IAT 201 Final Report

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Songza

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We hereby grant permission to show this report in future courses as a sample project

Abstract

Songza is a smartphone music application that allows users to listen to playlists based on their activity and time of the day. The playing screen of current Songza has cluttered interface that makes it not only difficult for users to recognize the function of buttons but also hard to use it while doing other activities. The navigation system involves several redundant steps for users to accomplish their goal with the Songza, which is playing the music.

Our redesign objectives mainly considered playing screen interface and navigation system of the Songza. First, we aimed to simplify the interface of playing screen not only by decreasing the number of buttons and increasing the size of play buttons but also by constraining certain functions to decrease the number of errors that users could possibly make. Second, we intended to decrease unnecessary steps in interfaces and design the consistent navigation tab that exists throughout the whole interfaces so that users can carry out their tasks more efficiently with less error.

We designed two high-fidelity prototypes from many of our conceptual designs to address the problems described above in the current interface. Prototype A, which we named as 'Creative Design' utilized the innovative quarter-shaped playing buttons on the bottom-right of the playing screen and removed album art. Prototype B, which is named as 'Classic Design' followed the normal design of the playing screen used in most of the music players. Both prototypes were designed with consistent navigation system that exists throughout the every interface.

Both quantitative and qualitative evaluation was conducted with not only first time users but also those familiar with Songza- time and number of clicks were recorded and a questionnaire interview was conducted to discover the factors that negatively affected user experience. To avoid fallacy in our acquired data, we ensured that half of our users tested prototype A then B, and the rest performed tests on the two prototypes in reverse order.

The result of the evaluation revealed that both prototype A and B generally met the redesign objectives that we addressed in the beginning. The implemented navigation system for both prototype A and B was recognized as much more effective than the current Songza interface. Some participants, however, said that they did not like the quarter circular shape buttons and absence of album art in the playing screen. We realized that our participants preferred the interface that is already familiar with them. Therefore, the prototype B, which kept the standard characteristics of normal playing screen design but simpler in terms of interfaces and design compared with current Songza interface, better met the functional and non-functional(user experience) goals of our re-design.

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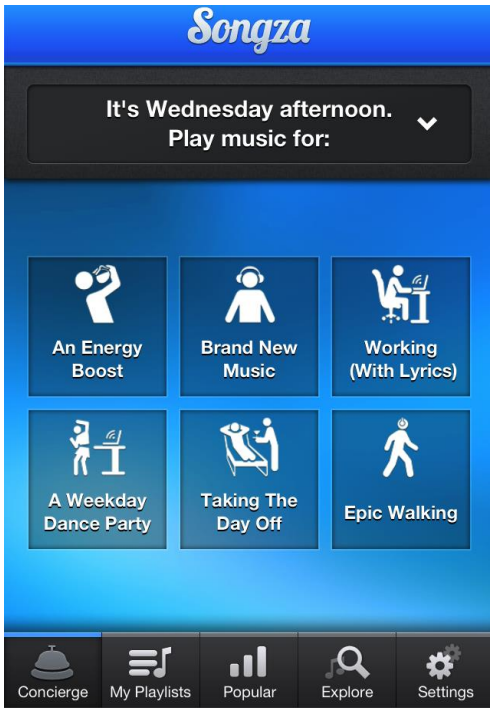
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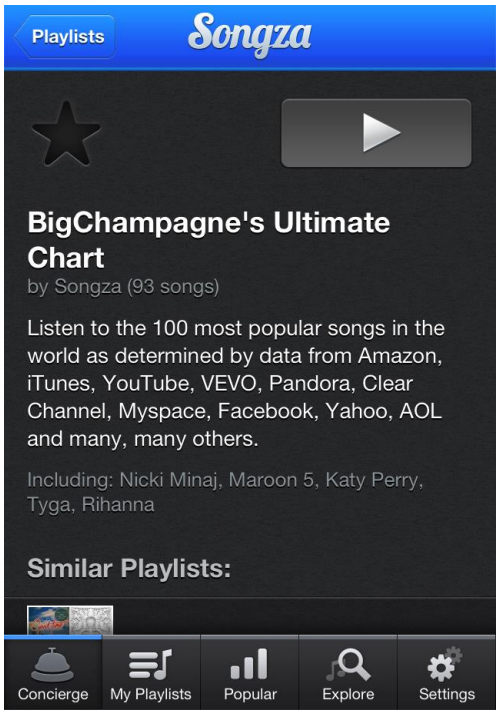
Chapter I: Identifying needs and establishing requirements

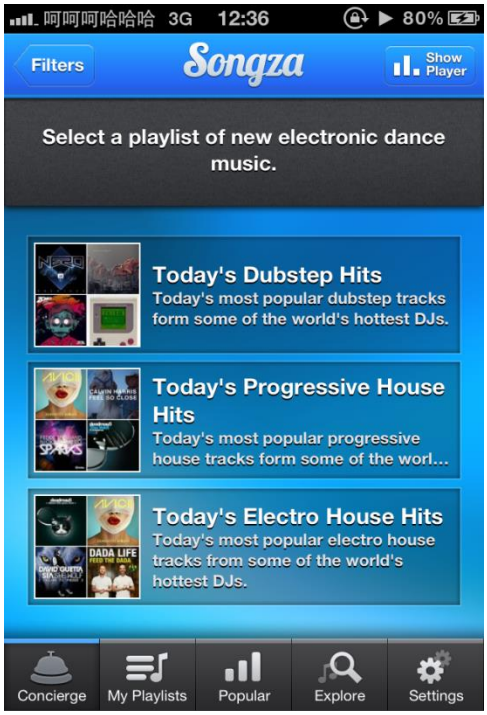
1. Introduction & Project Topic

The Songza interface is a mobile application that allows its users to listen to playlists based on their activity and the time of day.
After selecting their activity, users can select the genre of music they want to listen to, and then play a certain playlist within that genre. The application recommends playlists containing songs from the specific genre the user chose.
After selecting the playlist, users get a brief description of the playlist (which artists are included. Finally, the application will play songs from that playlist at random on a fairly basic interface.

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2. Motivation & Purpose

2.1. Problem Statement & User Goals

1 The user's goal is to control(e.g., change or replay) the songs as quickly and efficiently as possible, which can be measured by the number of error touches that users make.
2 Unnecessary redundancy (i.e. if user only uses application for certain genre or activity, there tends to be needless choices)makes the current Songza interface difficult for users to navigate through the interfaces during moments of activity. . This reduces the elegance(or simplicity),efficiency and utility of the interface. The goal is to increase the efficiency of user choices by providing

Word count: 96 of [50 – 100 words allowed]

2.2. Redesign Objectives

Based on the problems and user goals we outlined above, we have identified two objectives:

1. Modify certain heuristics (the visibility, mapping, and (lack of) constraints on buttons) that make it difficult for users to navigate the interface during moments of activity (i.e. while running on a track). After our changes, will measure and compare how long it takes for a user to change/replay/find their song while also taking into account the average number or errors (or 'miss click/presses' of buttons) that occur.
2. Increase user satisfaction and reduce redundancy of undesirable options by creating a user profile screen and adding some customizability. We will measure this by counting how it takes a user to begin listening to a playlist they prefer and also surveying their satisfaction with choices.

Word count: 130 of [75 – 150 words allowed]

3. Users

3.1 Description of User Base

a. **Users**: Active individuals who use the application while exercising.
Capabilities: Their capabilities are limited to one or two button presses
: Need a simple interface with easy usability (e.g. button size/mapping).
: Technical savvy (at least, the basics of iOS use)
Age/Gender: 15-45 (avg), M/F
Background: Exercise enthusiasts who use music to motivate them during workouts

b. **Users**: Music enthusiasts with certain genre preferences
Capabilities: full, extensive use of UI
Background: These users want access to their favorite music while not being bothered by other genres/choices.

Word count: 92 of [50 – 100 words allowed]



3.2 Persona

Name: Alison Fox
Gender: Female
Motto*: I'll stay strong, so I can live long*.
Hobbies: Working out, running, hiking, sports.
Experience goal: Quickly and effectively browse playlists and change/play songs without any (or minimal) interruption to her workout.
End goal: Have an intense, effective workout which is amplified by music.
Life goal: Maintain a healthy lifestyle and prolong her life span. Become a personal trainer and work in the industry she loves.
Motivation and Behavior: Alison needs a music playing application for her iPhone which she can use regularly during her workouts. Her fast-paced workout regimen requires an application that allows her to listen to her favorite music without interrupting her workouts. This includes

changing or replaying songs, as well as navigating playlists to find her favorite songs. She likes to stay moving, so she needs an app with minimal distractions that she can navigate on the run.
'I wish someone could make an app that didn't stop my workouts!'

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4. Context of Use, Scenario & Task

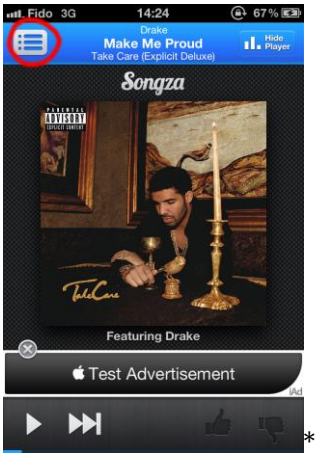
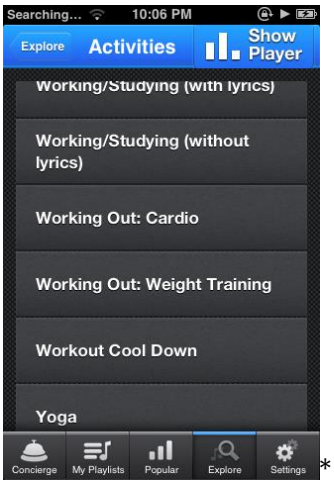
Context of use: Certain situational factors will greatly influence the use and usability of the interface. For this particular persona, Alison will mainly be interacting with the 'now playing' screen - her playlist selection will likely already have occurred. Environmental factors will hold the greatest influence on Alison's user experience; she will be moving while interacting with the interface and interacting for a minimal amount of time. She may be exercising outside, but we assume system factors such as connectivity will already be accounted for (she has 3G). Hence, motion will need to be accounted for in the interface design (this will influence mapping, visibility and constraints).

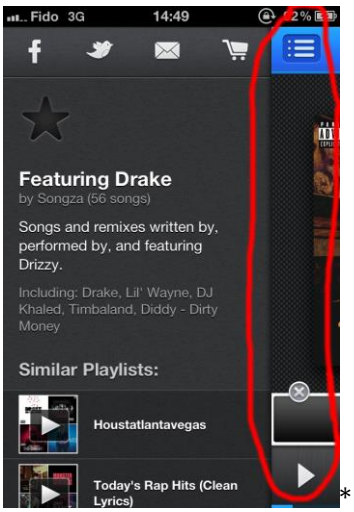
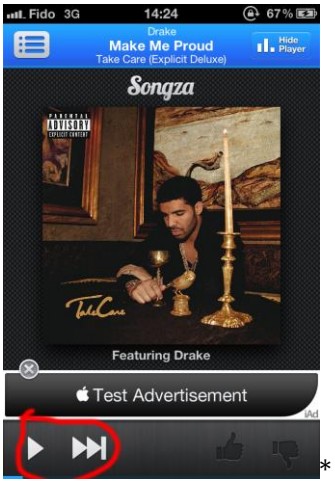
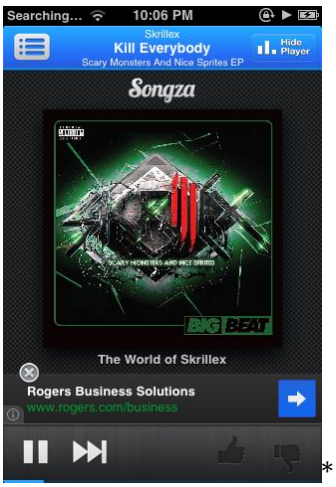
Scenario: Alison is about to begin running on the track. She has selected her favorite playlist, which contains a majority of her favorite workout music. In the middle of her run, a song (by random) comes on that is not helping her stay motivated (it's not intense enough). She pulls out her iPhone and attempts to change the song without losing her pace. The first thing she sees is the ugly album art that adds no value to her goals. When she attempts to click on the 'next' button, she struggles with pressing the small button and maintaining her pace concurrently. Eventually she gets frustrated, slows down, presses the button and then continues her run.

Main task: Alison's goal is to have an intense, seamless workout. As such, the primary tasks she needs to accomplish include: skipping unfavorable songs, replaying preferred songs, and navigating to her favorite songs on the playlist. All these tasks need to be able to be accomplished during movement.

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5 Heuristic Evaluation

Heuristics Violated	Location	Severity	Recommendation
Visibility: Users expect to see the playlist when they touch this button but it shows other similar playlists.		High	Consider changing the function of this button to show playlist when it is pressed.
Simplicity: This application provides too many kinds of activity options to users. Users can be overwhelmed by too many choices.		Medium	Consider providing simpler choices to users. Too specific functions are mostly useless to users, especially with music player application.

Simplicity: The user do not need to see even a part of music playing screen when they looking for other playlists or reading a description of the music being played.		Low	Consider hiding the player page completely and create a navigation bar on bottom so that users can switch different pages with a one touch.
Constraints: Users get disappointed when they cannot listen to the song they like again by pressing rewind button.		High	Consider creating rewind button on the left of the play button.
Consistency: Throughout the whole interfaces, the "Hide Player" button is the only button that is located on the top right side. It is confusing and awkward to users.		High	Consider deleting the button and creating navigation bar on the bottom so that it is possible to navigate through different pages with a click.

6. User Study

6.1 Goals of this user study and questions/hypotheses addressed

The hypotheses we based on are "If we eliminate the lists that user don't want would make it easier for users to look for their preferences" "If we eliminate the introduction page of a specific song, it would make the navigation system clear and simpler" etc.The hypotheses are the user might not be able to switch back to the main menu because of the flaw of navigation, they might not able to know what song is playing, they may never click into the categories they dislike etc.The goal of this user study is to identify the strengths and weaknesses of the interface, addressing the problems during activity period and further improve a better version of our interface for the users. We are asking our users many questions concerning the interface and the result will help us gain important information about the efficiency, usability and user satisfaction. We will ask questions like "Do you think the system is simple enough to be navigated?" "Do you think the functions are overall useful?" The user study is performed because it's going to give us a clear content of how users think about it, what are the good things and what need to be improved based on their using experiences. We'll let the user specify why and how they think it's good or bad. This user study was designed to test whether it's efficient, effective or learnable enough for using, whether it fills users' overall needs and whether it implements the users' goal.

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6.2 Methods

6.2.1 Participants

1 P1- female//21 years old/ Korean/Living in Burnaby
   a primary goal: P1 wants to use this application while studying and running on a treadmill. When she is studying in the library, she wishes to focus on studying while listening to music and when running on a treadmill, she listens to pump-up songs.
   b roles: engaged and active smartphone users
   c experience
      i very active and engaged smartphone users/ technical savvy
      ii play songza application at least 3 times per day
   d directly recruited
   e test lasted for 10 mins
   f compensated with a Starbucks coffee

1 P2- male//28 years old/ Persian/Living in Downtown Vancouver
   a. primary goal: P2 wants to use this application while working in his office and walking to his apartment. When he is working in his office, he wants to enjoy energetic music playing in the background and when walking to his apartment, he listens to soft and relaxing music to relieve the stress at work.
   b. roles: highly active smartphone user

c. experience
    i. highly active smartphone user
    ii. play songza application 4-5 times a day
d. directly recruited
e. test lasted for 15 mins
f. compensated with a coffee

3. P3- female/19 years old/university student/Chinese/Living in Richmond
    a. primary goal: P3 wants to enjoy the music while taking skytrain and walking to school. She wants to enjoy her preferred music with a fast and easy way in order to get a good mood and final promotes her university success.
    b. roles: engaged active smartphone user
    c. experience
        i. not very technical person but use smartphone application very often
        ii. play songza app during spare time when no computer access (2-3 times a day)
        iii. have been engaged with looking for free music apps for a long time
    d. directly recuited
    e. test lasted for 20 minutes (user testing on Songza for 10 minutes and interview for 10 minutes).
    f. compensated with a group of chocolate bars

4. P4- female/22 years old/co-op student/Chinese/Living in Burnaby
    a. primary goal: P4 wants to enjoy the music while working time. She wants to enjoy the music while organizing the documents in her office and spare time. Her goal is to get her job done successfully with a good mood in order to promotes further success.
    b. roles: engaged active smartphone user
    c. experience
        i. not very engaged with smartphone ap
        ii. play songza app during spare time and working time, usually 2-3 times a day
    d. directly recuited
    e. test lasted for 10 minutes
    f. compensated with a starbucks coffee

6.2.2 Materials and Procedure

The first research method we used was Contextual Inquiry. Because we wanted to observe the behaviours and tendencies of Songza use during moments of activity, it was important to see how users interacted with the interface and what they were doing in the actual context. We did this in various situations (at the gym, running on the track, and during more stationary activities such as studying). We found it difficult to keep track of behaviours during very active periods (such as

when a user was changing a song while running) and admit our information during these particular times is a little more limited than we had hoped.

We also used questionnaires to get a broader understanding and to understand their current thoughts on issues we had identified. It was important eliminate any bias we may have had when creating our hypotheses, so we asked users questions in an effort to eliminate any potential for that. Paper questionnaires were used, and we asked users that had been pre-screened to fit our general persona type seven questions related to our interface design objectives. The questions were more general in an effort to get a better understanding of the problem rather than specific. We were more focussed on seeing if we were on the right track than specifically testing our hypothesis.

Finally, we used user interviews on specific users we felt could relate to our design goals the best (they were identified to be the most similar to our persona). Here we asked them several, specific questions related to our hypotheses. We wanted to see if we were on the right track with our assumptions, and test whether or not our ideas for improvement would be well received. These interviews were less formal, and were more like a one-to-one discussion about the interface. We expressed to our interviewees that we valued their opinion and wanted to hear their thoughts on several subjects.

The questions we used to get the general idea:

1. Do you think the navigation system is clear and simple?

◯Yes ◯No

If no, can you specifically describe which part of the navigation isn't good and how you would want it to be improved?

2. How long it takes to find your preferred songs?

◯20 seconds ◯30 seconds ◯1 minute ◯More than 1 minute

3. In what level you would consider all the functions to be able to learned?

◯very easy ◯ fairly easy ◯a bit hard ◯very hard

4. If the functions are hard for you to learn how to use it, which is the most difficult part?

5. Are you able to get what you expect from the product?

◯Yes ◯No

If no, can you describe what is missing in specific?

6. What is your satisfaction level of this product?

◯very satisfied ◯ satisfied ◯It's ok ◯unsatisfied ◯very unsatisfied

7. Do you think this product is overall useful for you?

◯Yes ◯No

6.3 Results

One of the primary areas that our users seemed to have difficulty with was navigation. They commented on the redundancy of unnecessary buttons as well as undesired list of songs. Our users emphasized on the fact that they need to be able to search their own music preferences rather than being imposed by playlists that may or may not suit their taste of music. As a result of this ineffective navigation system, our users expressed their negative opinion on the inefficiency of our interface, highlighting their unpleasant experience during specific actions of choice such as exercising.
As a consequence of all the aforementioned responses acquired through our user study, users did not have an enjoyable and satisfying experience overall. They expressed more confusion and frustration which clearly indicated a lack of interest in the existing interface. Our users made a compelling argument by explaining how the usability of this interface (i.e. button placement) does not go according to various existing interfaces and that is mainly why the overall user experience was negative.

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6.4 Discussion and Conclusions – Implications for Your Project

When we gathered all of our results, we achieved a higher motivation and a firm confirmation that our choice of improving Songza is smart and benefits a large group of users. The overall experience of the interface tested by users was unpleasant and we can reasonably conclude that our well-defined plans will certainly improve the existing interface to a much better product at the end. We were pleased to discover that a great deal of our hypothesis proved to be correct and in accordance to our users' explanations. Our users were dissatisfied with the overall usability and navigation, and our conclusions are exactly directed towards upgrading those lacking areas. User study greatly enhanced our understanding of what changes the users want to see and our solution concerning the globalizing this smartphone application by transforming it into a social media type of interface would immensely strengthen the usability of Sonza. By creating profiles for our users, they will be able to communicate with other users and share specific music according to their preferences, and consequently enjoying the experience to a much higher degree than before.

Word count: 185 [150 – 250 words allowed]

7. Requirements Statement

Our main objective is to increase the usability of the interface through factors such as: error tolerance (especially during movement), sustainability (so users can complete their activities without interruption), and increase controllability (so users can input their preferences in to the application). We have identified and prioritized several functional and non-functional requirements below.

7.1 Functional Requirements

1st Requirement

a) Songs selection
b) In the main page, user starts by selecting the activity they are doing. They will be provided with several genres and after selecting one of the genres, they get the recommended playlists and can add to their own playlist.
c)
- Errors/misclicks (motor mistakes when exercising), specifically when exercising
- Time it takes to access features (i.e. change playlist or song when you're exercising
- Number of clicks it takes to get your to your preference (how many screens you have to get passed to finally start playing music

2st Requirement:

a) Songs management (song control)
b) After the user make their own playlist, they may modify it later. If they don't like it they may want to skip a song or add a new song or pause for emergency.
c)
- Errors/misclicks (motor mistakes when exercising), specifically when exercising
- Time it takes to access features (i.e. change playlist or song when you're exercising)
- Number of clicks it takes to get your to your preference screen(how many screens users have to experience to finally start playing music)
- Users subjective satisfaction
- Success rate (they can actually do what they want) during activity.

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7.2 Non-Functional Requirements

With our designing objectives in mind, we are certain that users will experience a drastically higher satisfaction than the existing interface. By reducing unnecessary buttons and designing a more accessible interface, we will fulfill individuals' requirements in relation to specific

actions such as exercising, because we understand the confusion that is created by a poorly designed interface when involved in intense-focused activities.

As dedicated designers, we strive to enhance the overall positivity of our users during specific actions, such as exercising. By developing simplicity and efficient mapping system, we allow users to exercise continually without any interruption in their positive experience. We eliminate users negative focus from frustrating technical issues they may encounter and consequently enhance and maintain users intensity during workout. As a result of this continuous and intense process, user will experience a radical uplift in their motivation in an effective and positive way.

We want users to learn how to use it as quickly as possible and also decrease the time they are looking for the specific task to do. For example, when a user is trying to share a song he likes to his friends on facebook, he clicks on the menu button, and he will certainly loses his focus by seeing lots of unrelated buttons. We want to make the look better so users would know what to focus on the screen and finish the tasks quicker.

Word count: 230 of [231 – 250 words allowed]

Chapter II. Design

1. Prioritization Worksheet

Score formula
= (Business importance + User Importance + Technical feasibility + Resource feasibility)

Rating rules	
Low	1
Medium	2
High	3

* Business importance(B), User importance(U), Technical feasibility(T), Resource feasibility(R)

	Item	Description	B	U	T	R	Total Score
1	Playing Interface	- The size and location of the play buttons should be designed so that user can access and press buttons easily without error. - The rest of the page in player interface should be designed so that user knows in which album the song they are listening is included and what is the next and previous song is. - The location and flow of album cover should be designed aesthetically pleasing.	3	3	3	2	**11**
2	Navigation	- Locate navigation bar bottom of every page so that user can switch between different pages easily. - The button icon should stand for this function well(affordance). - Overall navigation should be optimized for accomplishing user's task flows.	2	3	3	2	**10**
3	Profile page/customization	- Provide users options to customize Songza by setting their moods, schedules, favourite artists and genres in order to reflect user's personal preferences in the functioning of the Songza.	2	2	2	1	**7**

2. Design Inspirations, Prior Work & Comparison to Other Existing Interfaces

(1) Jango (Competitor & inspiration):



figure 2-1. Navigation bar

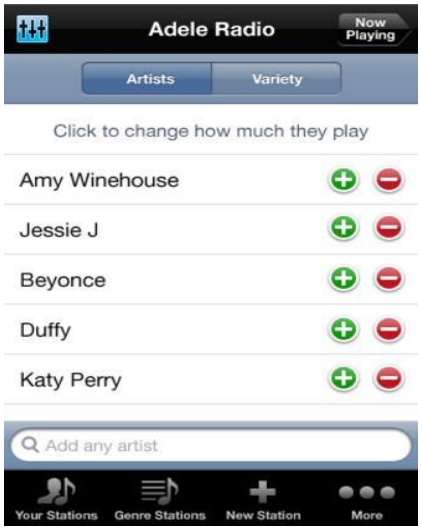


figure 2-2. User's station

Jango is the biggest competitor of Songza in the market. With Jango, user can search their favorite artists and save to their personal "Station", the page which first shows up when user opens Jango. Unlike Songza, Jango not only requires just one touch to play music but also it recommends the artists catered to the "Station" user set up.

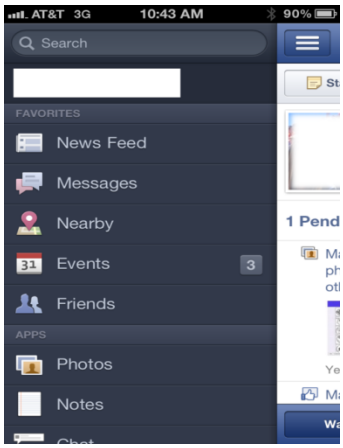
Another strong feature of Jango is the navigation bar on the bottom of the screen, which exists throughout the whole interfaces. Unlike Songza, Jango does not have back button in the playing screen because user just need to touch a button on the navigation bar to access any other page. Therefore, we can increase the user satisfaction by allowing them to search for artists they want to listen and decrease the number of steps(number of the button pressed) required to accomplish user's task in Songza interface by applying these two features.

https://itunes.apple.com/sg/app/jango-radio-mobile/id416867919?mt=8

http://www.appsrumors.com/apps/jango-radio-create-your-own-radio-station

(2) Facebook app (inspiration):

This slide out menu allows users to access menu at any pages. The good thing about it is that it doesn't take any spaces on the screen. When users need to use it, they could slide out the menu. For our redesign, it would be a big helps if we place it in the play screen. It helps reduce buttons on the screen and also users could search their favourite genre on the search bar or even access to their profile or favourite playlists quickly.



http://alldonegoodbye.tumblr.com/post/32485228684/slide-out-menu-as-made-famous-by-facebook-and

figure 2-1. Slide out menu

(3) Path (inspiration):

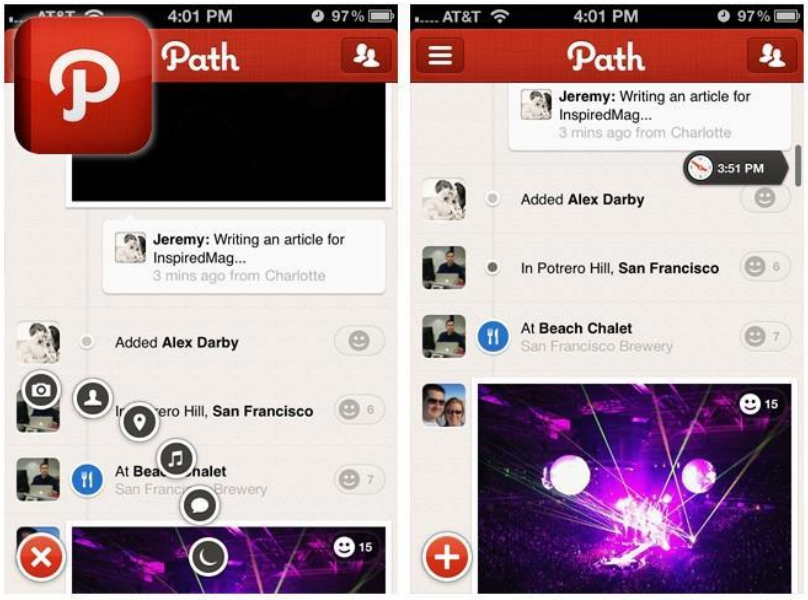


figure 2-3. Wheel interface

This wheel interface for update actions pops open when user taps the circle in the bottom left corner. It is very useful feature for two reasons: the buttons does not take up space unless user activates the circle and the location of the buttons are ergonomically designed.

Path is providing diverse options for users to update their status, and by using these buttons that pops open, they could still maintain the simplicity of the interface. Also, considering the range of motion of the thumb, a quarter circular placement of the buttons on the bottom left makes it easier for user to access with their thumb holding their phone with left hand.

Therefore, we can not only provide more functions to users utilizing the buttons that pops open but also make them control the play buttons while holding the phone with their one hand.

http://gigaom.com/apple/hands-on-with-path-2-0-what-facebook-should-be/path5/

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3. Conceptual Design A (Creative Design)

3.1 Overview and Description of Conceptual Design B

While our overall goals remain the same for B, our approach is drastically different. In this design, we aim to push the boundaries of conventional design; we are relying more on our creativity and intuition in a hope to create something new. While we understand that designing a brand new interface may be risky (i.e. conventions and learnability), design B will be our attempt at applying the knowledge in a creative way: we believe we can effectively use and apply the heuristic and usability principles we have learned into our design process.

In design B, we have created an ergonomically calibrated interface suited to a users hand (which can be changed to left or right). Button mapping and visibility is intertwined with hierarchy: the most important features extend from the bottom right and outwards. This design choice is centered around the range of motion of the primary interaction device users use (the thumb).. Navigation has been simplified with respect to how many 'clicks' it takes a user to accomplish their task. We have also implemented a NavBar that allows users to return to any screen in their navigation process. Finally, with the implementation of a profile screen/system, we will be reducing redundancy; users will be able to save their preferences so they do not have to click through the same process every time. Unused categories will disappear from their choice selection completely.

Word count: 232 of [100 – 250 words allowed]

3.2 Design Hypotheses

With our Conceptual B model, we have made a lot of assumptions in regards to what we consider good interface design. While these assumptions (and thus design decisions) are not without basis, they are still our guesses and we could very well guess wrong. It is our hypothesis, however, that our design decisions will improve usability, learnability, and overall user experience. Our hypotheses include:

1.We assume simplifying navigation is a positive characteristic; allowing users to accomplish their task faster is a good thing, and limiting the choices they have to make to get there is a good idea.

2. We assume our new, ergonomic Now Playing screen will increase user satisfaction and reduce errors. We also assume this interface will be intuitive and learnable. We are hypothesizing that mapping and visibility were the issues behind user errors. Also, it is an assumption that this 'ergonomic' solution does indeed maximize efficiency.

3. Finally, we are assuming users tend to listen to certain genre's and use the application for certain, specific activities, so a profile system that eliminates unused categories will be beneficial to them.
Word count: 184 of [75 – 200 words allowed]

3.3 Interaction Paradigm & Interface Metaphors

Our purpose is to eliminate unnecessary buttons and function to make it easy for users to manipulate and therefore the users achieves their end goals and life goals on this product. Our core value is to make the interface learnable, memorable, simple and affordable in order to ensure our core value of user-friendly interface. So our interface generates windows, menu and icons to realize paradigm. It contains lists of icons and text that represents different categories of music (i.e. sleeping music icon would be a simple human contour lying in the bed). We use round shape play/pause button and make it the same size as thumb as metaphor to comfort user needs. We don't want to give user a novel design of the interface since it may confuse user somehow. We follow the convention to use the classical interface and use easily understandable icons to represents data so it fits the metaphor.

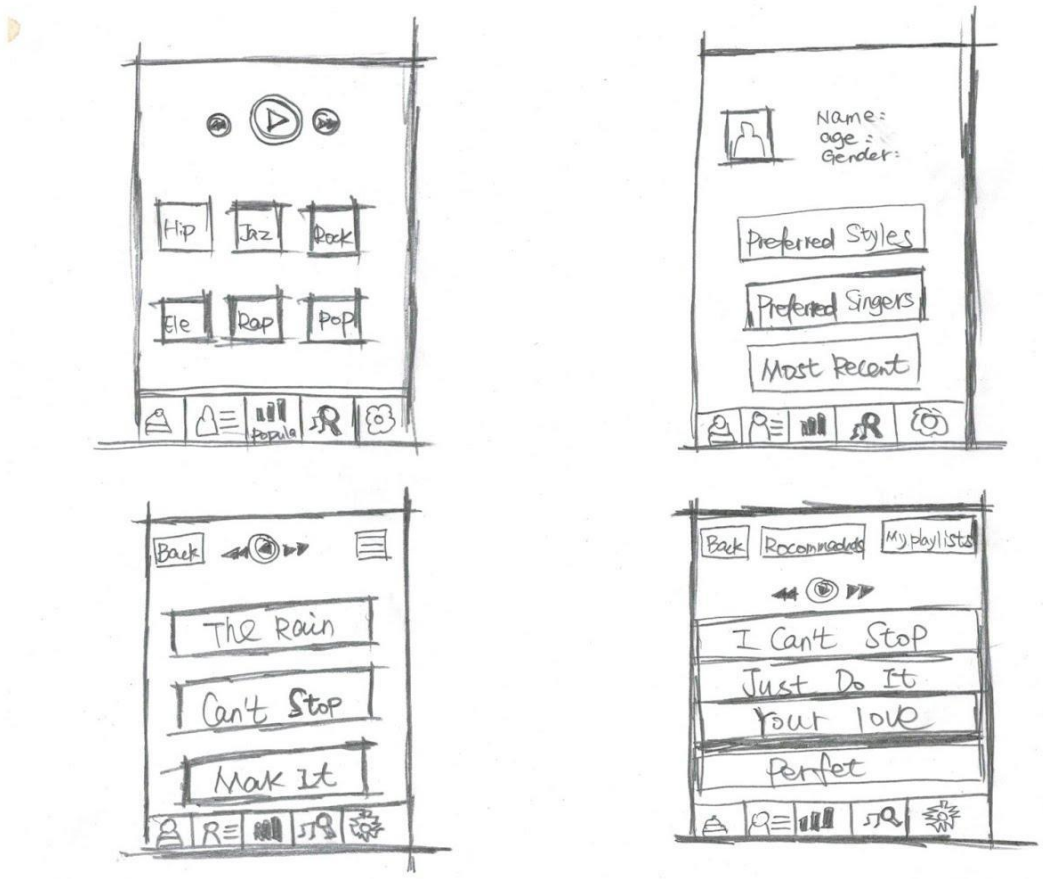


figure 4-1. Conceptual design B sketch

Word count: 153 of [100 – 250 words allowed]

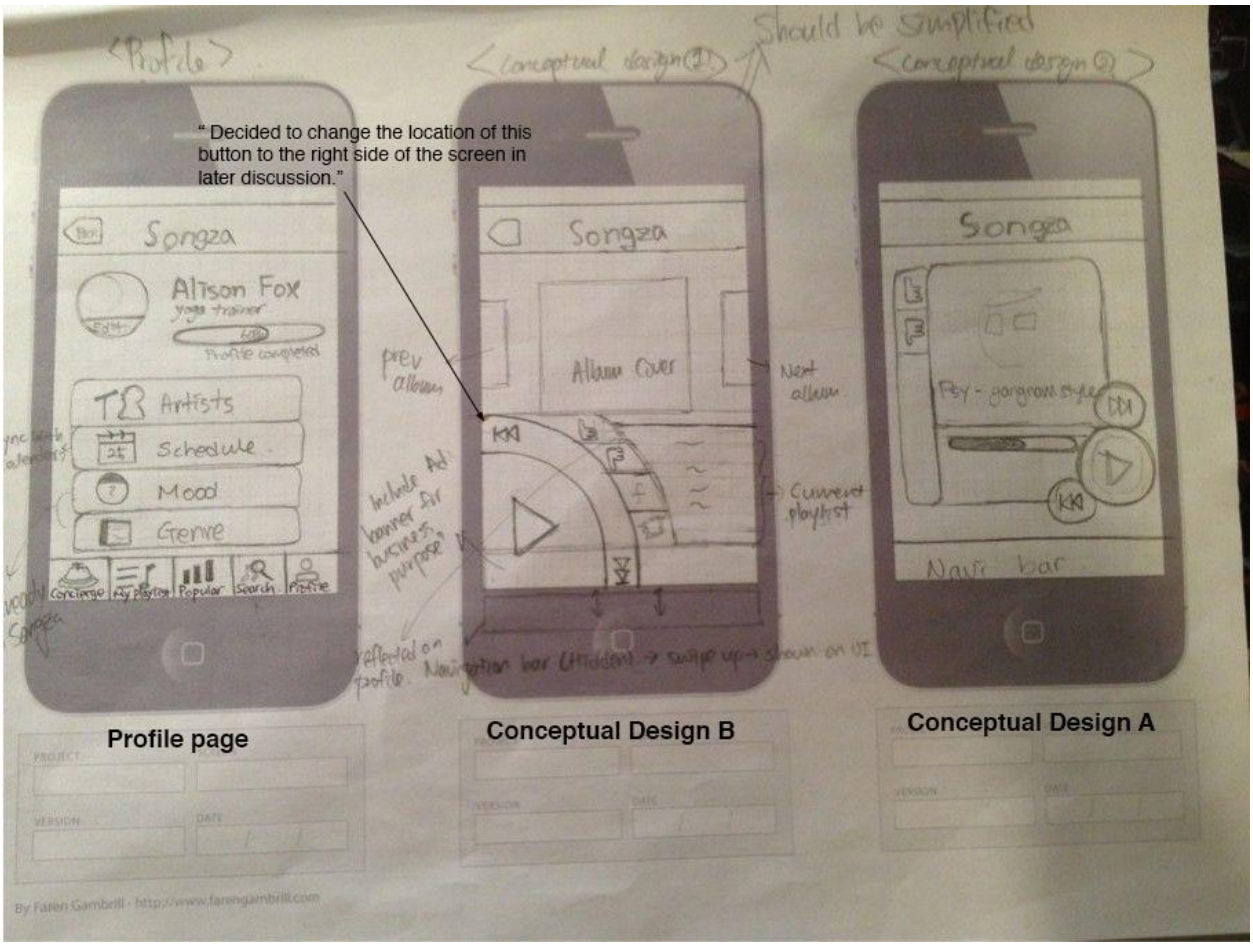


figure 3-1. Conceptual design sketches

4. Conceptual Design B (The Classic Design)

4.1 Overview and Description of Conceptual Design A

In the current Songza interface, play/forward/backward buttons are located at the bottom-left of the now playing screen. We changed this design and located our playing buttons at the bottom-right slightly towards the upper direction for the purpose of making user's thumb reach easier and more convenient. Unlike the current Songza interface, we added a music player bar in order to enable users to observe how many seconds are passed/left of the song. Also, this feature enables users to drag the music-playing bar to the specific minute of a song if they need to. Also, we simplified the navigation bar by placing it at the bottom of screen where users are able to open the navigating options by a simple touch with a slight chance of error. We aim to drastically increase user attraction towards our improved design of Songza. Thus, we believe that creating a simple and aesthetically pleasing playing screen and adding a social media image to our interface would effectively guide us to our ultimate goal of improving user satisfaction. To enhance the social media image, we enable users to 'like' or 'dislike' songs in order to suggest the right kinds of music to our users based on their preferences. The buttons are easy to reach thus making the 'now playing' screen easy to use and suitable for various activities such as exercising.

Word count: 226 of [100 – 250 words allowed]

4.2 Design Hypotheses

If we design a simple 'now playing' screen, users will be able to select songs more effectively and efficiently. We create this simplicity by making clear circular shapes for the play/forward backward buttons, by placing the navigation button clearly at the bottom of screen, as well maintaining an aesthetically pleasing interface. The design considerations that we applied, such as placing buttons on bottom-left for easier thumb reach, will certainly enhance user satisfaction to a great extent while maintaining simplicity. Unlike the existing interface, a simple 'now playing' screen along with a user profile will establish a friendly relationship between users and the interface in order to keep users utilizing the interface more frequently as a stress relief product and a social media platform in their daily routine. If we design this simple 'now playing' screen, it will drastically increase user satisfaction suitable for all kinds of activities, as well providing a platform for users to connect with their 'music buddies'.
Word count: 160 of [75 – 200 words allowed]

4.3 Interaction Paradigm & Interface Metaphors

Our classic design contains several visual, procedural, and functional features that exploit previously obtained knowledge from other domains. The entire design is based on a 'classic' aesthetic that aims to visually imply how to interact with the interface instantly. Buttons are designed similar to those seen on iPods and DVD players. Album art is mapped strategically (between song title and playing buttons) and mimics an interactive picture gallery often seen on websites on file folders on computers. This feature is also designed to functionally exploit the 'swipe' feature smart phone users are accustomed to using. Other mapping (such as the back button, the navigation bar on the top, and the category listing on the bottom) is also strategically placed in locations that users have come to expect. Our goal with the 'classic' design was to create an interface where users could rely on previous knowledge to interact fluidly.

Word count: 148 of [100 – 250 words allowed]

5. Comparison of Conceptual Designs A & B

	Conceptual Design A	Conceptual Design B
Goals	This design is to enable user to click the play button and switch songs holding their phone with one hand. In addition, the quarter circular shape of the button on the playing screen is aiming to give user uniqueness of our interface.	This design is to enable user to click the play button easily irrelevant with the size of the hand/thumb and slide album arts on the touchscreen to change the playlist. Also, this design allows users can navigate through different pages with a touch on the navigation bar on the bottom of the screen.
Problems	- The quarter circular shape of the button on the bottom right made it harder for left-handed user to touch button. - The play button on the bottom edge of the screen made user to squeeze their thumb to reach. - There is no space for album art in the playing screen.	- Placement of big circular play button on the bottom and the album art in the middle of the playing screen has created the empty space in between. - The user flow is not simplified; users still need to go through 4 - 5 different pages to play music.
Requirements	Clear spatial separation between play button and previous and forward button is required to prevent users from touching incorrect button.	From left to right, the buttons on the navigation bar should be placed through the hierarchy of each function.

Word count: 214 of [150 – 300 words allowed]

6. Reflection: Designing for Humans

1.Pop-out

Pop out refers to the way objects are perceived in relation to each other. An object will pop out when it has distinct feature in comparison to the features of the objects nearby. This will grab the user's attention by guiding their eye movement. In our playing screen, we re-designed a play button to have a circular (conceptual design B) and a quarter circular shape (conceptual design A). As a main button in the playing screen, it is coded by shape since all other buttons are rectangular shape. Therefore, by making shape contrast, the play button is pop out. Since pop-out channels also coincide with colour and gestalt principles outlined in Ware's writings, we also used these concepts when considering how to effectively make our design choices Pop out. Buttons use the pop-out property of spatial grouping so they can quickly be found.

2.Color Vision (color contrast & what stands out)

We incorporated colour-opponent theory (cone receptors are linked together to form 3 opposing colour pairs: blue/yellow, red/green, black/white) and accounted for cone types/sensitivities (short, medium, and long wavelength cones) in our designs; we tried to combine colors in order to make retina feel more comfortable and eyes to perceive the information easily. For example, in prototype B, the background color brings the depth for eyes to move around the screen and as a co to navigation bar (black background) makes it stand out. The button icons also contrast with the background of the button so that they can easily be perceived. We used grey scale in Conceptual Design B because it is neutral (and a safe choice) - the last thing we wanted was a bad colour pairing that would make it difficult or confusing for users to quickly make visual queries on the now playing screen . Moreover, we tried to limit the overall number of colours on the screen so the users eyes always had enough visual channels available to differentiate colours and make effective visual searches.

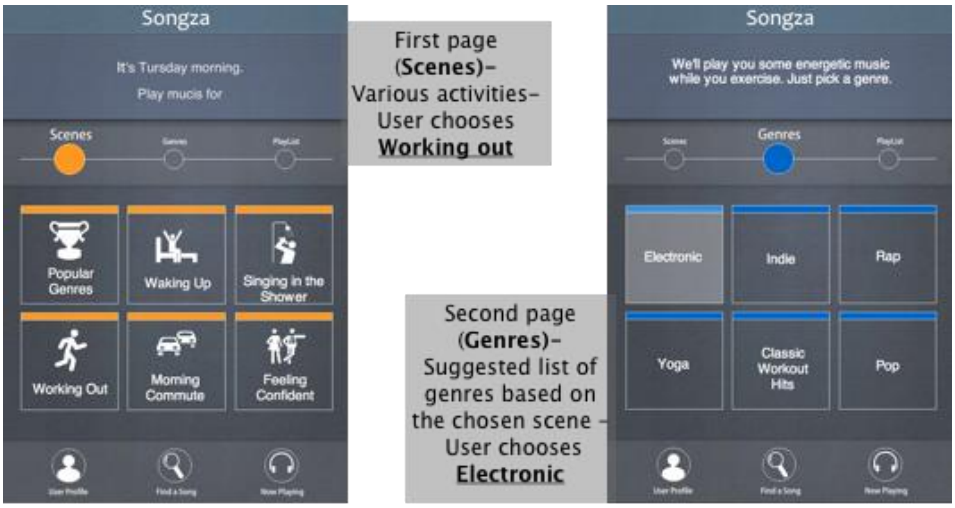
3. Gestalt Principles

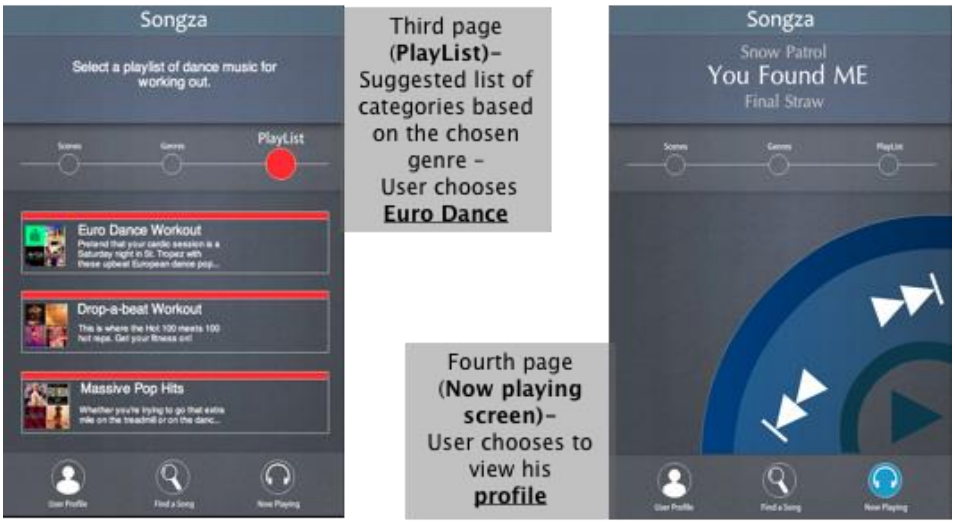
Similarity and proximity of Gestalt principles are incorporated into our prototype. The principle of similarity suggests that when objects look similar to one another, people perceive them as a pattern. The principle of proximity suggests that when elements are placed close together they tend to be perceived as a group. In our interface re-design, there are menu bar on the top and navigation bar on the bottom, which consist of similarly designed icons. Therefore, users will perceive them as a group of buttons that are different from other parts of the screen and since menu buttons and navigation buttons are placed close each other in each bar, user will not be confused with any other buttons on the screen. We also used the Figure-Ground principle to ensure users could perceive buttons as a Figure immediately so that they could quickly accomplish their task (change the song, play, etc).

Chapter III: Prototyping

1. Illustration of Task Pursued with Your Two Prototypes

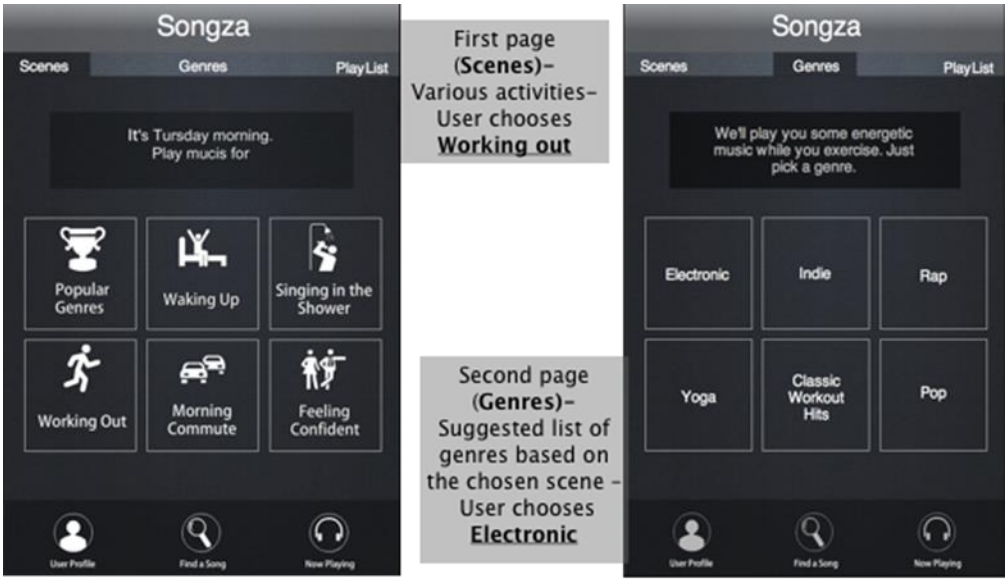
1.1 Illustration of Task Pursed with Prototype A







1.2 Illustration of Task Pursed with Prototype B



First page (**Scenes**)– Various activities– User chooses **Working out**

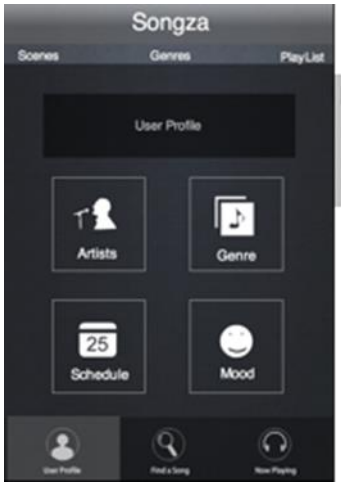
Second page (**Genres**)– Suggested list of genres based on the chosen scene – User chooses **Electronic**



Third page (**PlayList**)– Suggested list of categories based on the chosen genre – User chooses **Euro Dance**



Fourth page (**Now playing screen**)– User chooses to view his **profile**



Fifth page page **User profile screen** appears.

2. Reflection: Insights & Lessons Learned from Prototyping

2.1 Insights from Prototype User Testing, Feedback & Discussion

Much of our user testing was informal - we tried to promote an environment where users felt like their ideas and input mattered. This sort of approach helped us understand that although we did try empathize with our personas closely, our perspective was biased; we knew how everything worked and where everything was so the feedback we got from user testers wasn't always what we expected. While personas helped initially, nothing could have substituted real user interaction. Moreover, the informal, open approach we took gave us a 'fresh' perspective and gave us design considerations we would not have previously thought of. Through user testing, we were able test and critically analyze our changes. We were able to make unbiased comparisons to the old interface through users who were not as intimate with the application as we were.

Word count: 137 of [75 – 150 words allowed]

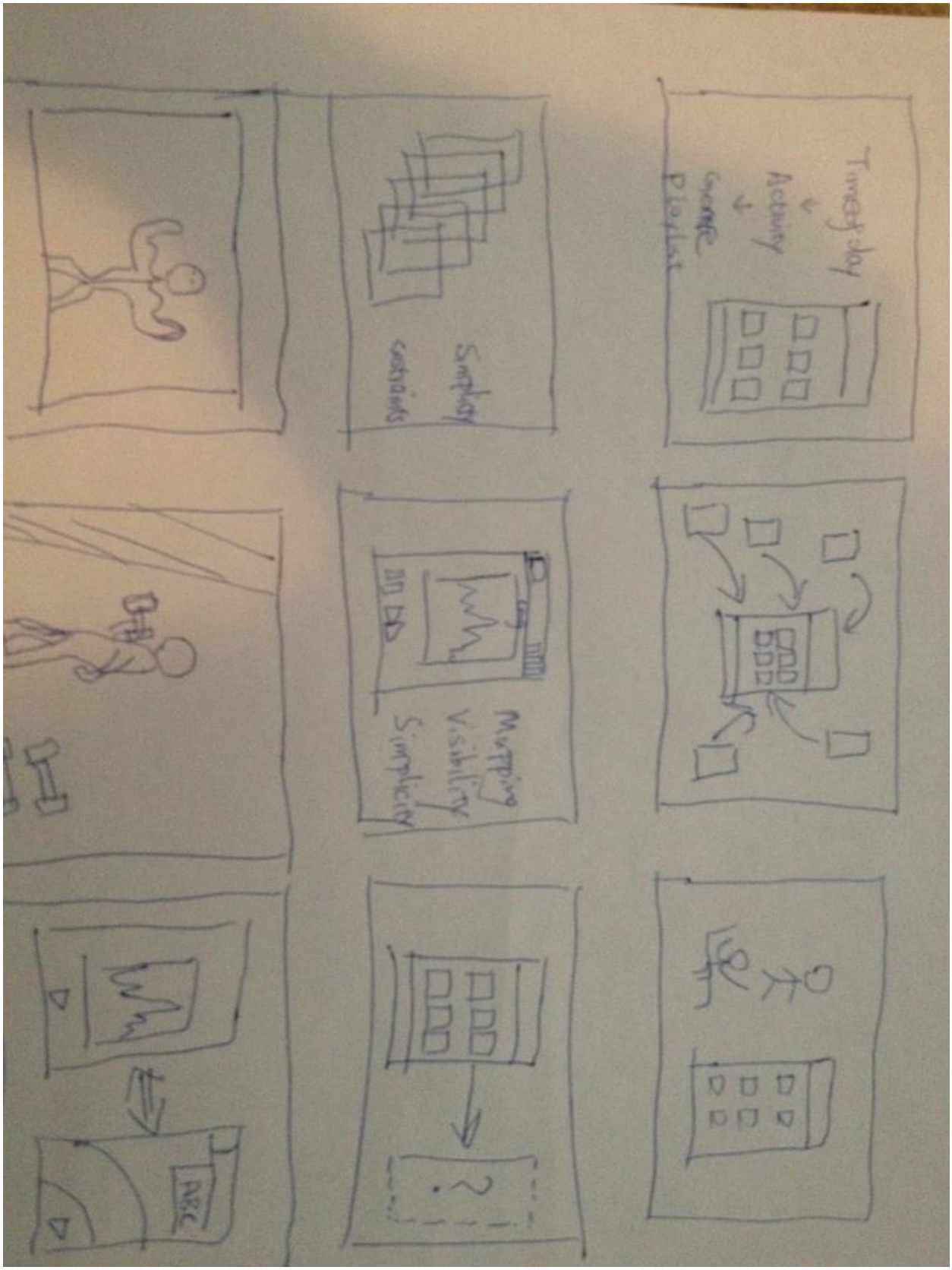
2.2 Insights from Prototyping

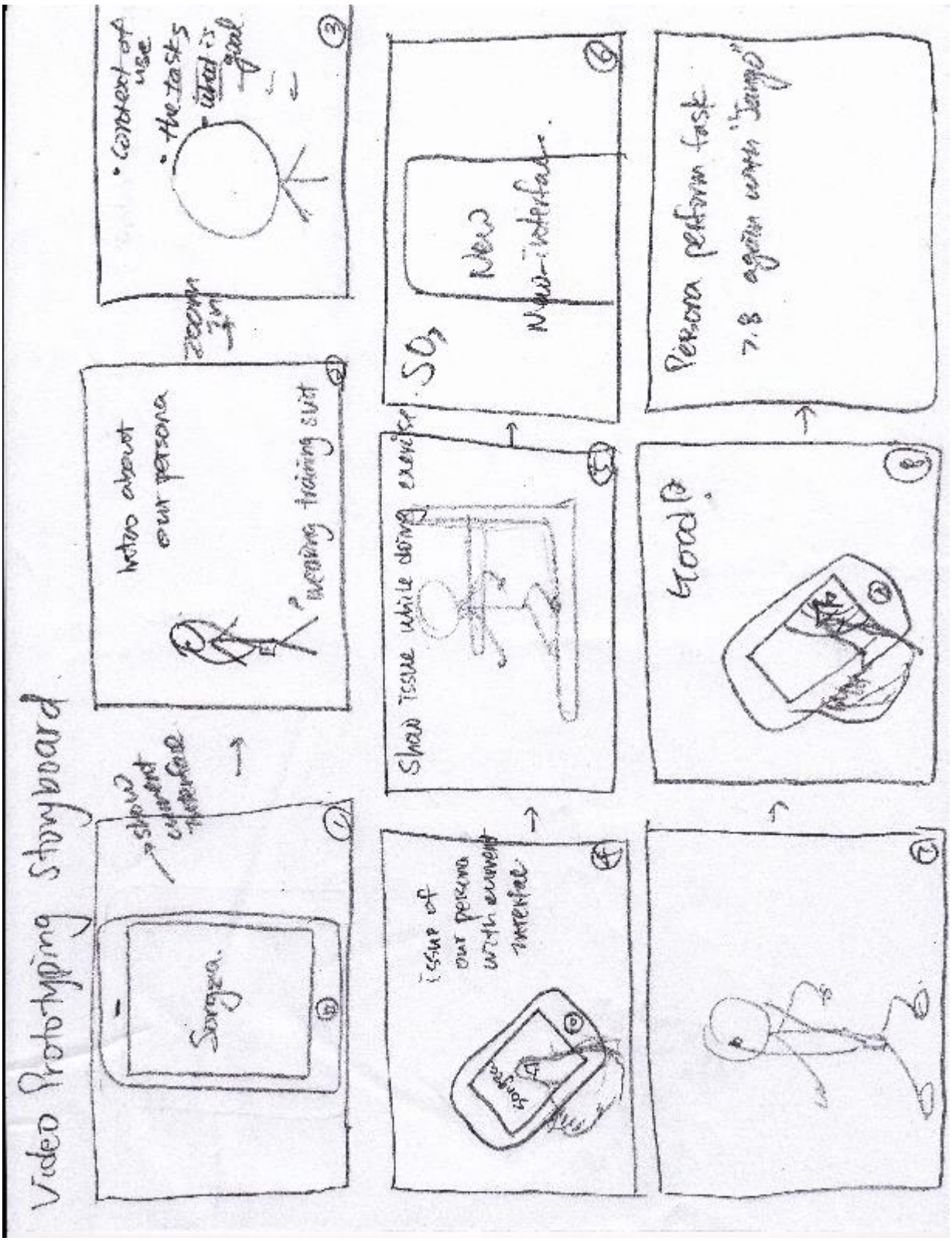
While heuristic analysis and creating personas helped us identify general issues with the Songza application, the real, deep discovery did not come until we began prototyping.
Paper prototyping helped us understand the interface intimately; we gained insight on the space and how we could effectively manipulate it. Designing for a mobile interface presented challenges that we had not previously considered deep enough (such as determining an effective relation between button size and hierarchy) until we constrained ourselves to the space we had to work with. Designing a digital prototype gave us better insights on navigation; you cannot understand navigation and the possible issues surrounding it on a deep level in a superficial system like paper prototyping. While paper prototyping did help somewhat with this, it was not until we saw the system in action that we could analyze it critically.

-

Word count: 140 of [75 – 150 words allowed]

3. Storyboard for Project Video




Video Prototyping Storyboard
Sangya
Intro about our persona
wearing training suit
zoom in
• Context of use
• the tasks
• their goal
Show tissue while doing exercise
SO2
Neuro-interface
Load
Persona perform task
7, 8 again wears "Lenses"

4.Prototype Video

Link:

http://www.youtube.com/watch?v=Ta33O9L5go4&feature=youtu.be

Chapter IV: Evaluation

1. Goals of this Evaluation Study

The goals of this evaluation study is not only to analyze the level of success of re-designed interfaces with the statements and hypotheses established in ID1-3 reports but also to discover what parts of our current two prototypes might be difficult and ineffective to users.

From our initial studies, we figured out that music playing interface, method of navigation and lack of customization lowered the usability of the Songza and interrupted pleasurable user experiences. Therefore, based on our design hypotheses, we are going to observe and evaluate user behaviours with our new prototypes by providing them real tasks and exposing them in real situations, in order to see the trends in users' behaviours and how well the real users support our design decisions.

Word count: 123 of [50 – 150 words allowed]

1.1 Questions and Hypothesis Addressed by the Evaluation

Question 1: Which prototype made users to navigate through interfaces faster?

- Hypothesis: If we put menu bar on the bottom and navigation bar on the top of the screen, user will be able to navigate through the pages more efficiently.
    a Can users navigate through every interface with a touch on the menu bar?
    b Can users play music as soon as they open the application?
    c Does it take less time for users to change playlist while they are listening to music? how about changing genre? how about changing their task setting?
    d Can users access to the search page from the playing interface with a touch?
    e Can users access to their profile page from any interface?

Question 2: Which playing screen is more effective and enjoyable for users?

- Hypothesis: If we make the play buttons bigger, users will feel comfortable to touch play buttons.
    a Do users accidently touch the wrong button? (e.g., touching forward button when they wanted to stop the music.)
    b Do users enjoy swiping the album arts?
    c Do users like the empty space on the playing screen?
        ■ Do users want larger size album art?
        ■ Do users rather want the size of the button bigger?
- Hypothesis: User will recognize the ergonomically designed playing screen as simpler and spacious design yet support all the functions they need.

a What is the first impression with the playing screen?
b While running, can users stop, play and change music with their thumb, holding the phone with one hand? How much error happened?
c The degree to which users squeeze their thumb to touch the button decreased?
d Are users satisfied with not having the album art in the playing screen?
e Can users see the title and artists of the song while touching the button? (Does thumb block the users' sight?)

Word count: 168 of [100 – 300 words allowed]

2 Design Evaluation Methods

2.1 Participants

Majority of participants recruited were in their 20's attending post secondary education. We believed these participants were perfect candidates for our evaluation because they are not only very familiar with the smartphone applications but also recognized as the age group that listen to music using smartphone most frequently.
We recruited both experienced and inexperienced/first-time users of Songza as our participants. Experienced user was defined as the one who use Songza application on a regular basis and inexperienced user was defined as the one who have downloaded the Songza and played with it before but never used it more than 5 times.
The evaluation with each prototype took about two minutes; the following questionnaire took about four minutes. In total the evaluation lasted about 10 minutes including the greetings, introduction about our interface, our re-design and explanations about the tasks. Since the participants were friends of the designers, they did not receive any compensation besides gratitude.

Participant 1:

Age: 24

- Gender: Male
- Occupation: student/co-op student
- Study area: Engineering
- Job title: Engineer
- Daily activity: playing video games and listening to music with cellphone application
- Background: never used Songza before. Enjoys challenging. Especially interested in technology related exploration and challenge.

Participant 2:

- Age: 22
- Gender: Female

- Occupation: student
- Study area: Media Arts
- Daily activity: listening to music with cellphone application
- Background: using Songza once a week. Enjoy trying new things if it interesting. Doesn't really into technological stuff because she thinks it requires a lot time to learn and memorize. Described herself as 'lazy' person.

Participant 3:

- Age: 22
- Gender: Female
- Occupation: student
- Study area: Interactive design
- Daily activity: reading books and listening to music
- Background: have an interest in technology but tend to give up early when challenge happens.

Participant 4:

- Age: 23
- Gender: Male
- Occupation: student
- Study area: Design
- Daily activity: Playing video games, working out and listening to music
- Background: using Songza frequently. Addicted in working out at gym. As a design student, he is good at picking up design-related features.

Participant 5:

- Age: 18
- Gender: Male
- Occupation: Student
- Study area: Planning on majoring in electrical engineering
- Daily activity: Listening to motivational music (especially rap) while working out and doing school work
- Background: As a student who is very determined in achieving academic success, he describes music as an influential factor in helping him power through tough times when his motivation reduces. Working out is a way of releasing anxiety and stress for him. As an experienced user of Songza, he showed greatest interest in trying out our re-designed interface expecting to see better interface that he can actually use in the future during studying or exercising.

Participant 6:

- Age: 20
- Gender: Male
- Occupation: Student
- Study area: Business and IAT
- Hobbies: Videogame, Working out, listening to music
  Background: he never use Songza before, he is a fitness fanatic who spends a lot of time on working out . He also likes to explore various apps with his phone and has some graphic design experiences.

2.2 Materials

We started evaluation by performing two sets of one-on-one usability tests. Having two high-fidelity prototypes, we needed to test and compare two competitive solutions and usability test allowed us to see user completing the tasks with our prototypes. During the usability testing, participants performed a talk aloud procedure without any prompt or help from observers. Though the environment of the evaluation was not as natural as the real situation, by having participants expressing their thoughts on our interface, we could acquire information regarding their impressions about our interface designs and mental processes while choosing options, which are experienced fairly similarly with the real users(qualitative data).
While users are conducting the specific tasks that observers provided them in an instruction sheet, observers not only recorded a number of steps, pages, buttons and touches on the screen but also the point where participants struggle to complete the tasks and time taken to complete the tasks(quantitative data).

Followed by the usability test, a series of surveys were done with participants to gather additional qualitative data about our prototypes. Our questionnaires were composed of both closed(multiple choice) and open-end answers. By asking standard set of questions, we could collect not only the individual preferences regarding functions(i.e., navigation) and design(i.e., playing screen) of 11 participants but also the result of the hypotheses assessments.

2.2.1 Instructions and Task Description

Thank you for participating in our IAT 201 evaluation. We will be asking you to perform two scenarios for our two re-designed prototypes. We want you to think aloud while you are doing the tasks. Please feel free to say so. This is completely anonymous evaluation and none of your thoughts are interpreted or assessed.
The first task would be playing the songs that you want to listen. The second task would be to change the playlist while you are listening to the music. Questions will be asked after completion of both tasks. Your feedback is greatly appreciated.

Task 1- Play the music
Scenario: Imagine you are about to run on the treadmill. Your goal is to have an intense and effective workout session so, you open up Songza on your smartphone to play music that can assist your exercise.

Task 2 - Change the playlist
Scenario: In the middle of workout, you suddenly wanted to change playlist. You can change genre, playlist or find the song. How would you change the music?

Can you fill out the survey? It is going to take about 10 minutes.
(Participants fill out the survey)
Thank you!

2.2.2 Observation table

Here is the example observational table we used:

Observation table for prototype A & B	User 1	User 2	User 3	User 4	User 5	User 6
# of touch in total on user profile	A:0 B:1	A:1 B:2	A:1 B:2	A:0 B:1	A: 0 B: 1	A: 0 B: 0
# of touch in total on search function	A:0 B:0	A:0 B:0	A:0 B:0	A:0 B:0	A: 1 B: 1	A:0 B:0
# of touch in total to change playlist	A:4 B:5	A:4 B:6	A:4 B:5	A:3 B:5	A: 3 B: 6	A:3 B:3
Errors(touch or any action that do not bring the user closer to complete the tasks. Include number and describe the error)	A:2 B:1	A:3 B:1	A:1 B:2	A:3 B:1	A: 4 B: 1	A:1 B:1
#of touch in total on the navigation bar until playing music	A:3 B:8	A:3 B:6	A:3 B:7	A:3 B:7	A: 5 B: 7	A:3 B:3
#of touch in total on the menu bar until playing music	A:5 B:8	A:5 B:6	A:5 B:7	A:5 B:7	A: 5 B: 8	A: 6 B: 8
Total # of touch to play music	A:9 B:8	A:9 B:4	A:8 B:6	A:9 B:7	A: 14 B: 15	A: 9 B: 8
Time to complete the tasks(min)	A:2 B:1	A:3 B:2	A:3 B:2	A:4 B:1.5	A:1 B:0.5	A:3 B:2

2.2.3 Questionnaire

https://websurvey.sfu.ca/cgi-bin/WebObjects/WebSurvey.woa/wa/survey?126348484

Songza User Testing Questionnaire

Page 1 of 6

Participant number: _____

About this questionnaire

The purpose of this questionnaire is to help us gain an understanding of the people who will use Songza, and to get any additional feedback or comments about Songza.We will use this information to try to ensure that Songza meets the needs of the people who will be using it.All the information you provide is confidential. Your name is not stored with this questionnaire, and the information you provide will not be used for any other purpose.

1. Please indicate the extent to which you agree or disagree with the following statement :

	Strongly agree	Agree	Neutral Disagree	Strongly disagree	Don't know
Songza is easy to be used	☐	☐	☐	☐	☐
Songza is aesthetic pleasing	☐	☐	☐	☐	☐
The design successfully support all the functions	☐	☐	☐	☐	☐
I can easily manipulate Songza without reading instructions	☐	☐	☐	☐	☐
I can always get what I want without confusion	☐	☐	☐	☐	☐
I always know where I am and where should I go	☐	☐	☐	☐	☐

Please continue to next page…

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Songza User Testing Questionnaire

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	Strongly agree	Agree	Neutral Disagree	Strongly disagree	Don't know
The navigating steps are easy to be memorized	☐	☐	☐	☐	☐
The big size of the button is convenient for me to click	☐	☐	☐	☐	☐
I'm able to change songs/genres with my thumb when holding my phone using one hand	☐	☐	☐	☐	☐

2. **Do you think the navigation system can easily guide you to the songs you want?**

☐ Yes ☐ No

- **If no, can you specify what bother you the most?**

_____

3. **Do you think all the functions are necessary?**

☐ Yes ☐ No

- **If no, what functions would you want to cut off?**

_____

Please continue to next page…

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Songza User Testing Questionnaire

Page 3 of 6

4. **Do you feel switching from different functions on the top of the screen just by one click is easier rather than going back to other menu through steps one by one?**

☐ Yes ☐ No

5. **Do you enjoy switching different album art by sliding?**

☐ Yes ☐ No

6. **Do you think the button is big enough to be clicked?**

☐ Yes ☐ No

7. **Do you always press a wrong button when you actually want to press another one adjacent?**

☐ Yes ☐ No

8. **Are you able to recall the correct steps of navigating when going through the same step again?**

☐ Yes ☐ No

- **If no, which part/function is the hardest to go through?**

_____

9. **Do you feel overall satisfied with this new design?**

☐ Yes ☐ No

- **If no, can you specify what would you want to be improved?**

_____

Please continue to next page…

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Songza User Testing Questionnaire

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10. **Do you think the new interface is better compare to the original Songza?**

☐ Yes ☐ No

11. **If there were things you would change, what would they be?**

_____

_____

12. **Do you have any other comments or suggestions?**

_____

_____

13. **Would you use this application more and recommend to your friend in the future?**

☐ Yes ☐ No

Please continue to next page…

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Songza User Testing Questionnaire

About you

1. **Age (select one):**

☐ Under 18 ☐ 18-25 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐ Over 55

2. What's your occupation?

☐ Student ☐ Employed ☐ Self-employed ☐ Unemployed

3. If you are student, what's your study area?

_____

4. **If you are working, what's your job title?**

_____

5. **How long have you studying/working in this area?**

☐ Less than 1 month ☐ 1 month to 6 months ☐ 6 months to 2 years

☐ 2 years to 10 years ☐ More than 10 years

6. **Please indicate your highest educational level**

☐ Primary ☐ High School ☐ University

☐ Apprenticeship or trade qualification

7. **Which of the following describes you the most:**

☐ I'm a fashionable person always would like to try novel things
☐ I don't want to learn new things and would like to stick with classical, easy interaction
☐ I can try new things as long as it doesn't take much time to learn
☐ I'd like to try new things if it's interesting to me no matter how challenge it is
☐ Neither above

Please continue to next page…

Songza User Testing Questionnaire

8. How often do you use the smartphone music playing application?

☐ I use everyday ☐ At least five times each week

☐ About once each week ☐ About once each month

☐ Less often than monthly ☐ Never

9. Have you ever used any of the following application?

☐ Jango ☐ Facebook app

☐ Path ☐ Neither above

10. How often do you use Songza?

☐ I use it everyday ☐ At least five times each week

☐ About once each week ☐ About once each month

☐ Less often than monthly ☐ Never

Thank you for your participation!

2.3 Experimental Design Procedure

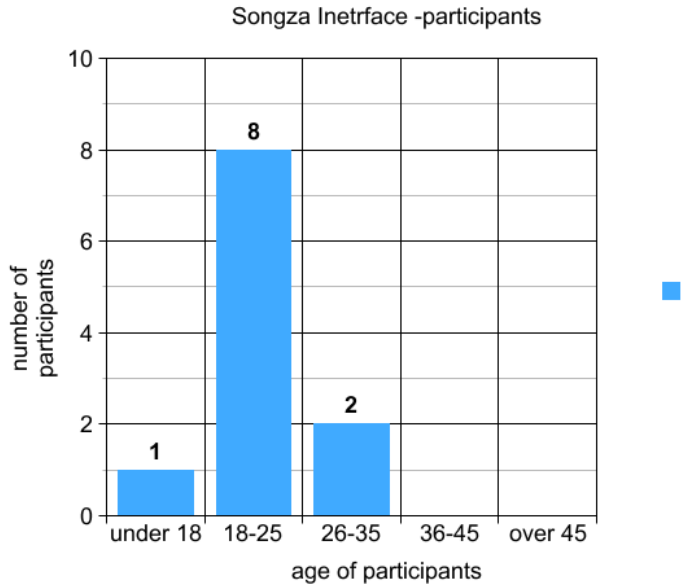
Evaluation Procedure Overview		
Introduction, informed consent form, instructions, task explanation, etc.		
	User Group A (6 participants)	**User Group B** (6 participants)
Test Session 1	**Test Prototype A**	**Test Prototype B**
Set scenario	"Suppose you regularly go to gym and now you are about to start running the treadmill" "I want you to talk what you think while doing this"	"Suppose you regularly go to gym and now you are about to start running the treadmill" "I want you to talk what you think while doing this"
Task 1	"Select a playlist you like that fits your current situation"	"Select a playlist you like that fits your current situation"
1st Observation	All participants were able to finish this task quickly enough without making mistakes such as touch the wrong button	All participants were able to finish this task quickly enough without making mistakes such as touch the wrong button
Task 2	"Change the playlist you are listening to any other playlist from different genre"	"Change the playlist you are listening to any other playlist from different genre"
2nd Observation	Most participants changed playlist using navigation system but most of them touched wrong button	Most participants changed playlist using navigation system
Task 3	"Just play around with it at the playing screen. For example you can listen to previous song again, jump to next song or pause the song"	"Just play around with it at the playing screen. For example you can listen to previous song again, jump to next song or pause the song"
3rd observation	- Most of participants did not like the absence of album art(from self-talk) - Some participants said they had to squeeze their thumb to touch play buttons - Some participants complained about the way playing screen shows the title of song	- Participants looked more ease with this playing screen- they did not surprised at all, which we have seen with prototype A - They used every function provided on the playing screen

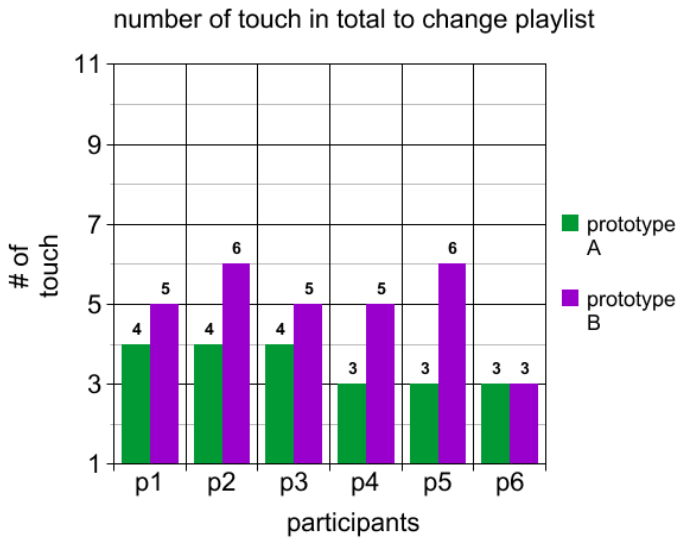
Test Session 2	**Test Prototype A**	**Test Prototype B**
	We performed another test session in opposite order but could not find any difference in users' behavior (quantitative data), the difference was more about their feeling- some participants preferred the colorful interface(prototype B) and others liked the colorless interface better(prototype A). So we had a short conversation with them	
Conversation with participants	- Participants said our purpose of designing consistent navigation bar throughout the whole interfaces were great but some of them said that they did not realize that the navigation bar is touchable - Majority of participants preferred the prototype A because the design of the playing screen is much more familiar to them * our conversation was over by asking them to fill out our on-line questionnaire	

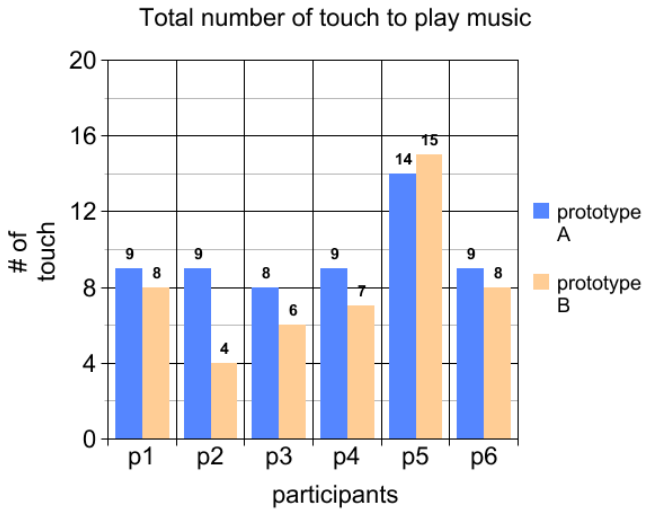
3. Results

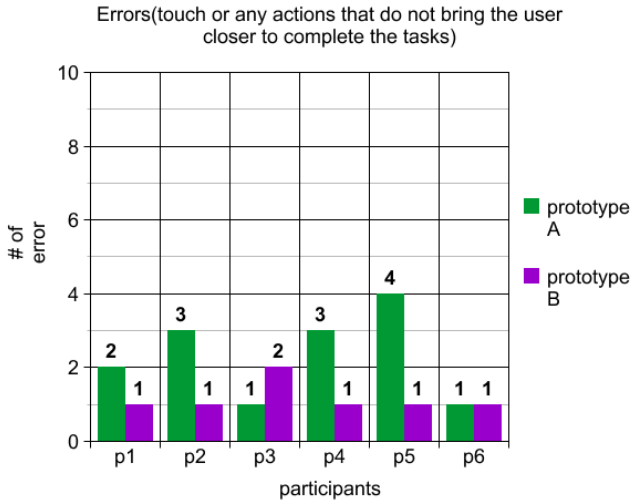
Graphs are the results based on the observation table in 2.2.2 and our online survey.

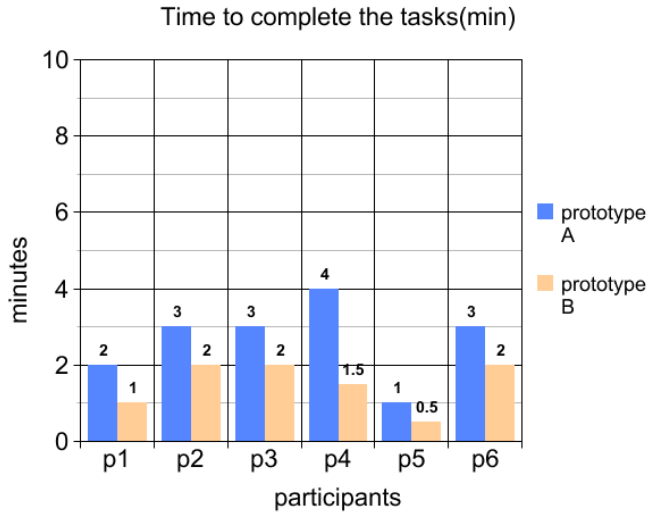
3.1 Quantitative Data






Total number of touch to play music
# of touch
participants
p1
p2
p3
p4
p5
p6
prototype A
prototype B
9
8
9
4
8
6
9
7
14
15
9
8


Errors(touch or any actions that do not bring the user closer to complete the tasks)
# of error
participants
p1
p2
p3
p4
p5
p6
prototype A
prototype B
2
1
3
1
1
2
3
1
4
1
1
1


Time to complete the tasks(min)
minutes
participants
p1
p2
p3
p4
p5
p6
prototype A
prototype B
2
1
3
2
3
2
4
1.5
1
0.5
3
2

3.2 Qualitative Data

Current Songza interface

Initially, we allowed our users to navigate through the existing interface which enabled them to get a sense of what this mobile application is about. We performed this preliminary step for both experienced and inexperienced users so that both groups get a clearer understanding of different buttons and discovering unseen functions. This step helped us collect more data for better result comparison. The main feature that users had difficulty with was the navigation system because it took them a long period of time to play their desired song which in their opinion should be a "very quick action".

Redesigned interface

According to the responses we have received from our user studies, we are certain that users find prototypes A and B easier to use in comparison to the current Songza interface. One of the central reasons for users' satisfaction towards our re-designed interfaces is the navigation system, which is "implemented quite successfully compared to the current interface." Unlike the current interface, each navigable section is clearly placed at the top of the screen which makes it "so much easier to jump from one section to another".

When comparing prototype A to prototype B, one of the surprising results was users' experience with album art in the now playing section. In contrast to our initial hypothesis, most users expressed more satisfaction with prototype 2, our classical design, which included the album arts of different songs. They believed that "[they] like the album arts because it sometimes helps them identify songs by just flipping through images of albums." Also, users commented on how album arts can "add to the nice look of the now playing section (more aesthetically pleasing)".

For the now playing screen on prototype 1, most users commented on the convenience that the circular shaped play buttons bring while doing activities. However, some users preferred the now playing screen on prototype 2, saying that "it looks more like the other music applications out there (more consistent with various existing interfaces)." In terms of systems navigation, results proved prototype 1 and 2 to be equally effective and satisfying for our users. For example, users believed that both prototypes were effective in terms of affordances and simplicity, because it helped them find out what each button does "simply and quickly".

Although majority of users thought the buttons are big enough to be clicked on both prototype A and B, there were still difficulties with pressing wrong buttons. For some users, it was common to press a wrong button when actually they intended to press another one adjacent. Making a 'home' icon on the top corner was among the popular suggestions that we received from users.

4. Discussion and Conclusions – Implications for Future Interaction Design

The result of our testing concludes that our designs, in general, were successful. We tested several hypotheses and, on the surface, they were mostly correct; users tended to prefer our design improvements rather than the original interface. Because our results were positive, this reveals one, definite truth: the Songza interface has room for improvement with regards to its interaction design. But, while many of our hypotheses appeared to be valid on the surface, deeper reflection revealed opposing views. For instance, we assumed that an innovative design would lead to higher satisfaction whereas in reality people preferred the 'mainstream', more generic design. In the end, evaluating our hypotheses and testing results (both negative and positive) is key in evolving our design; we will use results from this ID to improve our design and guide our decisions looking forward (not just in this course).

Both of our prototypes compared well to the original product: users revealed that the design improvements we made were indeed effective and that they preferred our designs to the original. Surprisingly, our two designs ranked equally in terms of error tolerance. This was unexpected as we assumed our more ergonomic design would prove to be more effective in terms of error tolerance. However, we are still considering these results to be inconclusive because of learnability factors (users did not have enough time to become intimate with the interface). Instead, the major difference between our two prototypes was aesthetics. Users preferred the more aesthetically pleasing prototype to the ergonomic and functional design. We believe familiarity (that is, similarity to industry standard designs) and memorability were factors in this outcome.

Through the evaluation of our designs (specifically by testing them through users), we discovered several things that we did not account for in our initial designs and hypotheses:

For example, as mentioned earlier, we considered learnability and initial error volume to be higher initially as users got used to the interface, but we did not consider their 'comfort'. Users tended to prefer the design that was more similar to something they had seen before rather than the design that was more tailored to their specific task (the ergonomic design). Even though we still consider these results inconclusive (users had a limited amount of time to interact and get used to our interface), it was still an important lesson (especially when considering future hypotheses). These results also suggest that we should allot more time for learning with an innovative design.

Another discovery we made through the evaluation of our designs was the value users put on aesthetics and how much weight they hold in regards to user satisfaction. One of our initial assumptions suggested that functionality was key on the 'Now Playing' screen. As such, we discounted the importance of aesthetic appeal and focused on ergonomic functionality and usability. Counter-intuitively, our evaluation revealed that users were more satisfied with a more aesthetically pleasing interface, even though they would not be looking at it often during usage (i.e. using Songza during exercise). We found this result particularly interesting, and will apply this knowledge to future hypothesis considerations

Similar to aesthetics, we also discovered the importance of certain perception mechanisms in our design. While we thought we were making pattern perception considerations, our evaluation results suggested otherwise: Our ergonomic prototype aimed to reduce album art because we discounted it as useless clutter and a visibility issue. In truth, we learned from our testers that the album art was indeed valuable – users were able to identify songs immediately based on album art. Biologically, this is a form of perception where users create connections with certain images to identify songs quickly (an important factor when time is key such as when changing a song during exercise). This discovery may have been the most important of the three highlighted; while we thought we were accounting for pattern perception in our initial prototypes, we clearly overestimated. Understanding theory through reading and JiTT's was a good start, but actually seeing the applications and implications of these theories through our evaluation results was both exciting and enlightening.

Both our design and testing methods were directly responsible for these results. For instance, our testing order most definitely skewed or biased our testing results. We showed our users (both experienced and inexperienced) the Songza interface before we tested our designs. While we felt this was the right approach for this particular testing session, in the future it may be more productive to do independent testing to determine the actual feasibility of our designs in a real, production environment (can our interface stand alone, or is the simply the improvements we made that are effective?). In regards to design, used a similar navigation system for both of our designs (our major differing factor was the now playing screen). These similar systems produced similar results from our user testing. Differentiating our interfaces even more would allow us to test specific hypothesis' more accurately.

Ultimately, our evaluation discoveries reveal certain, vital considerations that we would have to make in future hypothesis testing. If we were to continue the project, it would be mandatory that we adapt our design approach with this newfound knowledge as an effort to create the most effective prototype. While we have a good base (our navigation changes proved to be effective), more emphasis would have to be placed on pattern perception and aesthetics. Ignoring our evaluation results would definitely lead to less effective product. In addition to design changes, we would also have reconsider our testing approach. Firstly, while our hypotheses generated very informative results, future assumptions would have to be far more specific; we have already gained a general understanding of our interface. Now, we can make more, specific assumptions to determine the effectiveness and efficiency very specific features of our prototypes. Secondly, we would have to find a way to increase intimacy (in regards to our new interface(s)) and memorability in order to get a more transparent understanding of user satisfaction and interaction implications of our design choices. This could mean multiple testing sessions, longer testing sessions, or sessions that mimic certain tasks (such as an actual gym workout) more closely.

In the end, much was learned from this evaluation session. Innovation (like in our prototype A), it seems, is not always the answer. Familiarity, comfort and learnability (or previously learned habits) are important design factors that cannot be ignored. And, while on the surface our hypotheses proved to be correct, it was upon deeper reflection that the real learning occurred; the

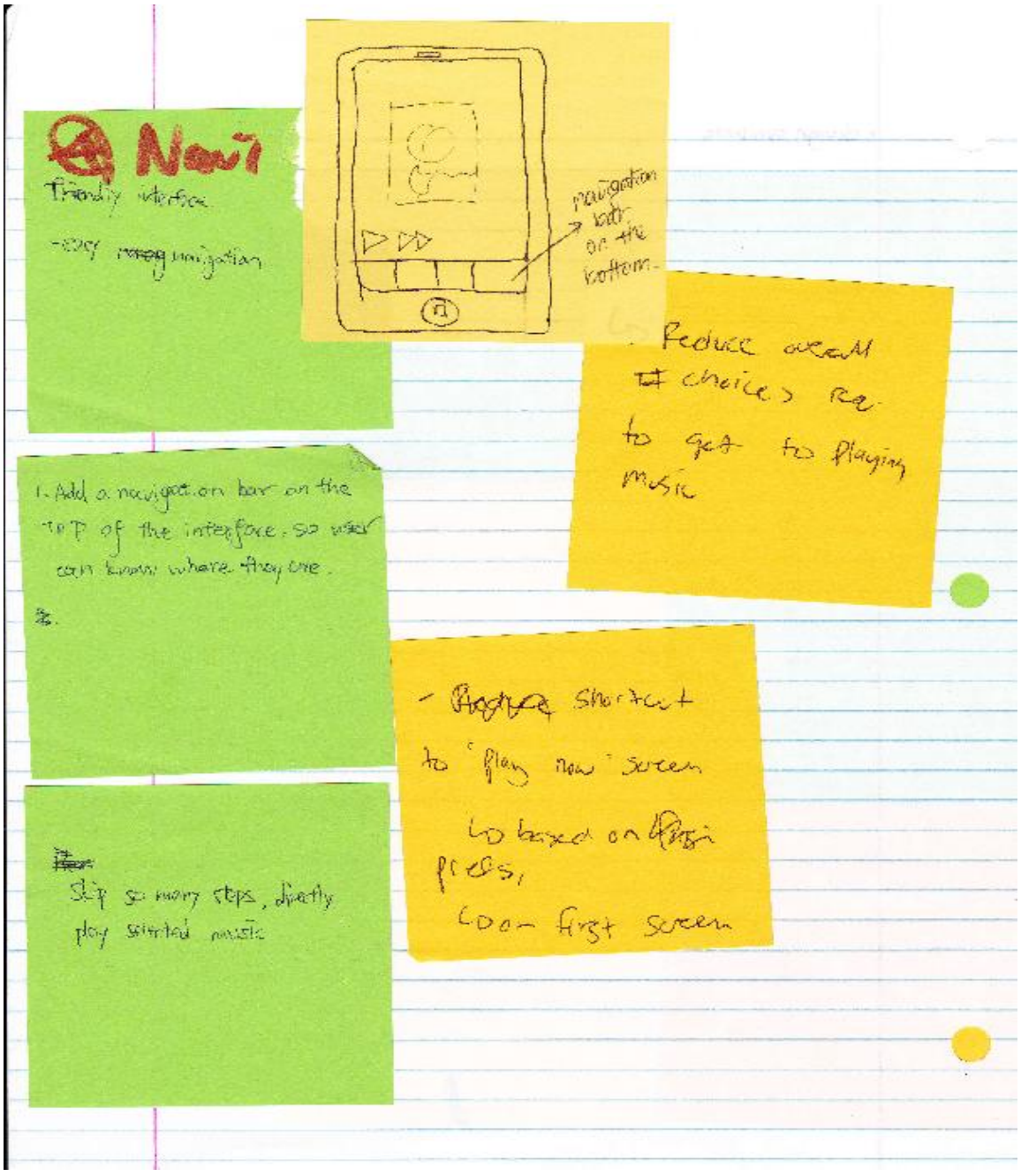
real value of hypothesis testing lies not in what the results are, but rather why these results seem to be.

Appendix

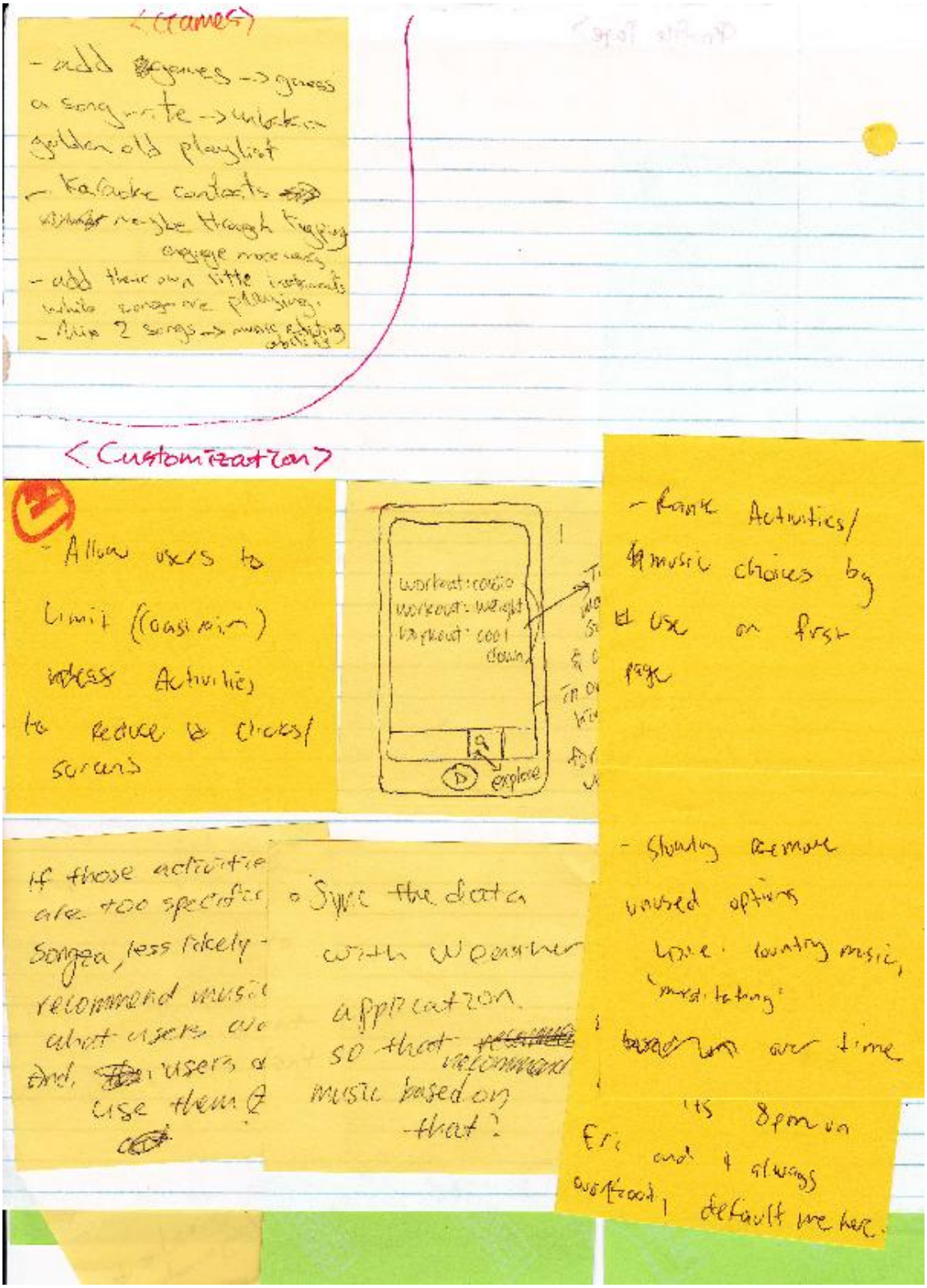
1. Design Process Illustration

Affinity Diagram

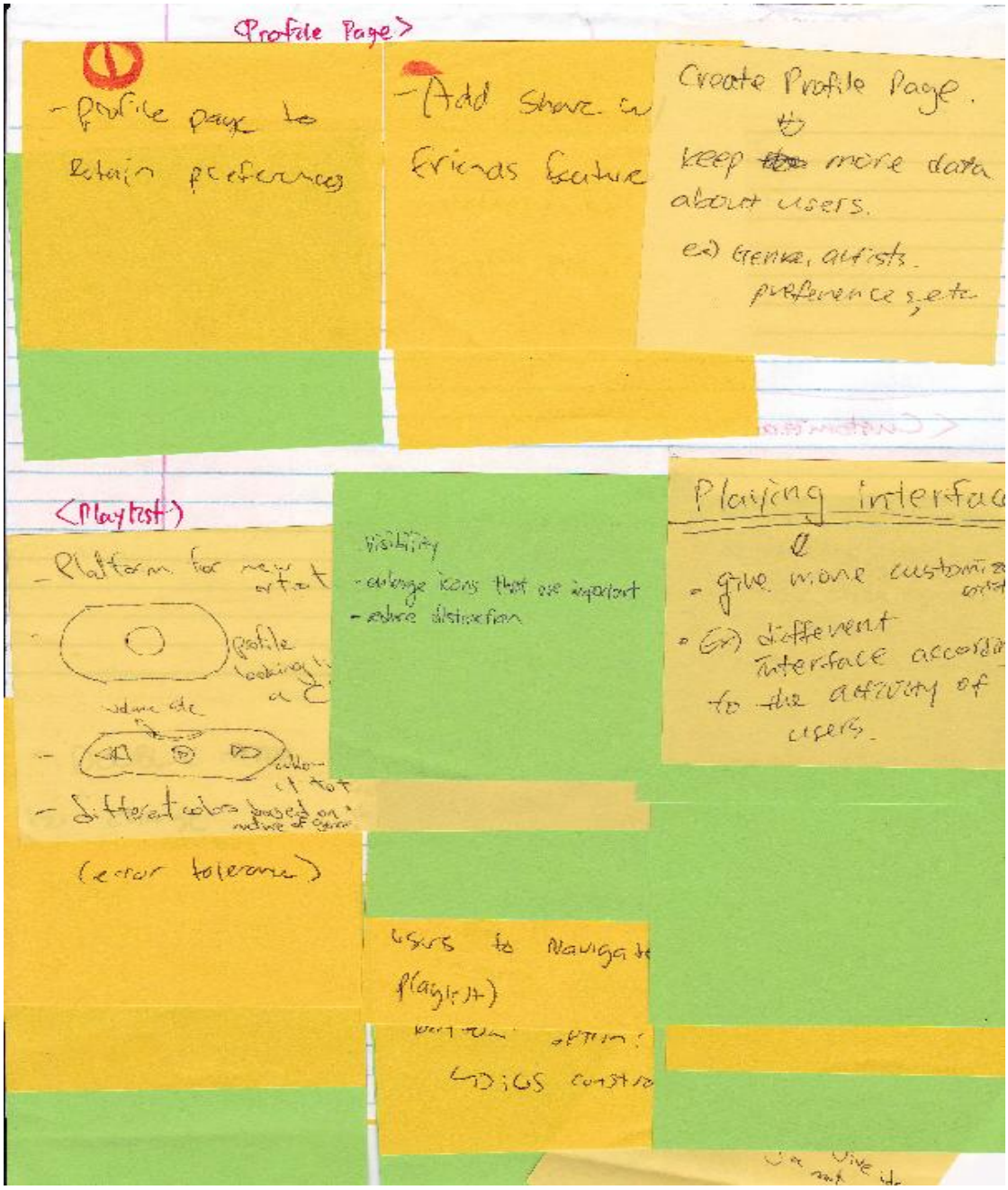
Navigation:



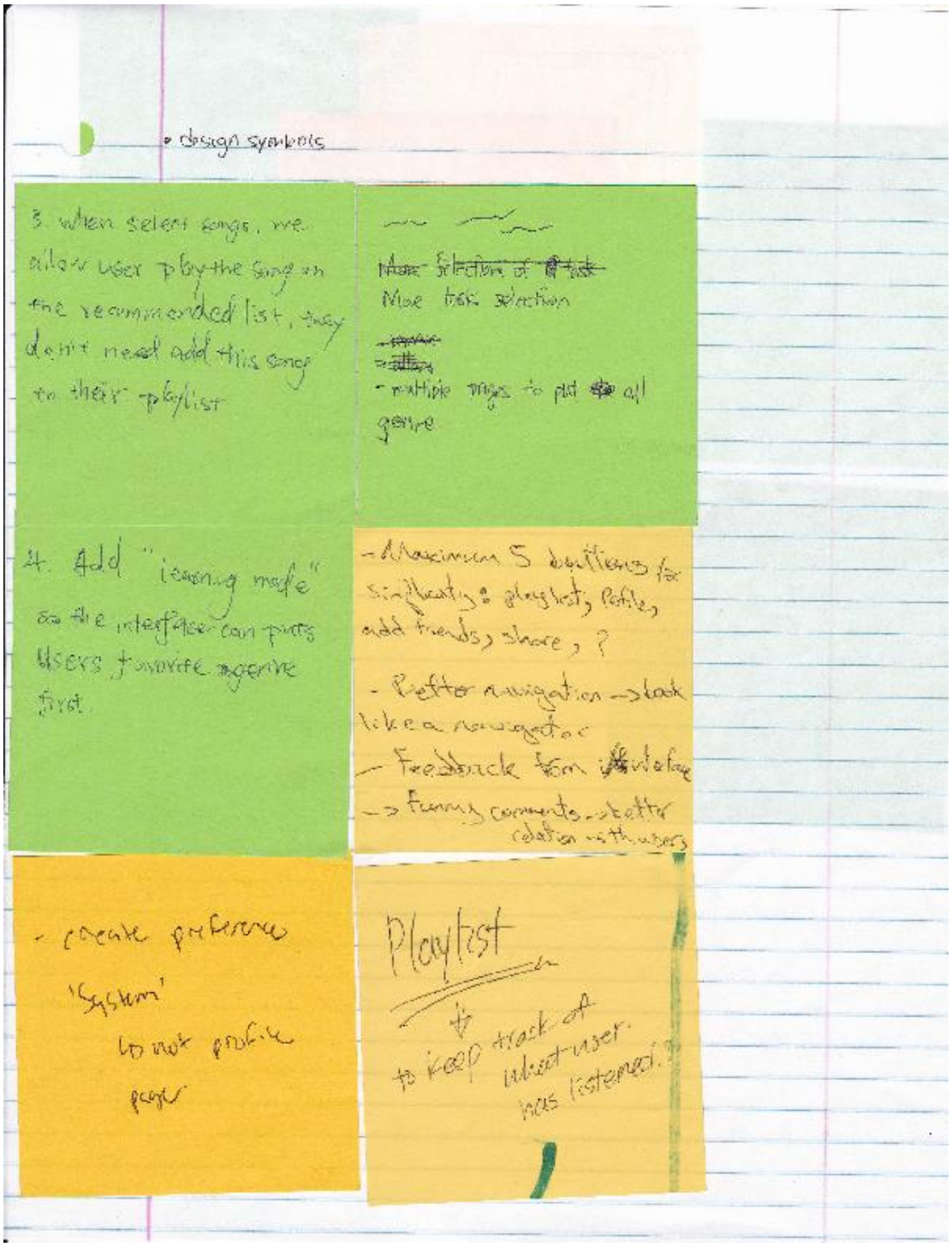
Customization:



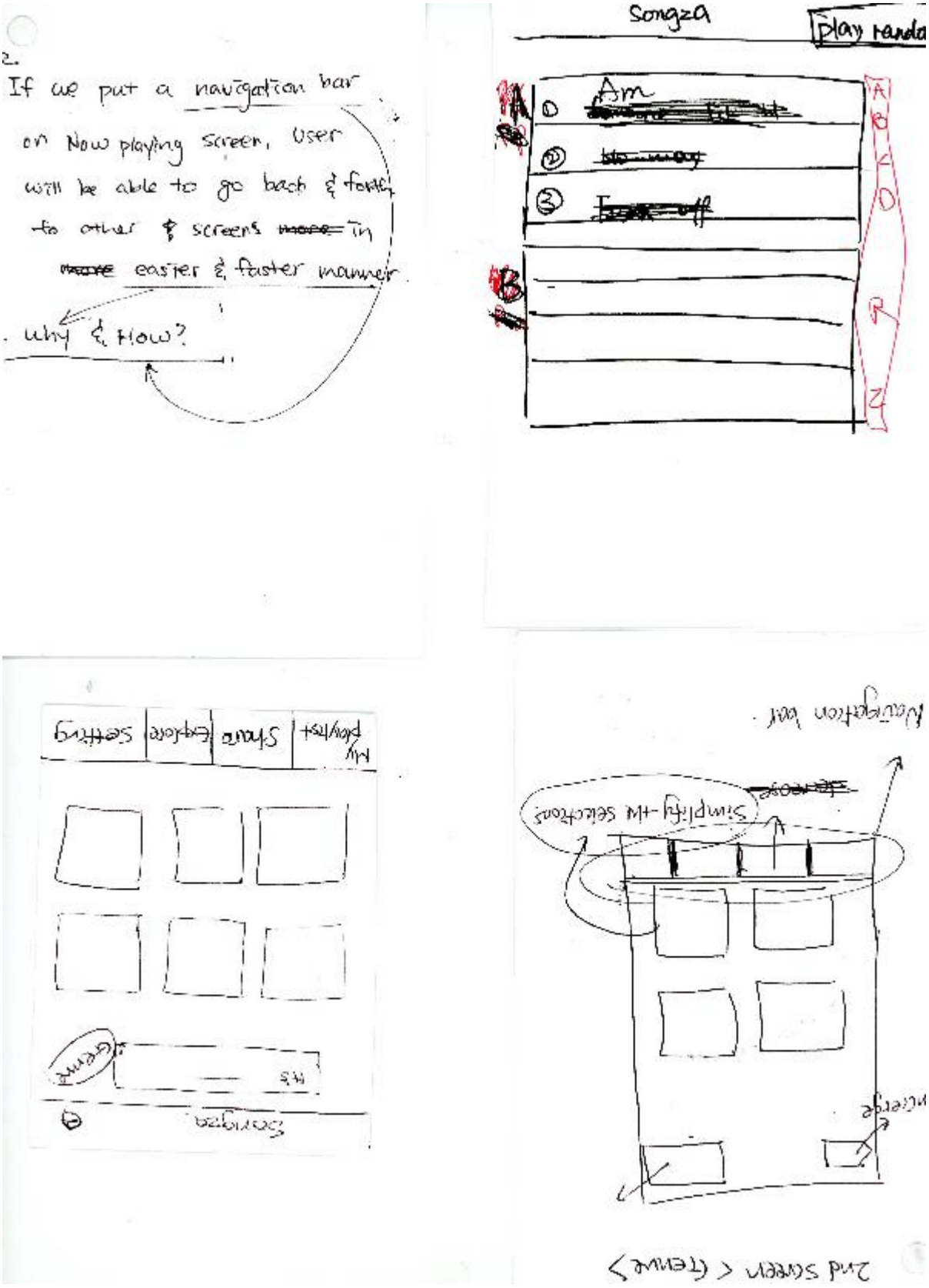
Profile Page:



Design Symbols:



Sketches


2.
If we put a navigation bar
on Now playing screen, User
will be able to go back & forth
to other screens in
easier & faster manner
Why & How?
Songza
Play
Am
A
B
C
D
E
F
G
Songza
Genre
Share
Explore
Setting
My playlist
Navigation bar
Simplify-ur selections
2nd screen < (Tenue)

2. List of changes

Chapter I: Identifying needs and establishing requirements

- 2.1 Problem Statements and User Goals

  : The goals have been changed so that the degree of accomplishments could be measured.

- 6.2.2 Materials and Procedure

  : The descriptions about research methods have been changed to convey clear idea and corrected all grammatical errors.

- 7.1 Functional Requirements

  : The writing has become more concise by removing repetitive sentences.

Chapter II: Design

- The order between 3.1, 3.2, 3.3 and 4.1, 4.2, 4.3 has been changed.

- 4.3 Interaction Paradigm and Interface Metaphors(originally 3.3)

  : Our original answer failed to correctly apply the concept of interface paradigm and metaphor in our conceptual design A. Therefore, we rewrote this part based on clear understanding of the concepts.

Chapter III: Prototyping

- 1.1 and 1.2 Illustration of Task Pursed with Prototype A and B

  : Changed images with most updated prototypes

Chapter IV: Evaluation

- 2.3 Experimental Design Procedure

  : Original answer looked very unorganized so we revised the table and made our writings more concise.