key feature that Thuuz has. Each page will contain an easy-to-understand image, a title and a very short caption to describe the feature. The user may skip the process by tapping on the action button presented on the bottom of the screen.

## Redesign Prototypes

The redesign prototypes are presented in the form of screenshots. We designed our prototypes to fit the screen of an iPhone 8, which can also be adaptable for iPhones with differently sized displays.

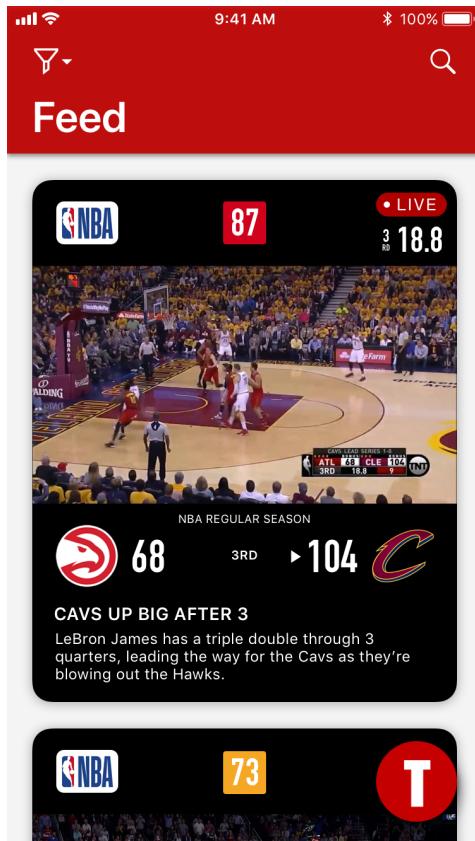


Figure 7

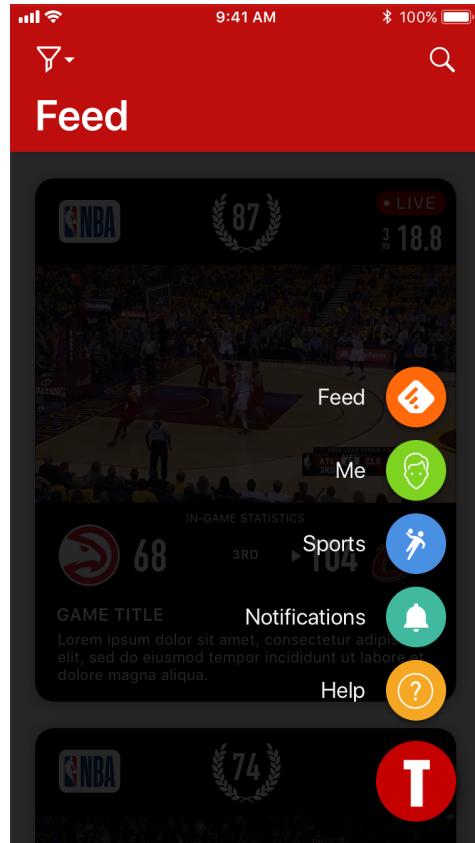


Figure 8

The new home page now features a clean and elegant card-like design (Figure 7). Each page can display at most 1 game at any given time, and the card representing the game now shows a video or an image of the game as the center of visual attention. In addition to the excitement score, the game score and the teams, the game card also shows the title of the game as well as a short description so that the user is presented with the most necessary information without going into the game details page.

On the bottom right corner (Figure 8) is the new navigation button. Tapping on it dims the rest of the page, and the icons of the most frequently accessed portions pop up. The user can tap on an icon to proceed to the corresponding page of the application, or tap any blank area to collapse the menu. The navigation button would hide itself when the user scrolls down to save screen space. It would immediately pop back when the user attempts to scroll up or tap on a blank portion of the screen.

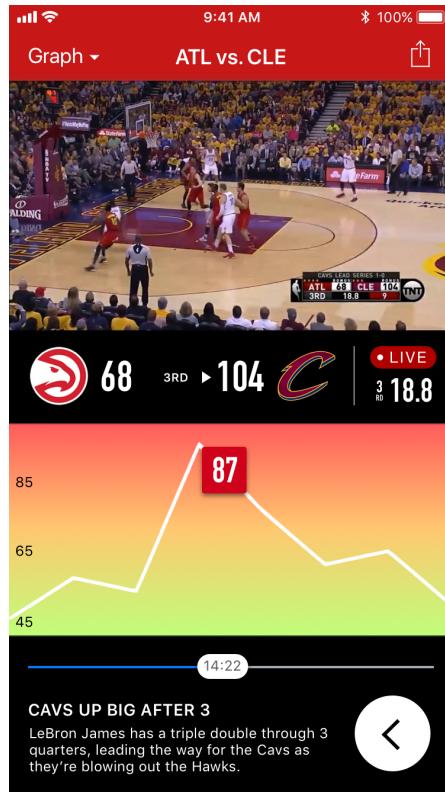


Figure 9

Tapping on the card of any game brings the user into the game details page (Figure 9). The new game details page not only shows more information, but also presents such information in a more appealing and efficient way. The video or the image of the game along with the graph showing the flow of the game's real-time excitement score dominates the page, which ensures that the user would receive the most relevant information in the shortest amount of time. The user also has the option to use a slider to adjust the time of the game for games with valid video feeds.

To maintain visual and navigational consistency, the navigation button on the bottom-right corner turns into the back button. A new feature is that on the top-left corner, the user would have the option to switch between the excitement score graph, the statistics chart and a textual description of the game. The user also has the option to share the game to the most common social media platforms using the share button on the top right corner.

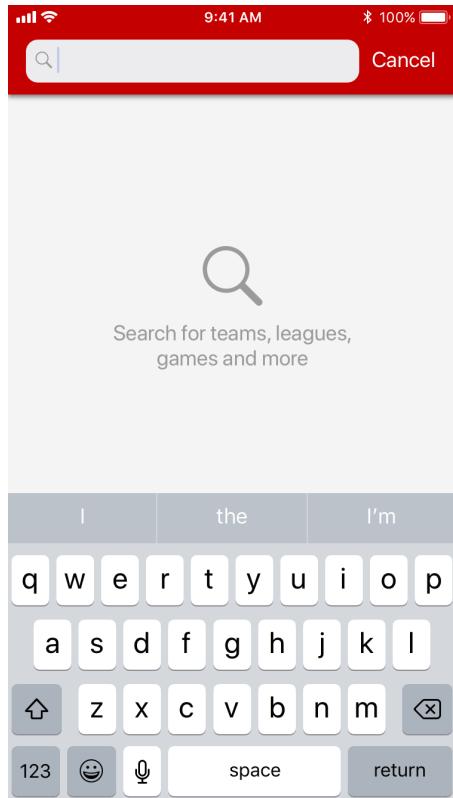


Figure 10

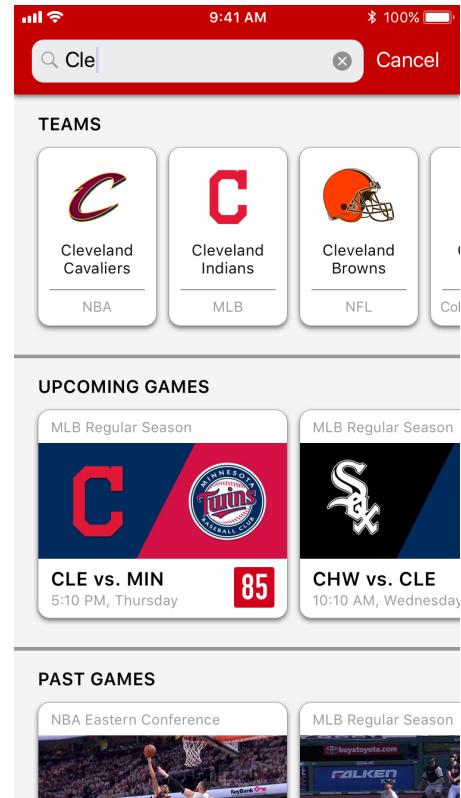


Figure 11

The search page (Figure 10) is an entirely new feature incorporated into the application. It allows the user to search for teams, leagues, games and other types of information across multiple sections of the application, so that the user can reach more fine-grained targets quickly.

The user does not have to enter the entire keyword(s) to make a query. Instead, the application would automatically suggest the most relevant results by sections (Figure 11) before the user completes the query. The search results utilize a similar card-like design to maintain the consistency of the application.

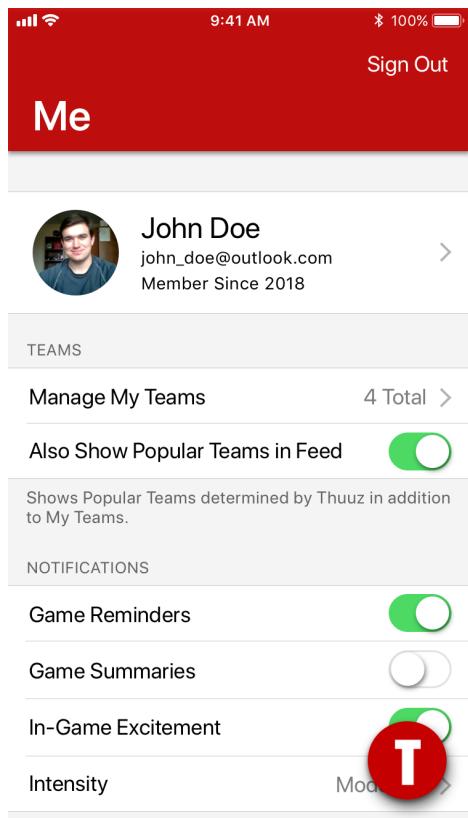


Figure 12

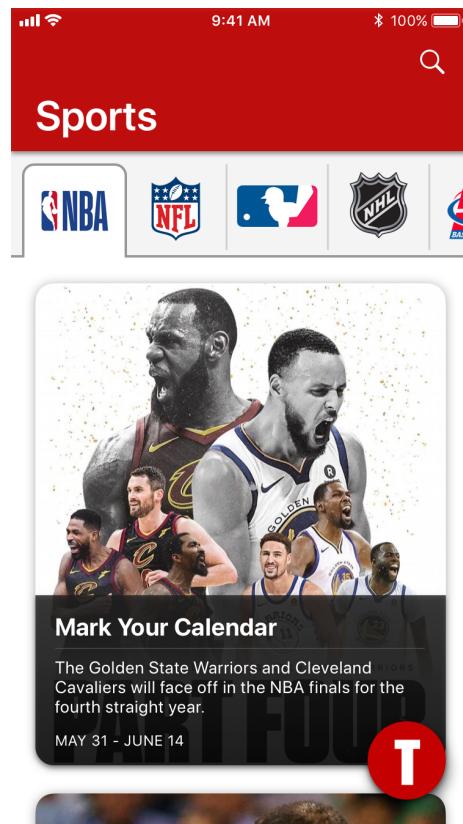


Figure 13

The redesigned “Me” page (Figure 12) essentially replaces the “profile” page in the original application. It utilizes a similar design scheme to native iOS applications with switches and options separated by sections. The user may manage the account, configure team preferences, setup notification settings and change the TV provider information on this page. The navigation button is still located at the bottom-right corner for easy access.

Another addition to the application is the new Sports page (Figure 13). It displays news, player information, games and other highlights separated by different kinds of sports. Here, the user may browse information coming from a wider variety of sources, and the information displayed in this page is not limited to the team preferences configured for the “Feed” page. Similar to most other pages of the application, the navigation button maintains its position.

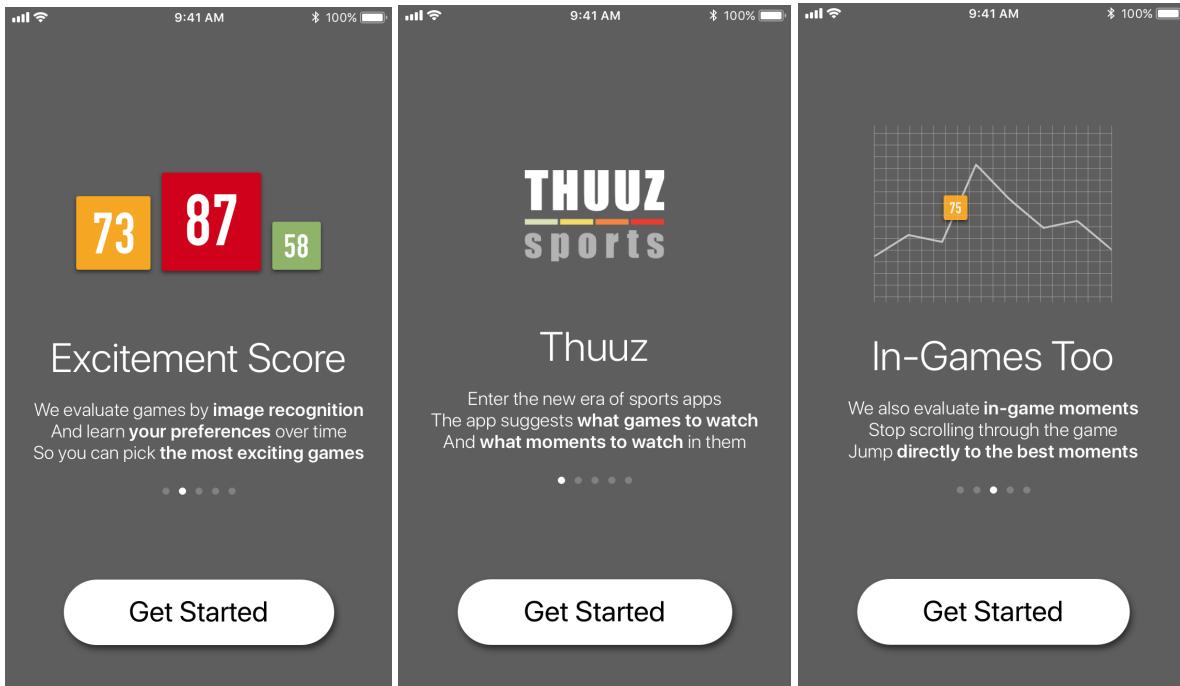


Figure 14

Figure 15

Figure 16

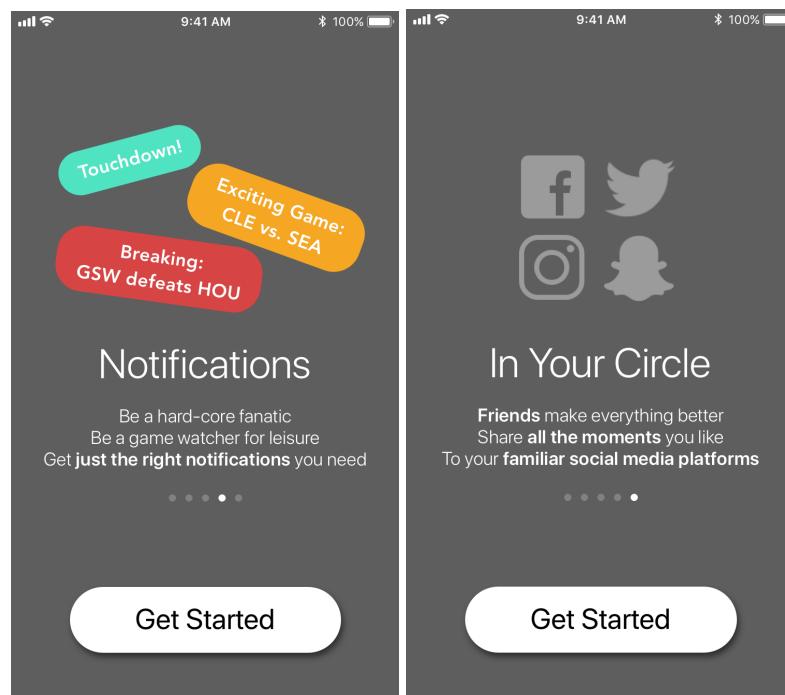


Figure 17

Figure 18

The new setup pages (Figure 14-18) utilizes a new design philosophy. The application shows one key feature of the application with a minimalistic graph and a short textual description. Different key features are organized horizontally and can be switched by swiping. The user has the option to skip at any time by tapping on the “Get Started” button.

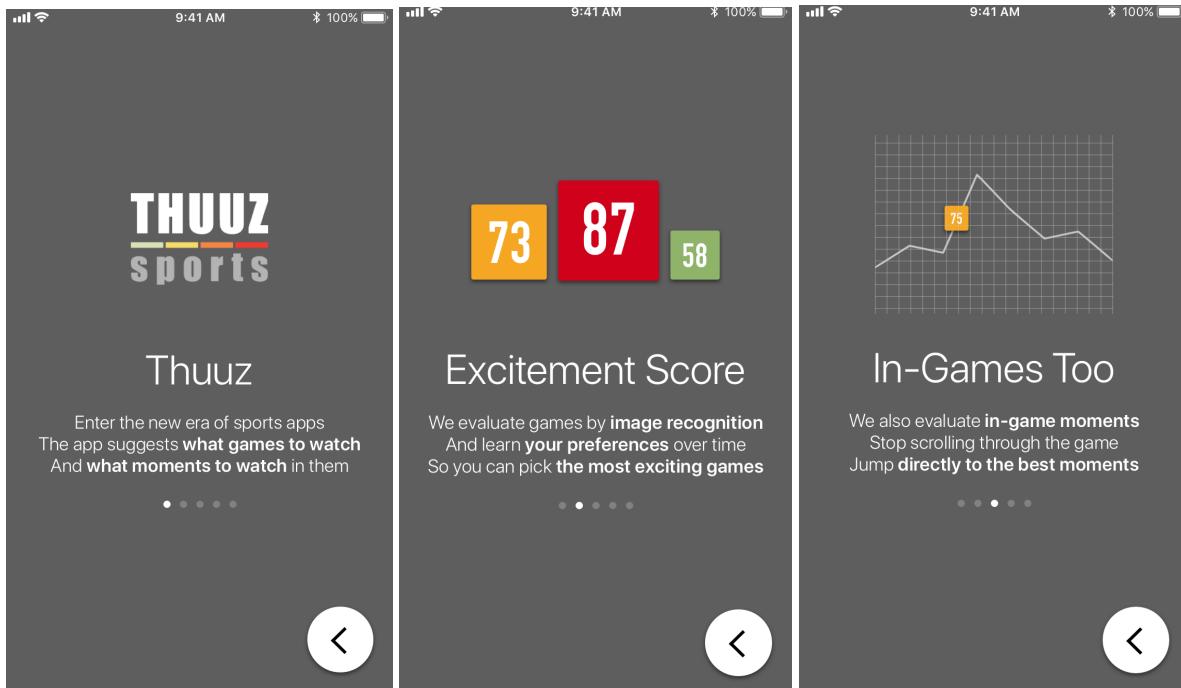


Figure 19

Figure 20

Figure 21

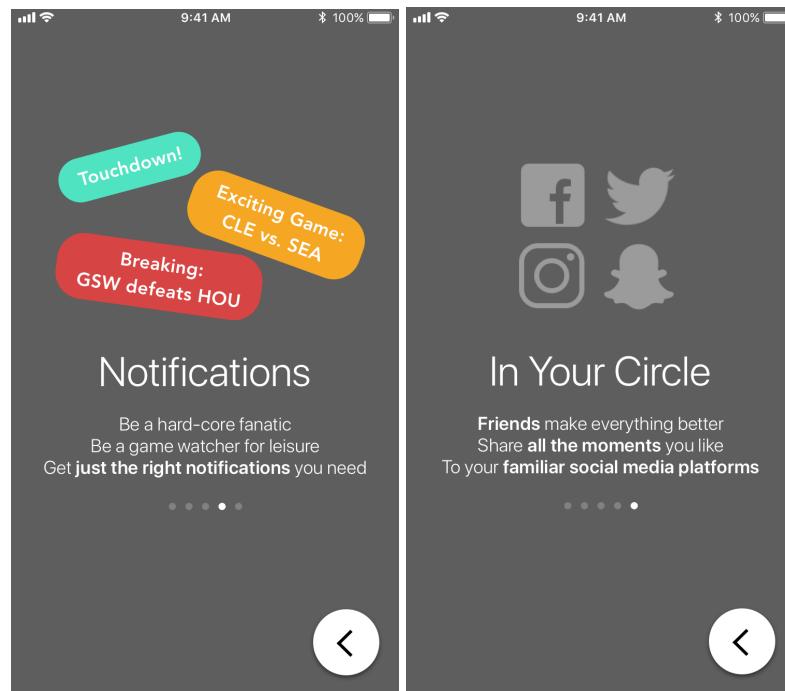


Figure 22

Figure 23

The new help pages (Figure 19-23) utilizes a very similar design from the setup pages. The users are presented with the key features of the application, and the action button is now replaced by a back button located at where the navigation button should be.

# Heuristic Evaluation on Redesign Prototypes

## Limitations

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Given the time frame and constraints of this project, we did not complete a full redesign of the entire Thuuz iOS application. Our redesign focused on the results that surfaced from our rigorous evaluation and research methods. Because of this, not all heuristics may apply to our interfaces.

## Heuristic Evaluations

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It is apparent that our redesign of the Thuuz iOS mobile application is a significant improvement from the original, but there are still many ways in which it could be improved. To narrow in on these specifics, we conducted five individual heuristic evaluations using Nielsen's 10 Usability Heuristics for User Interface Design. Heuristic evaluation is the industry standard method of discovering common problems of a product, and the checklist we selected reasonably covers the scope of our redesign. The results have helped us evaluate our original evaluation of the interface, and they will be useful for future evaluations and redesigns of the application.

## Areas of Strength

We set out to create a simplified experience that would minimize cognitive overload, create a more intuitive environment, and reduce errors. In doing so, we hit on many heuristics that are necessary for a successful redesign. The search bar feature strongly contributes to user control, freedom, and flexibility. Our simplified navigation builds on these, helps prevent errors, and enables users to efficiently pilot their way through the app. The icons we use not just for navigating but also throughout the entire experience are standard and can help users recognize rather than recall their meanings. Some errors are difficult to prevent though, so we redesigned the setup flow that also serves as a help flow. Novice users can utilize this flow at any point to help them in their Thuuz experience, and experts can skip ahead and never look back. Even if an expert makes a mistake, we have strategically placed "back," "cancel," and "x" buttons that allow users to recover from errors. This is standard and consistent in mobile applications. Building off of that consistency, we followed the iOS design standards in our redesign. Interface familiarity is known to reduce the cognitive load that users undertake using a mobile application, which was a problem with the original Thuuz experience. In the game tiles, we used pictures and colors to compliment a less heavy cognitive load and create an aesthetic and minimalist design. It was impossible to avoid game specific information in these tiles so we made sure that users would be able to recall that information in the game page, and we had that information update in real time so that it matched the real world version of the game.

## **Areas of Improvement**

The biggest challenge of this redesign was how to communicate and emphasize Thuuz's excitement score. This excitement score in itself is sewn into the fabric of the system. When a user is viewing the excitement score, they are seeing into the system. We did a good job of improving this from the original Thuuz app, but visibility into the excitement score will be an ongoing effort throughout Thuuz's lifetime. In addition to visibility into the excitement score is how we organize and effectively communicate the excitement score so that it matches with real world excitement in the most accurate way possible. It's one thing to calculate the score on a scale of 1-100, but how it is delivered to the user so that they understand and find value in it is equally as important. Other areas where the redesign can be improved is reducing the amount of taps it takes to accomplish standard tasks, creating more shortcuts for power users, and making more in-depth help and documentation for users who want to learn more about Thuuz and become a better Thuuz user.

# Conclusion

In order to be competitive in a crowded space such as sports technology, applications nowadays need to have an x-factor that separates the product from the rest. Thuuz has this with their proprietary technology, and they have proven it with other products. However, their iOS mobile app has failed to meet the standard that they have set with these products. Using industry standard user research methods and expert interface assessments, we were able to evaluate and identify major usability issues and provide redesign wireframes that correspond to these findings. The wireframes are far from a final product, and given the constraints of this project, there are certainly areas that need improvement within the redesigns. However, the end-product delivery is a reflection of user based research along with the application of standard human-computer interaction guidelines, which can serve as building blocks for future redesigns.

# Appendices

## A.1 - Interview Protocols

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Before the interview begins, instruct the interviewee to sign the informed consent form or read informed consent request and ask for explicit consent if not conducting the interview in person. Provide water if necessary.

Never stop the interviewee unless they are spending more than three minutes on a single question or their response is clearly deviating from the questions.

Skip questions depending on time and on the interviewees' responses. Also feel free to ask individualized follow-up questions.

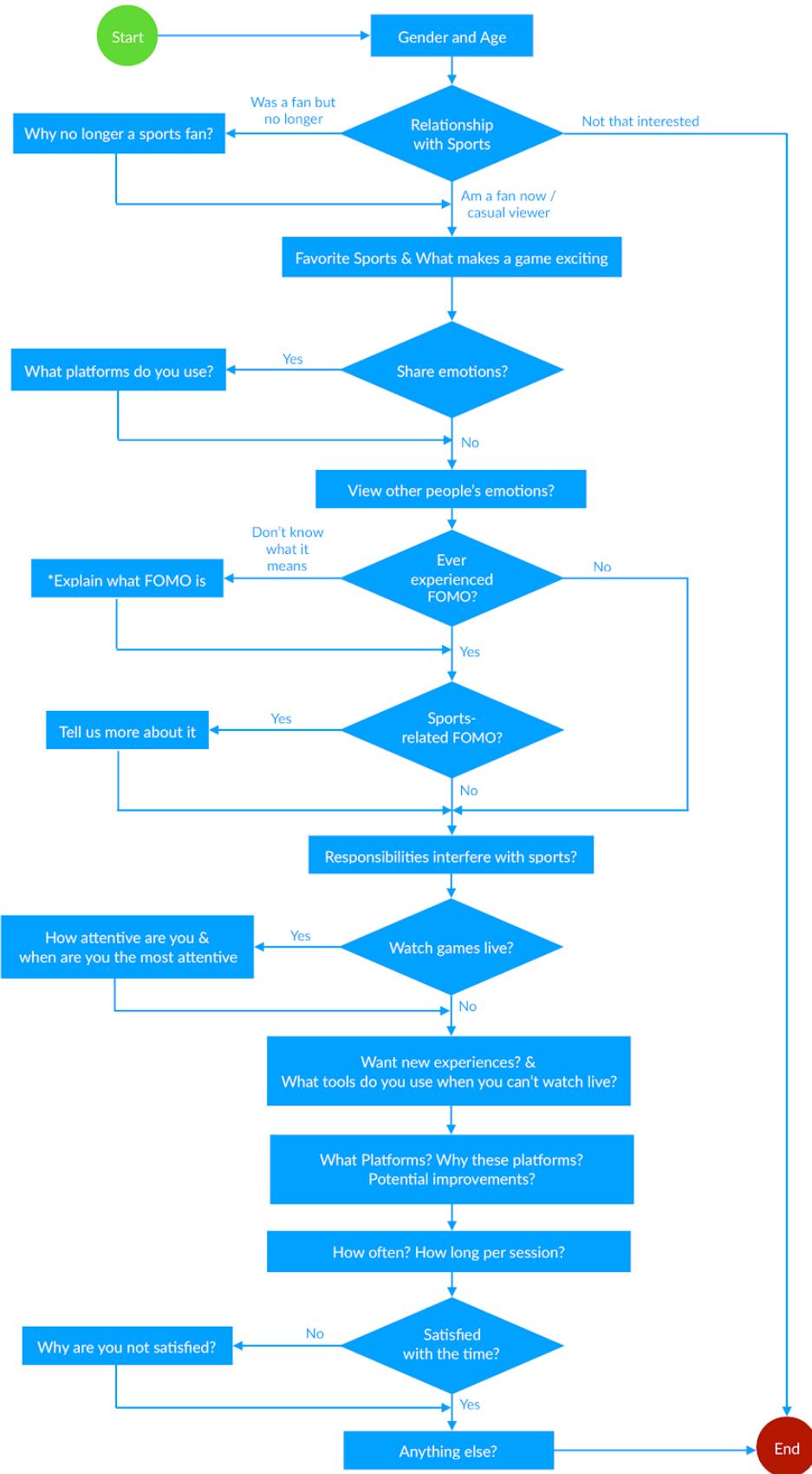
### Questions:

1. What's your relationship with sports in general?
2. What are your favorite sports?
  - a. What do you like about these sports?
  - b. \*Note: talk/ask about their favorite sport
    - i. How they feel about that sport?
    - ii. Why they like it
    - iii. Best memory... 'tell me a story'
    - iv. Tailor further questions according to the specific sport
3. What do you like most about sports (generally speaking)?
  - a. \*Note: What do you like least about sports (generally speaking)?
4. Do you often watch games live? How important is watching a game live to you?
5. Do you usually watch the whole game?

If yes - How attentive are you during different "phases" of a game? (Ask for example)  
If no - Do you only watch the exciting parts of the game?
6. What makes a game exciting to you? Give me an example of the most "exciting" moment that comes into your mind.
  - Thought provokers:
    - Rival games
    - Close games
    - Championship game
    - Team about to score a touchdown
    - NBA: player has 50+ points

7. Do you know what FOMO is? (Explain it to them if they don't know)
  - What do you think is the reason why people get FOMO?
  - Do you get FOMO when it comes to sports?
  - Do you find that your responsibilities interfere with your ability to watch your favorite team?
8. When you simply aren't/weren't able to watch a sporting event live, how do you get the scoop on it?
  - Are you comfortable with alternative ways of enjoying sporting activities other than watching live streams? (E.g. textual, audio, graphs,etc.)
  - If you don't watch it live, what are some of the other primary ways in which you experience or keep up with the sporting event?
9. Do you currently use any sports-related mobile apps? Which one(s) do you use?
  - Why do you like that particular app? (What is the killer feature of that app)
  - How much time do you usually spend on that app?
    - How often do you check the application? Daily, weekly?
    - Are you satisfied with that amount of time?
10. Do you like share your emotion or mood with others, especially when game comes to an exciting point. If yes, How?
  - How important is the social aspect of following sports?
11. At any point in this conversation, didn't were there any topics or questions that stood out to you as particularly interesting?
  - "*has anything come to your mind that we didn't cover? Like a feature or etc...*"
  - *If they say yes:* ask why and what about that was interesting. Have them elaborate.

## A.2 - Survey Questions - Diagram



## A.3 - Survey Questions - Textual

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*Note: Unless explicitly mentioned, all questions are required to complete the survey.*

### **1. Before we start, could you tell us what gender you affiliate with?**

Choose one:

- Male
- Female
- Prefer not to say
- Other (please specify)

### **2. And your age?**

Choose one:

- Under 10
- 10-20
- 20-30
- 30-40
- 40-50
- 50-60
- 60-70
- 70+
- Prefer not to say

### **3. How would you describe your relationship with sports in general?**

Choose one:

- I'm a sports fan now. [Go directly to question 5](#)
- I was once a sports fan but now I'm more of a casual viewer.
- I'm generally interested in sports but nothing too deep. [Go directly to question 5](#)
- I don't see myself interested in sports that much. [End Survey](#)

### **4. Can you tell us why you are no longer a sports fan?**

(Optional) Please provide a short answer.

### **5. What are your favorite sports?**

Choose one or more:

- Football
- Basketball
- Baseball
- Hockey
- Soccer
- Golf
- Tennis
- Other (Please specify)

**6. What makes a game exciting for you? (could be rival games, end-of-seasons, important players, etc.)**

(Optional) Please provide a short answer.

**7. Do you like to share your emotions or mood as you experience exciting moments in games?**

Choose one:

- Yes
- No [Go directly to question 9](#)

**8. What services/social media platforms do you typically use to share these feelings?**

Choose one or more:

- Facebook
- Twitter
- Snapchat
- Instagram
- Messaging Apps (Facebook Messenger, iMessage, WhatsApp, Line, WeChat, etc.)
- Other (Please specify)

**9. Do you like to read/hear about other people's reactions to exciting moments in games?**

(Optional) Please provide a short answer.

**10. Have you ever experienced "FOMO"?**

Choose one:

- Yes [Go directly to question 12](#)
- No [Go directly to question 14](#)
- I do not know what "FOMO" means

**11. "FOMO" means "Fear of missing out". For example, your best friends are all hanging out but you have to work for a deadline. "FOMO" is the emotion associated with this. Now, have you ever experienced this feeling?**

Choose one:

- Yes
- No [Go directly to question 14](#)

**12. Have you ever experienced "FOMO" in relation to sports?**

Choose one:

- Yes
- No [Go directly to question 14](#)

**13. If you have experienced FOMO, could you tell us more about that?**

(Optional) Please provide a short answer.

**14. Do you find your responsibilities in life interfere with your ability to watch/enjoy sports?**

Choose one:

- Yes
- Sometimes
- No

**15. Do you typically follow games live? (This includes means other than live streams)**

Choose one:

- Yes
- No [Go directly to question 18](#)

**16. How attentive are you during these games?**

Select a number from the scale to reflect your attentiveness

1 (Minimally) ----- 2 ----- 3 ----- 4 ----- 5 (Completely)

**17. During which phases/parts of games are you most attentive?**

(Optional) Please provide a short answer.

**18. Do you wish there is a way for you to experience these parts/phases more directly without following the entire event?**

Choose one:

- No. I still prefer following entire events.
- Yes.
- Other (Please specify)

**19. In case you cannot enjoy sporting event live, what are some of the primary ways in which you experience/keep up with the sporting event?**

(Optional) Please provide a short answer.

**20. What sport-related platforms (websites, apps, etc.) do you currently use?**

Choose one or more:

- ESPN
- NBC Sports
- Yahoo Sports
- Fox Sports
- Bleacher Report
- Official apps for major sports leagues (NFL, NBA, etc.)
- Other (Please specify)

**21.What do you like about those particular apps/services?**

(Optional) Please provide a short answer.

**22.Are there ways in which you think these apps could create a better experience for you?**

(Optional) Please provide a short answer.

**23.How often do you use these apps/services?**

Choose one:

- Multiple times per day
- Once a day
- A couple of times per week
- Once per week
- Only when something I'm interested in is happening
- None of the above

**24.On average, how long do you typically spend on these apps/services per session?**

Choose one:

- Less than a minute
- 1~5 minutes
- 5~15 minutes
- More than 15 minutes

**25.Are you generally satisfied with the time you spend on these apps/services?**

Choose one:

- Yes [Go directly to question 27](#)
- No

**26.How come you are not satisfied with the time spent on these apps/services?**

(Optional) Please provide a short answer.

**27.At any point during this survey, has anything came to your mind regarding your virtual sports experiences that you wish to tell us?**

(Optional) Please provide a short answer.

## A.4 - Cognitive Walkthrough Tasks

---

### **Task 1: Reach the home page by completing the initial set-ups**

- User opens the app
- User taps anywhere to get setup
- User taps anywhere to continue
- User indicates they would like the app to send him/her notifications
- Users confirms their desire to allow the system to send him/her notifications
- User taps anywhere to get started

*Assumptions:*

- The user selects that they want notifications.
- The user does not have a TV provider to input
- The user does not want to input their location to set up the TV provider

### **Task 2: Customize your favorite team's notifications to receive the most notifications**

- Select "Customize Your Alerts"
- Select "Sport & Team Alerts"
- Select the team of choice
- Adjust the fan level to "Fanatic (most alerts)"

*Assumptions:*

- The user has selected favorite teams
- The user has allowed the application to send notifications

### **Task 3: Find how many touchdown passes Tom Brady threw in the Super Bowl last year**

- Select "Guide" Tab
- Select "sports"
- Select "NFL Football" under "My Sports"
- Swipe left to find the correct game
- Tap on the game
- Selects "stats" in the toggle bar

*Assumptions:*

- The start base is the the "Guide/Profile" screen, instead of the "Profile" screen.
- The user is using the app during football off season.
- The user is familiar with sports terminology and acronyms, such as TD.
- The user has familiarity with basic smartphone standards

## A.5 - Usability Test Tasks

---

### Task 1: Reach the home page by completing the initial set-ups

#### 1. Start state:

- a. Application is freshly downloaded from the App Store.
- b. Application has never been opened.
- c. Application is the only application on that page of the home screen.
- d. The device is connected to a stable network (WiFi or LTE)
- e. The device has enough battery life and is in silent mode.
- f. The device is in the region of the 92697 zip code
- g. Test the screen recording function to ensure normal functionality

#### 2. Instructions:

Let's say that you want to know more about the LA Angels and Dodgers and would only watch games that they are playing. Your friend recommended this application to you since he knows that you are a big sports fan but you are also busy doing so many other things. You live on campus (zip code 92697) but you do not have a cable subscription. Your friend told you that the application will let you know when the best games are happening and you are very excited to receive these updates.

For the first task, your goal is to finish the initial setup and reach the home screen of the application. In the device in front of you, the application was just downloaded from the app store and has never been opened before. The application will walk you through how to set up your viewing preferences, updates and favorite teams.

In the process of completing your tasks, please remember to use the "think-aloud" protocol and tell us what you are thinking as you are using the application. We may remind you to use the protocol during the test. When you think you have completed the goal of this task, please let us know by explicitly telling us.

If you have any questions as we go along, feel free to ask. I might not be able to answer them right away, since we are interested in how people react when they don't have someone sitting next to them to help.

#### 3. All possible paths:

- a. "Tap anywhere to get started" - No alternatives
- b. "Tap to continue for explanation of excitement score" - No alternatives
- c. Set notifications - prompt the user to say "enable", even though the user may click "Don't allow" when the system prompts.
- d. Prompt for location to set up TV provider - again, the user may decline when the user prompts and there is no back button - you must type in a zip code
  - i. If we instruct the user to not have a TV provider, they may either click "no, maybe later" or actually give a zip code and (after finding it) select "No TV Provider"

1. When they select “no, maybe later”, the system prompts again for a zip code and there is no back button. This new zip code is for setting up teams based on location. The users have the option to skip. When they do skip, they have to select the team manually.
  2. When they do put in a zip code but made a typo and when the zip code they gave does not exist, the system may crash.
  - e. They get to set up their favorite teams - No alternatives
4. *Assistance provided, when needed:*
- a. When “tap anywhere to continue/setup” doesn’t work, tell the user that it’s probably a flaw of the software and they may have to make a few more taps.
  - b. When the application crashes or stops responding, help the participant reset the device (quitting and reopening the app, or probably even re-downloading it) and reset the timer.
5. *Measurements:*
- a. Number of taps, starting with opening the app
  - b. Number of errors made
  - c. Time
  - d. Number of hesitations (each time when the user stares at the screen and does nothing for 5 seconds, it is counted as one hesitation)
  - e. Scale of 1-5: how satisfied are you with completing the set-up process?
  - f. General comments and emotions after completing the task

## **Task 2: Add team from new city and find future game with excitement score of >80**

1. *Start state:*
- a. Application is just set up by the user.
    - i. No TV provider is configured
    - ii. Zip code is set to 92697
    - iii. Favorite teams are LA Angels and Dodgers
    - iv. Notifications are enabled
  - b. Application is in the “Guide” page
  - c. The device is connected to a stable network (WiFi or LTE)
  - d. The device has enough battery life and is in silent mode.
2. *Instructions:*
- You’ve just set up the application and should be ready to go. However, you are from New York City and you just moved to Southern California earlier this year. Although you really do want to get accustomed to the local MLB teams, you don’t want to give up your New York roots. Plus, it would be nice if you could share updates with your New York friends about the teams in New York.

For this task, your goal is to add the New York Yankees as one of your favorite teams. You also need to find a game in the future, featuring the New York Yankees, that has a predicted excitement score of 80 or higher. The device in front of you is the same one that you have just used, and the application was set up in the way that you did a couple of minutes ago. The application itself should have enough instructions and guides to help you complete this task.

Again, in the process of completing your tasks, please remember to use the "think-aloud" protocol. We may remind you to use the protocol during the test. When you think you have completed the goal of this task, please explicitly tell us.

If you have any questions as we go along, feel free to ask. I might not be able to answer them right away, since we are interested in how people react when they don't have someone sitting next to them to help.

3. *All possible paths:*

- a. Select "Profile" page - No alternatives
- b. Select "Favorite Sports & Teams" - No alternatives
- c. Tap "add more" - no alternatives
- d. Add NY Yankees as a favorite team - No alternatives
- e. Go back to "Guides" page - No alternatives
- f. Scroll through future dates - depends on which day they land on
- g. Select a game with 80+ score - could be any game

4. *Assistance provided, when needed:*

None. This is a pass/fail task.

5. *Measurements:*

- a. Number of taps
- b. Number of errors made
- c. Time
- d. Number of hesitations (each time when the user stares at the screen and does nothing for 5 seconds, it is counted as one hesitation)
- e. Scale of 1-5: how satisfied are you with completing the team-adding process?
- f. General comments and emotions after completing the task

### Task 3: Fully setup your account

#### 1. Start state:

- a. Application is just set up by the user, with three favorite teams.
  - i. No TV provider is configured
  - ii. Zip code is set to 92697
  - iii. Favorite teams are LA Angels, Dodgers and the NY Yankees
  - iv. Notifications are enabled
- b. Application is in the “Guide” page
- c. The device is connected to a stable network (WiFi or LTE)
- d. The device has enough battery life and is in silent mode.

#### 2. Instructions:

Now with all of your favorite teams registered with the application, you are ready to fully unleash the power of the application to make it beyond a notification tool. You want to try out the interesting and unique features of this application, which means that you would now make the experience as customized as possible.

For this task, your goal is to create a new account with Thuuz. You do not have to register with your actual name or email address - feel free to make up such information. After setting up the account, please set up the TV provider preferences in the application. For the purposes of this research, add Cox Communications as your TV provider. You can also configure the favorite teams to your actual liking, if you prefer. Lastly, please also set the notifications to the strongest setting for the New York Yankees.

It is not necessary that you perform these subtasks in the order laid out above - you may perform them in any way you prefer. Again, in the process of completing your tasks, please remember to use the “think-aloud” protocol. When you think you have completed the goal of this task, please let us know by explicitly telling us.

If you have any questions as we go along, feel free to ask. I might not be able to answer them right away, since we are interested in how people react when they don't have someone sitting next to them to help.

#### 3. All possible paths:

- a. Select “Profile” page - No alternatives
- b. Select “Register” - No alternatives
- c. Tap “Register” - No alternatives
- d. Go back to profile page - No alternatives
- e. Select “Set Your TV Info” - No alternatives
- f. Select Cox Communications for the TV provider - No alternatives.
- g. Go back to profile page - No alternatives
- h. Select “Customize Your Alerts” - No alternatives
- i. Select “Sport and Team Alerts” - No alternatives
- j. Tap on New York Yankees - No alternatives
- k. Set fan level to “Fanatic” - No alternatives

4. *Assistance provided, when needed:*

None of these tasks is particularly challenging, so answer any question.

5. *Measurements:*

- a. Number of taps
- b. Number of errors made
- c. Time
- d. Number of hesitations (each time when the user stares at the screen and does nothing for 5 seconds, it is counted as one hesitation)
- e. Scale of 1-5: how satisfied are you with completing the registering and configuration process?
- f. General comments and emotions after completing the task

**Task 4: Find your friend, follow him/her, find what game what he/she is currently checked-in to, and check in to that same game.**

1. *Start state:*

- a. Application is just set up by the user, with three favorite teams.
  - i. TV provider is configured as "Cox Communications"
  - ii. Zip code is set to 92697
  - iii. Favorite teams are LA Angels, Dodgers and the NY Yankees
  - iv. Notifications are enabled
- b. Application is in the "Guide" page
- c. The device is connected to a stable network (WiFi or LTE)
- d. The device has enough battery life and is in silent mode.
- e. The user is using his/her Thuuz account which is set up in previous step

2. *Instructions:*

Now you have completely setup the application with your preferences and account information, but what fun is experiencing a game by yourself? Sports are always better within communities. Why not connect with your friends, follow their sports experiences and enjoy the games together? In this scenario, you and your lifelong best (fictional) friend, Potato Ag., watched a game together the other day, during which she told you about Thuuz. You were interested in the app, went through all of the steps in this usability test so far, and now want to connect with her and "check in" to that game.

For this task, your goal is to connect with your lifelong best (fictional) friend, Potato Ag. First, you need to find her account and follow her through her email, **butterflyhobo27@gmail.com**. The next step is to view her profile and see the games Potato has checked in to. You will select the game you two watched together, "check-in" and leave a message for the community. After, you'll be so excited about this feature that you will use the app to invite another (fictional) friend, Thomas, to join Thuuz as well. Thomas' email is **throuawae@gmail.com**.

In the process of completing your tasks, please remember to use the “think-aloud” protocol and tell us what you are thinking as you are using the application. We may remind you to use the protocol during the test. When you think you have completed the goal of this task, please let us know by explicitly telling us.

If you have any questions as we go along, feel free to ask. I might not be able to answer them right away, since we are interested in how people react when they don't have someone sitting next to them to help.

3. *All possible paths:*

- a. Select “Profile” page - No alternatives
- b. Select “Follow Your Friends” button and access the “Friends” page - No alternatives
- c. Select “Search all Thuuzers” button - No alternatives
- d. Type in the friend's email address to add the friend - No alternatives
- e. Click follow button to confirm action - No alternatives
- f. Click on the “Friends” page, click on “Following” tab - Clicking “Followers” would also lead users to view the friends they follow. This is considered as a inappropriate access.
- g. Click on “Potato Ag” - No Alternatives
- h. Find the game you and “Potato Ag” watched together and click on it - No alternatives
  - i. Click check in and you will be redirected to “Share this Game” - No alternative
  - j. Add optional personal message and “post” the message - No alternative path
  - k. Click “Thuuzer”, then click “Friends”, then click “Profile” - Another path the user can take is to click Profile at the bottom-right corner”
  - l. Click on “Follow your Friends” - No Alternative
  - m. “Email invite” and input your friend's email address - No alternative

4. *Assistance provided, when needed:*

- a. When the participants have struggled long enough to find where/how to accomplish one part of this task, hint them in the right direction

5. *Measurements:*

- a. Number of taps, starting with opening the app
- b. Number of errors made
- c. Time
- d. Number of hesitations (each time when the user stares at the screen and does nothing for 5 seconds, it is counted as one hesitation)
- e. Scale from 1-5: how satisfied are you with completing the set-up process?
- f. General comments and emotions after completing the task
- g. Scale of 1-5: general satisfaction of using Thuuz
- h. Whether the user would keep or delete the application

## A.6 - Participant Information Log

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### 1. Interview Participants

#### **Participant 1**

- Gender: Female
- Age: ~25
- Occupation/key characteristic: Senior college student
- Date: 4/20/2018
- Time and duration: 8-8:35pm (35 minutes)
- Location: Interviewee's apartment, Irvine, CA

#### **Participant 2**

- Gender: Male
- Age: 35~40
- Occupation/key characteristic: College club sports coordinator
- Date: 4/21/2018
- Time and duration: 2:20-2:45pm (25 minutes)
- Location: Aldrich Park of UCI, Irvine, CA

#### **Participant 3**

- Gender: Male
- Age: 29
- Occupation/key characteristic: Graduate student in Mechanical Engineering
- Date: 4/21/2018
- Time and duration: 8:00-8:35pm (35 minutes)
- Location: Berkeley Community Center, Irvine, CA

#### **Participant 4**

- Gender: Male
- Age: 24
- Occupation/key characteristic: Undergraduate student in Electronic Engineering
- Date: 4/20/2018
- Time and duration: about 7:00-7:30pm (30 minutes)
- Location: Interviewee's apartment, Irvine, CA

#### **Participant 5**

- Gender: Female
- Age: 22
- Occupation/key characteristic: UCI undergraduate
- Date: 4/23/2018
- Time and duration: 8:00-8:30 (30 minutes)
- Location: Interviewee's apartment, Irvine, CA

### **Participant 6**

- Gender: Male
- Age: 26
- Occupation/key characteristic: Restaurant chef
- Date: 4/22/2018
- Time and duration: 7:00-7:27 (27 minutes)
- Location: Over the phone

### **Participant 7**

- Gender: Male
- Age: 24
- Occupation/key characteristic: College student
- Date: 4/22/2018
- Time and duration: 12:00-12:29am (29 minutes)
- Location: Over the phone

### **Participant 8**

- Gender: Male
- Age: 48
- Occupation/key characteristic: Long time sports fan
- Date: 4/23/2018
- Time and duration: 8:00 - 8:30pm (30 minutes)
- Location: Over the phone

### **Participant 9**

- Gender: Male
- Age: 31
- Occupation/key characteristic: Product manager
- Date: 4/18/2018
- Time and duration: 9:30-10:00pm (30 minutes)
- Location: Over FaceTime

### **Participant 10**

- Gender: Male
- Age: 45
- Occupation/key characteristic: Christian Minister
- Date: 4/22/2018
- Time and duration: 9:45pm-10:15pm (30 minutes)
- Location: Anteater Recreation Center, Irvine, CA

## 2. Usability Tests Participants

### **Participant 1**

- Gender: Female
- Age: ~25
- Occupation/key characteristic: Senior college student/Long-term basketball lover
- Date: 5/14/2018
- Time and duration: 3:31-4:26 pm (55 minutes)
- Location: UCI Gateway Study Center, Irvine, CA

### **Participant 2**

- Gender: Male
- Age: 26
- Occupation/key characteristic: Senior college student/ Part-Time Electronic Engineer
- Date: 5/15/2018
- Time and duration: 3:42-4:35 pm (53 minutes)
- Location: UCI Multimedia Resources Center, Irvine, CA

### **Participant 3**

- Gender: Female
- Age: 22
- Occupation/key characteristic: Senior college student/Former UCI Sports athlete
- Date: 5/15/2018
- Time and duration: 10:17-11:05 pm (48 minutes)
- Location: Participant's apartment, Irvine, CA

### **Participant 4**

- Gender: Female
- Age: 20
- Occupation/key characteristic: Junior college student
- Date: 5/16/2018
- Time and duration: 10:17-10:52 am (35 minutes)
- Location: Participant's apartment, Irvine, CA

### **Participant 5**

- Gender: Male
- Age: 19
- Occupation/key characteristic: Freshman college student/Soccer fan
- Date: 5/14/2018
- Time and duration: 4:33-5:20 pm (47 minutes)
- Location: UCI Gateway Study Center, Irvine, CA

## A.7 - Individual Heuristic Evaluation Notes

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### Heuristic Evaluation - Alicia Nunez

#### Visibility of System Status

- When you start typing in the search bar, the app immediately starts giving you suggestions, showing that it knows you're looking for something.
- Green highlighted toggles show the user notifications that are on/off.

#### Match Between System and the Real World

- System uses clear tab names like Feed, Me, Sports, Notifications, and Help that users understand.

#### User Control and Freedom

- Users can cancel a search easily.
- Widget on the bottom-right allows users to go back to homepage.
- When on a game page, widget can only go back—not to other pages.

#### Consistency and Standards

- Fonts, colors, buttons are all consistent.
- I feel like we solved the consistency problem the original had.

#### Error Prevention

- There doesn't seem to be anything on error prevention. Wasn't applicable to our designs.

#### Recognition Rather than Recall

- By having the widget with all the tabs on the side clearly available, users have the ability to go anywhere in the app, they don't have to remember where something specifically is.

#### Flexibility and Efficiency of Use

- When users first join, they have the option to accelerate past the introductory help pages.

#### Aesthetic and Minimalist Design

- Colors are simple and make the interface pop.
- We only include the necessary information on each page.

#### Help Users Recognize, Diagnose, and Recover from Errors

- Doesn't seem applicable to our designs.

#### Help and Documentation

- Set up pages are there to help users when they first join and will always be there on the help page.

## Heuristic Evaluation - Thomas Huang

\* Negative evaluations are *italicized* and are in **red**

### Visibility of System Status

- For the game details page, updates are provided in real time. The visual changes on the page would properly inform the user about the progress in order for him/her to maintain control.
- The fact that most parts of the screen are dimmed when the navigation button is accessed visually implies the logically available portion of the application, so that the user knows the proper area to take the next step
- *The user might feel lost when the navigation button disappears as he/she scrolls down*

### Match between system and the real world

- Natural language in a friendly and concise tone is used throughout the application to minimize any additional learning
- The ordering of the home page along with the sorting mechanisms are reasonable and logical
- Different sports presented in the sports page follows the order in the real world
- Technology-related terminology is either thoroughly explained or not used at all
- Icons mimic real-life objects and are unambiguous in what they mean
- *Different people may have different interpretations on the meanings of different colors. This means that the red-green color scale for the excitement score may be confusing for some.*

### User control and freedom

- When users do have to make critical choices, the options provided are easily understandable and reasonable so that the users are not required to make unwanted changes
- Most actions are reversible
- *The only option available at the help screen is \*back\*. The user may need more information or more detailed assistance.*

### Consistency and standards

- Application follows iOS 11 design standards with regards to the placement of elements, the organization of information and several interaction standards
- Interactions that do not necessarily conform to Apple's standards are still intuitive
- Icons, switches and sections in the "Me" page look very similar to those of native iOS applications
- Several industry standard icons are used to minimize learning
- A uniformed red-black-white color scheme is used in most portions of the application
- The setup/help pages with the grey background does not necessarily conform to the red-black white color scheme
- *Some users may find the placement of the back button (at the bottom-right corner) to be troublesome*

### Error prevention

- The navigation is simple enough so that the user would not want to make erroneous inputs
- Most pages only have a small amount of clearly explained actions so that the user are not likely to take unwanted actions
- The display of cards, specifically how an incomplete card is shown either at the bottom or at the right edge of the screen, shows the direction of navigation. This ensures that the user would swipe in the correct direction to gather more information.

### Recognition rather than recall

- Icons are accompanied by captions
- The most frequently accessed actions (e.g. managing teams) are available in multiple pages so that the user does not have to constantly move between pages just to perform an action
- The search feature automatically suggests relevant results even when the query is incomplete
- Each card on the feed page displays an image/video of the game, the team scores, the excitement scores, the game title and a short description so that the user does not have to recall information of the game
- *The application does not show the full name of teams. It only shows their logos and abbreviations.*

### Flexibility and efficiency of use

- The search feature is accessible from most panes of the application so that users with precise goals can reach their results in the shortest amount of time
- The setup and help pages allows the user to skip at any time instead of having to swipe through all pages
- Personalized settings are available in the “Me” page to make the home page more tailored in order to reduce the time needed to reach certain targets
- *Power users may find the inability to create shortcuts frustrating*
- *Navigating between sections of the application requires a minimum of two taps because of the navigation button*

### Aesthetic and minimalist design

- Layers are designed to display only the most necessary information
- The use of color emphasizes certain elements and shows significance
- The home page only shows at most one complete game to prevent information overload
- The setup/help pages only shows one key feature of the application to make the explanation process clearer
- *The game details page may contain more information than what a novice user may need*

### Help users recognize, diagnose, and recover from errors

- The search box allows the user to quickly clear an erroneous input with the clear button

### **Help and documentation**

- Help is always available when the navigation button is present
- The wording of the help document is clear to understand
- *Users might need more detailed help documents with instructions of specific actions or tasks*
- *There is no way for the user to directly contact a person for more specialized assistance*

## Heuristic Evaluation - Zhaomin Li

\* Possible improvements are in red

### Visibility of System Status

- The idea of synchronically updating the excitement scores for each game and promoting the games based on the excitement scores is a good way to show users the software algorithm to calculate and model the excitement scores.
- In the search page, the software update the recommendation based on what the users type first. This autocomplete function gives users proper information in time and improves work efficiency and user experience.
- The visibility of system status is emphasize in this new design. In the old version, user did not realize the statistics behind the screen and the importance of excitement score.

### Match between system and the real world

- When users click the “T” icon, he/she can see 5 different tabs to switch to. The naming and order of tabs follow the real-world conventions. “Feed” can greatly summarize the content in that tab, and users want this tab the most. “Help” tab is less important compared with other tabs, so we put it at the end of all icons.
- In the search page, the order of search results follows the sophisticated ranking algorithm. The search engine first finds all the team names which contain the keyword. Then it searches for all the future games played by those teams. Then it shows the previous games played by those teams. The order of searching results follows the user logics.
- We use the time series to present the excitement score. In each game page, the user can slide the slider to change the timespot. The system updates the excitement score and contemporary stats based on users' selections.

### User control and freedom

- In the Setup pages, users can swipe left/right to view the previous/next info page. Users can easily re-access the previous pages to review the instructions.
- When users setting their notifications options, we use a lot of switch buttons to let users easily change their options.
- When users type in wrong information in search bar, they can click the cross on the right to easily delete the content in the search bar.

### Consistency and standards

- Each tab title is consistent with the tab names that pop up at the bottom.
- The ‘<’ icon at the bottom of the Help page is a little bit awkward. Users may consider that as a ‘go-back’ button leading them the the last help page. But they can also swipe left to reach that goal, and this may confuse users.

### Error prevention

- Autocomplete and autocorrect!!! Users do not need to rectify the mistakes by themselves. Instead of letting users search the wrong queries, the searching correction can prevent the errors from happening in the first place.

### Recognition rather than recall

- Users do not need to remember all the games they want to watch. The software can remind them and push the notification to help users recognize the games.
- Autocomplete and autocorrect again!!! Instead of recalling the team names or the game names, the users can only type in a part of the query, and the system can do the rest. The software uses the synchronous update in the searching page. When users type in a part of the query, the software can find the most possible results simultaneously and help users recognize the targets.
- **In my personal opinion, the software can develop a recognition mechanism based on the time/date picking.**

### Flexibility and efficiency of use

- GUI design is important in our new interface. We use a lot of icons which can be easily interpreted by users. We use many powerful signifiers, such as the time slider and dot lines (swiping indicator), to help novices easily start on our software. Users can be familiar with the software quickly, since it follows the implement flows of many popular applications (We referred to the workflows of many prevalent applications during the design phase).
- We gave up on the complex setup sequence of the old Thuuz application, which was not user-friendly to novices. In new design, users do not need to input any information in the setup pages. We instead offer users the concise summary of new Thuuz and the important functionalities that users can experience. Novices can have an overview of Thuuz in the initial pages which can abbreviate their learning process.

### Aesthetic and minimalist design

- New Thuuz has the inline of using pictures. We believe the pictures can present the most straightforward and relevant information to users. Users may not have the patience to read a long paragraph of text and they may be distracted by some irrelevant information in the text. Therefore, the new Thuuz uses pictures to fill in 70% space of the game cards.
- The old Thuuz has the issue of information overload. In the new design, we try to minimize the information on each 'Feed' / 'Sport' page. Since the Thuuz uses sophisticated Machine Learning algorithm to order the game cards, users can always find their desired game on the top of the page. Because user can only see 1-2 games in one page, they should not be distracted by other irrelevant games which appear at the end of the list.
- **The new Thuzz can improve on its personal setting. It can offer users clearer options in the 'Me' setting page.**

### **Help users recognize, diagnose, and recover from errors**

- Again, autocomplete and autocorrect can help!!!
- Our new UI is highly flexible, and there is no operation which can be classify as a wrong operation. Rather than letting users predicate the result mismatches that might occur after they doing certain actions, We want them to comprehend the purposes of their actions.

### **Help and documentation**

- User can learn the main functionalities of Thuuz in Setup pages, and they can re-access those instructions in 'Help' page. The 'Help' is easy to find and access.
- To further improve the user experience, developers can offer some tutorial animations to the users. The animations should be stored in the help tab, and they can teach users how to implement some key features in Thuuz.

## **Heuristic Evaluation - Cynthia Aguilar**

### **Visibility of System status**

- Not applicable to scope of interactions in redesign.

### **Match between system & real world**

- Titles are clear and refer to sports related concepts and standard app title pages.

### **User control & freedom**

- Application has some instances of redo options, such as if they type in the wrong thing, the (x) button allows them to delete what they have to start again, but again this is a built-in function of the search button, not so much the app. However, there are 'cancel' buttons which allow the user to return to whatever page they were at if they want to undo the action.

### **Consistency & Standards**

- The application follows standard iOS guidelines, and uses terms consistently throughout its various pages. For example, in the tutorial, the button appears at the bottom of every page and states "Get Started" which the user understands as a way to proceed with the application.

### **Error Prevention**

- Not applicable to the scope of the interactions in the redesign.

### **Recognition rather than recall**

- The T is always visible to the user and is for ease of navigation. When they click on the T, several options pop up and the titles are recognizable and follow iOS standards that users are accustomed to.

### **Flexibility and efficiency of use**

- There are ways for the user to skip steps without having to be an expert of the app. For example, the initial page presented to users when they download the application has a quick tutorial that users can skim through quickly and is entirely optional. Clicking the "Get Started" button allows the user to skip the tutorial and head straight to the homepage.

### **Aesthetic and minimalist design**

- The pages are very minimalist and follow a color scheme that fits the aesthetics of sports applications. The card tiles on the Feed page are simplistic and allow each game to be displayed in their own tile. This allows the feed page to display one and a half games at a time, which is ideal and simplistic to avoid overwhelming the user. The navigation bar is also very minimalist since it is just bubbles that pop up on the side and can be easily hidden as opposed to other clunkier styles for navigation bars.

### **Help users recognize, diagnose, and recover from errors**

- From the given pages, there are no messages displayed that may help the user recover from an error. However, there are sliders in certain button options that allow them to revert the action they have taken. For example, if they accidentally disabled the notifications on their “Me” page, they can quickly undo this action. However, there is no message displayed letting the user know what they have done, instead a color scheme is used to indicate something has changed. This is however an iOS design principle.

### **Help & documentation**

- The redesign accomplishes this guideline since there is a section on the navigation that is visible and is clearly for help and documentation purposes. The page answers questions about the key characteristics such as the purpose of the “excitement score”, notifications, social media, and other aspects of the application.

## Heuristic Evaluation - Derek Minno

### Visibility of System Status

- Most actions the user can take are intended to have quick and appropriate feedback
- Examples of this are entering into a specific game page after tapping on its tile, the mobile keyboard appearing when the user is active in the search bar, and the navigation screen darkening the background to emphasize the navigation action buttons
- When a user enters input into the search bar, the results will show in real time as they continue to type their input
- One big challenge with this redesign was emphasizing the excitement score and helping users intuitively understand its value. The score in itself is essential to the system status in many areas. Improving visibility into the excitement score will be an ongoing afford throughout the Thuuz product lifetime.

### Match between system and the real world

- The excitement score is intended to be a quantified match of the excitement of experiencing a game in real time. While we certainly emphasized the excitement score, I think there is a lot of room for improvement here. How can we make the excitement score *even more* like the excitement of experiencing a game in real time? How can users interact with and experience the excitement score to make this connection? These are difficult questions to answer and would take more time and analysis than 10 weeks to make significant progress
- The game page is intended to match with a real game. It is all happening in real time. Brief snippets that summarize each play are meant to match each real play, but in verbal form. The score updates in real time along with the excitement score. These match with what is happening in any real life instance of the game.

### User control and freedom

- The search bar allows for users to get to any piece of information they want quickly and efficiently. A good search bar creates a lot of control and freedom
- On every page there are clear options available to the user that do a great job of communicating what the user is able to do on that page. Less of a need to think affords the user more control and freedom

### Consistency and standards

- For each game, we use the all capital abbreviation of the city the team is from. This is common across the board for the sports world.
- Having images associated with each game. Sports have become more visual to the fan than any other sense.
- Including a social aspect to the app but having it be completely secondary to the content is standard for all sports apps. This is the case for our redesign
- We were bold with our redesign. We strayed from the design standards that are normally associated with sports apps. As an avid sports app user, it's my personal opinion that

sports apps are becoming repetitive and often redundant. This means there could be a space for a new design direction.

- For example, almost every popular sports app available uses a flat bottom navigation bar that offers 3-5 options. We decided to use a floating circle that has navigation action buttons appear out of it.

### Error prevention

- One area we found users making a lot of mistakes during our usability tests was in navigation, and our navigation improves upon this. There is one main button and 5 sub buttons that are direct and consistent

### Recognition rather than recall

- When a user travels from the game card to the game page, they don't have to recall anything. They will have the information re-presented to them in the same manner
- This includes score, game time, excitement score, dates, statistics, etc

### Flexibility and efficiency of use

- The simplification and intuitive aspects of our resign allow for new users to use the app right away, but also for users to dive deeper into specific teams and games. New users are always presented with an introduction that shortens the learning curve, but users can also just skip that intro and go right to the home page.

### Aesthetic and minimalist design

- The game cards create a distinct and aesthetic summary of each game.
- We could combine features into less pages and emphasize the more important pages that most users will spend the majority of their time on and make the other pages even more secondary. Also the design is aesthetic, but still feels like it needs to be iterated over. Most apps have a cleaner feel, and while this is a fantastic v1, it's still a couple versions away from being in a "ready for release" state

### Help users recognize, diagnose, and recover from errors

- Users can easily return to their previous page with the back button
- The search bar allows for users to quickly fix an accidental or unwanted input in the textbook

### Help and documentation

- The user is two taps away from help, as help is available as an option in the navigation section
- With more time to work on this, it would be important to do more research about what help users need in regards to the excitement score. One's interpretation of the score might be different from another. Coming up with the language and examples necessary to accommodate all potential users would make a world of a different in help and documentation.