



**Spotify®**

## **FINAL TERM REPORT**

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## EXECUTIVE SUMMARY

### INTRODUCTION TO SELECTED WEBSITE

Spotify is a music streaming service that allows you to listen to millions of songs from a variety of artists and albums. Some of its features include: creating and sharing a playlist, following your friends, enabling collaboration on a playlists to share them with friends. Although Spotify is a great product there is room for improvement. Our team identified some existing issues and has suggested recommendations for Spotify that could make it more intuitive and give music lovers a rewarding experience, both in desktop and mobile application.

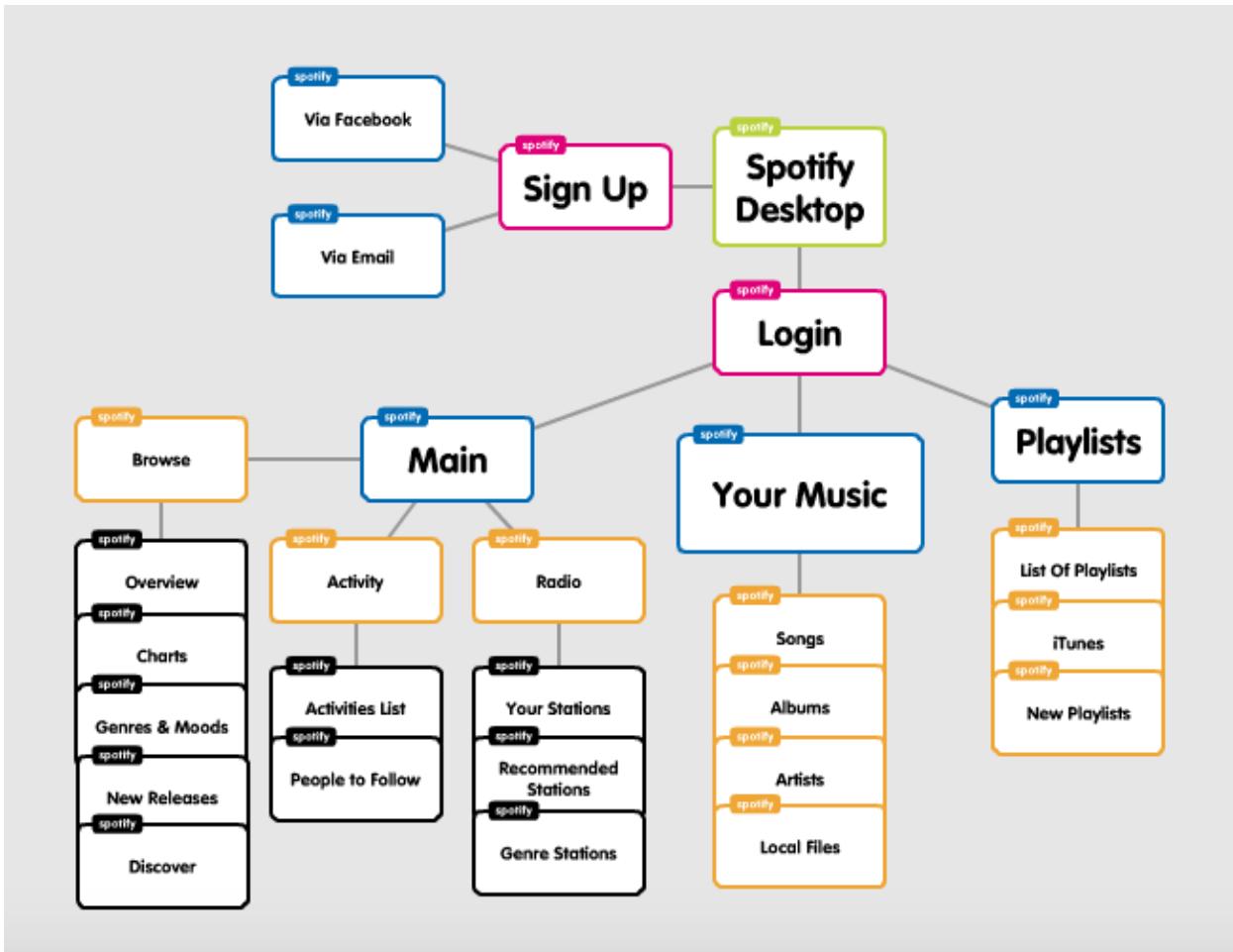
To further enhance the user experience and accessibility, Spotify has a mobile application much like the desktop version of the application.

Our team of graduate students from Indiana University School of Informatics in Indianapolis performed an expert review of Spotify. A usability test was implemented based on the identified issues from the expert review. 10 participants were recruited to complete seven tasks on both the web and mobile application. The tasks were based around the main functionalities of Spotify such as: Search songs, Create a playlist, Add/Delete songs from playlist, Follow friends, Share playlist, and Create collaborative playlist. We also conducted a pilot test to ensure the efficiency of our usability test. All users completed a post-task comfort rating as well as pre-test and post-test questionnaire to collect demographical data and assess the overall usability of Spotify (SUS score). After performing a competitive analysis between the Spotify Desktop and Mobile application we generalized results between both platforms.

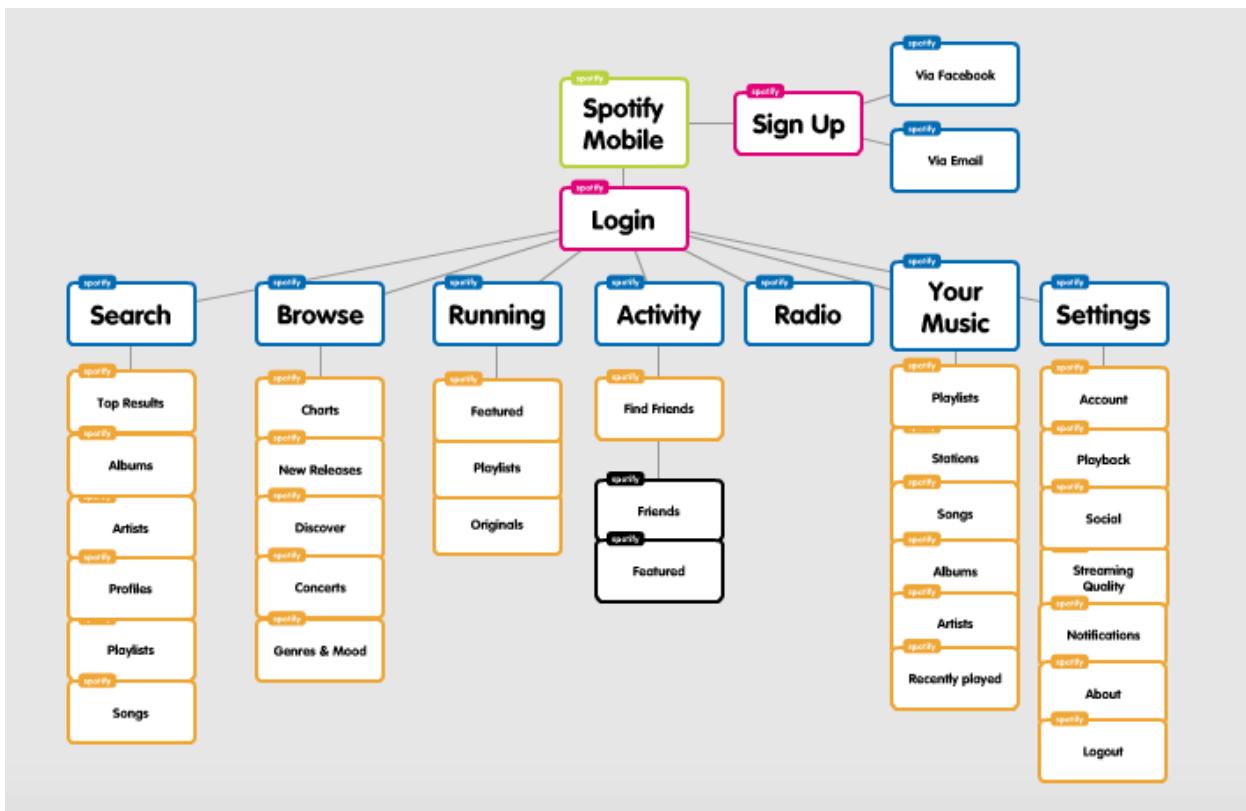
Overall, it was noted that the users could perform most of the tasks in the desktop application more easily as compared to the mobile application. Though users found the mobile application difficult to use in comparison with the desktop application, they found that the feedback from the mobile application very useful. Our final conclusions point to the Spotify mobile application being more cumbersome to use as compared to the desktop application.

## SITE MAP

### Site Map for Desktop



## Site Map for Mobile



## APPLICATION OVERVIEW & METHODOLOGY

### WHAT WE TESTED?

Our team did a competitive comparison of the Spotify desktop application versus the mobile application. For mobile, we primarily focused on the iOS platform. We also performed the entire test using the free version.

### WHO WE TESTED?

A total of 10 users participated in the study. All users tested the desktop application as well as the mobile application. Users were from a variety of backgrounds that included undergraduate students, graduate students, and working professionals.

### WHERE WE TESTED?

The majority of sessions took place in the study/conference rooms available in the library and the UITS lab. Other testing sessions took place at the participant's house or place of employment.

## WHEN WE TESTED?

User testing took place from November 9 through November 21, 2015.

## HOW WE TESTED?

The format used was one-on-one usability test sessions. All sessions took around 60 minutes or less to complete.

## EXPERIMENTAL SETUP

For all user testing, an interviewer and observer were present. The observer gathered notes on the user's reactions, facial and verbal expressions, etc. All users were asked to implement the Think-Aloud strategy throughout the session to provide further information. The interviewer clarified the tasks that were given to the user, guide them through tasks if necessary, and prompt users to think-aloud when they were stumped. Live video recording of all user-testing sessions was also taken to provide the team with a holistic view of user actions.

The following equipment was used for all desktop user-testing sessions:

- iOS based laptop/computer with the Spotify Desktop Application installed on it.
- AZ Screen Recorder, QuickTime Player and Captivate 9 for audio and video recording.

The list below consists of equipment used for mobile testing sessions:

- Android / Apple phone with Spotify mobile application installed on it.
- AZ Screen Recorder for audio and Video recording

Users were asked to complete various tasks such as searching for songs, creating a playlist, adding songs to that playlist, finding friends and following them, sharing playlist with friends etc. A complete list of all tasks used for the mobile and desktop version of Spotify can be found in the appendix. In addition, users were asked to fill out a consent form and also complete a post-task and a post-test questionnaire. These forms can be found in the appendix.

## SEVERITY RATING SYSTEM

Throughout this evaluation, four severity levels were identified to represent the magnitude of impact that an issue can have and how soon necessary corrective measures should be taken to rectify the issue.

- **Low**: potential problems exist but can be ignored
- **Average**: problem exists and should be fixed, but not necessarily immediately
- **High**: serious issue and needs to be fixed as soon as possible
- **Critical**: problem has severe impact and should be fixed right away

## EXPERT EVALUATION

## COGNITIVE WALKTHROUGH - DESKTOP

## PERSONA: ANTONIA

Antonia started using Spotify recently. She's planning to go on a road trip with some friends and wants to create a playlist with songs from their favorite band. She also wants to share it with them.

# Antonia Wagner



"Practice safe design: use a concept"

**Age:** 23  
**Work:** Student / Intern  
**Family:** Single  
**Hometown:** Bristol, UK  
**Character:** Outgoing

**Personality**

Introvert	Extrovert
Analytical	Creative
Conservative	Liberal
Passive	Active

**Goals**

- Landing a UX Design job after graduation
- Become involved in local design groups
- Travel the world.
- Attend the next Coachella Valley Music and Arts Festival

**Frustrations**

- Not able to find an application that accommodates all her music choices
- Limited spending power
- Not being familiar with New York - Current Intern
- Networking in a new city

**Bio**

Antonia is very focused on graduating with a job offer on hand. She has always been passionate about music and has been playing the oboe since middle school. Antonia is dynamic, always on the go, but likes flexibility. She's a frequent traveler, enjoys attending concerts, and supporting new local bands. She values time, social experiences, convenience. She started using Spotify recently because she likes having diverse playlists that she can share with her friends.

**Motivations**

Achievement	High
Growth	Medium-High
Power	Low
Social	High

**Brands**

A collection or list of the user's favorite brands.



**Preferred Channels**

Traditional Ads	Low
Online & Social Media	High
Referral	Medium
Guerrilla Efforts & PR	Low

## Task 1: Create a new playlist

When 1st logging in the user is presented with a navigation menu on the left side. At the bottom of the menu is the option for a new playlist. It is challenging to see as the section headings and the sub menu items are all using the same font. Because of this the New Playlist option blends in with the rest of the menu, aside from the large + sign. When you mouse over the New Playlist it does highlight; however there is no immediate iconography to show that is a separate option from the rest of the menu items. When you click on New Playlist, a new playlist item is created and is in an edit mode for changing the name.

**Problem description:** Menu items all use the same font type and style.

**Severity:** Average

**Recommendation:** Change the menu heading sections to a slightly different font or font style. Also make the size bigger to be more noticeable as headings.

**Problem Description:** New Playlist is not easily noticeable from the rest of the menu.

**Severity:** Average

**Recommendation:** Have the background color for the New Playlist selection be a color that stands out from the menu. Choosing a color that stays within the UI design scheme will retain cohesion.

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### Task 2: Search for songs

To Search for a song the user has to simply use the search menu that is clearly visible at the upper left corner of the application. When the user clicks into that field, if there were previous searches, the search history is show in a drop down fashion. The user could easily choose from their search history. When the user starts to search the field begins to auto populate with results that match Top Results, Songs, Artists, Albums, Playlists and profiles Each section of results is a slightly less dark grey than the section heading to help denote the sections. There is a top option to "Show All Results, which results in a new page that displays images for artists, Albums and Playlists. Songs are presented in a list format but in no discernible order each with a "See All" option. See all presents a new page showing all of those specific sections results, along with images for each result. At this point if a User wanted to get back to their original search results, there is no immediate way, button to do so. In the upper left corner of the application there are greater than / less than (<>) "buttons", but unless you hover over there is no indication that there are function buttons to move about the interface. The font color matches the rest of the UI and they have a black background.

Clicking on the section headings changes the main display to show the results of that section. Clicking on the section results changes the main display to the relevant selection. So clicking on the band name takes you to the band page, Songs takes you to the album that song appears with the song preselected, etc.

Scrolling thru the search results is difficult for the user to understand. The scroll bar is difficult to easily understand is there.

**Problem Description:** Navigation icons (<>) are not easily noticeable or clearly defined.

**Severity:** Average

**Recommendation:** Change the iconography to more clearly indicate that those are the forward and back buttons for navigation.

**Problem Description:** Scroll bar is difficult to see / understand is available

**Severity:** Average

**Recommendation:** Change the color of the scrollbar to a lighter color that will not so easily blend into the dark UI.

### Task 3: add songs to playlist

When the User wants to add a song to a playlist they have two main choices. First, if they right click on the song, they have a dialog box that presents a number of options. One of which is "Add to Playlist". Selecting this option opens a further dialog box listing all of the playlists. The user then simply clicks on the relevant playlist and the song is added.

The second option is that the user can simply click and drag the song to the relevant playlist in the menu selection. That is as long as they have scrolled to the playlist section.

To somewhat confuse matters is that there is a big + sign next to each song. The User may not initially understand what this does. There is a hover over message that states "Save to your music" but the user may not understand what this means.

**Problem Description:** The user has 2 ways to add to a playlist. Both options work quite well but the + sign may confuse matters. The User may feel that will allow adding to a playlist at first glance.

**Severity:** Low

**Recommendation:** Change the functionality of the + sign to that of the right click action.

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### Task 4: Share playlist

When the user wants to share a playlist it is not immediately apparent how to do so. However just like adding a song, sharing a playlist has two options. First, the user can just right click on the playlist name and a dialog box is presented with options such as sharing, delete, copy the link, etc.

The second path is not quite as intuitive. Once the user has selected the playlist to use, next to the green play button is a kebab menu icon. Although this is common iconography in a mobile setting (this is an assumption) for a desktop application it is not commonly used. The user has to hover over to get a feedback dialog of more. Clicking on the kebab opens a dialog box that gives the users similar options to the first path. Share, copy, rename, etc.

With either path choosing share brings a dialog box with two apparent options. The default is "Post to followers". At the bottom are options to also share to Facebook, Twitter and Tumblr. There is an open text box to be able to include a message when you share.

The second choice would be to "Send to..." but aside from a green underscore and a slight text highlight, it is not readily apparent which option you are using. When choosing who to share to, the option field does say "Enter a friend's name and is the default type focus when using. An auto fill feature does begin as you type, however there is some question as to where the search results are pulling. Is it followers? Is it Facebook connections? The search results seem to be inconsistent with where they are getting the results. It is possible to NOT have a follower in the search list. It is possible the search will NOT show a follower. It is not clear how this is functioning.

There is a big green Share / Send button that the user clicks to complete the share. There is no indication to the User if the playlist was actually shared in the application. The user does receive an email however.

The user also is not able to see who is following a playlist that has been shared. For a collaborative application this seems like an obvious misstep.

**Problem Description:** Sharing a playlist is not intuitive.

**Severity:** **Average**

**Recommendation:** Have a share button next to the play button on the playlist page to encourage sharing.

**Problem Description:** Sharing as “Post to followers” or “Send To...” choice is not clear.

**Severity:** **Low**

**Recommendation:** Instead of a green underscore, which seems lazy UI, have the background for each selection highlight when the active choice.

**Problem Description:** Search results for “Send To” are not clear where they are pulling from.

**Severity:** **Low**

**Recommendation:** Search from all available sources. Add a text line saying where the search is looking.

**Problem description:** Upon clicking Share/Send the User has no indication that the action was completed.

**Severity:** **Average**

**Recommendation:** There is a notification icon next to the user name but it does not seem to actually work. Have the notification icon indicate to the user actions such as new followers, shard playlist was accepted, etc..

**Problem Description:** The user has no way of understanding who is following a playlist

**Severity:** **Average**

**Recommendation:** Add an option named followers next to the play button. Upon clicking the user should get a list of the followers for that particular playlist.

**Task 5: follow people**

The user wants to follow a friend or another user. Using the search field they simply type the name. As before, the search field will start to auto complete. Search results pull from Facebook friends (if connected via Facebook account) and states that they have a Facebook friend below the name. Once a person has been found the user is able to click on their name to pull up their profile page in the main screen. Under the profile photo is a large “Follow” button. The user can click the button and begin following their friend. The button changes to say “Following”. When the user hovers over it says “Unfollow”, signaling to the user that they can unfollow if they so desire. The user can also see who that friend is following, who is following that friend, public playlists and an overview that seems to only show a few of that person's playlists.

**Problem description:** None.

**Severity:** None

**Recommendation:** None.

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**Task 6: have friends add to playlist.**

If the user wants to allow other friends to add to the playlist, they first need to create a new playlist. Once completed, the user can either right click the playlist in the menu or choose the kebab option in the playlist display screen. The user then will need to choose “Collaborative Playlist” to enable friends to add songs. When the user changes the playlist to collaborative the playlist display changes and adds a new column named “USER”. This states the name of the user that has added to the playlist, which is displayed for everyone. However, it's difficult to see when a playlist has been set to collaborative.

**Problem Description:** User must right click on the playlist or choose the menu kebab to choose “Collaborative”. For a social application this is not the most intuitive.

**Severity:** Average

**Recommendation:** Add a button next to the play button on the playlist main menu that says Collaborative Playlist.

**Problem Description:** No way of easily knowing if a playlist is set to collaborative

**Severity:** Average

**Recommendation:** Add an indication (whether by icon or text) on the playlist main screen that lets the user know the playlist is collaborative.

## PERSONA: ANDY

Andy has been using Spotify for a couple of years. He wants to follow his colleagues and fellow musicians to see the music they are sharing. He also wants to update his notification settings to determine who will see his activity. No real need to do the how to follow sections on this profile as it will be the same results as with Antonia.

# Andy Hall



*"Music brings passion and love to life."*

**Age:** 38  
**Work:** Musician and Uber Driver  
**Family:** Single  
**Location:** Chicago, Illinois  
**Character:** Jovial

**Personality**

Introvert	Extrovert
Analytical	Creative
Conservative	Liberal
Passive	Active

**Goals**

- Giving customers a good experience.
- Keeping customers and audience entertained.
- Writing music
- Touring
- Win a music reality show
- Technology enthusiast.

**Frustrations**

- Limited time for music writing
- Impolite customers.
- Last minute cancellations.
- Lack of variety in music on the radio

**Bio**

Andy is a musician and part-time Uber driver. A few years ago he worked as a music teacher in Germany but now he is back in the US. Being a part-time Uber driver gives him the freedom to focus on his music. Andy loves music and can play many musical instruments. He also likes exploring new technologies and keeps himself updated about them.

Andy loves meeting new people and making new friends. Meeting different people every day and talking to them gives him creative ideas for his music. Streaming his favorite music creates a happy and comfortable atmosphere for him while driving people around.

**Motivations**

Achievement	Growth
Power	Touring
Social	

**Brands**

A collection or list of the user's favorite brands.




**Preferred Channels**

Traditional Ads	Online & Social Media
Referral	Guerrilla Efforts & PR

### Task1: View people he follows and look at their playlists

If the user wants to view their followers there is not immediately easy path to view them. The user has to click on their name to view their profile. In their profile they can review an Overview of their account, recently played artists, Public playlists, following and followers. If the user clicks on following, they are take to that person's profile page. At the profile page they can review any playlist that user has along with recently viewed artists

**Problem Description:** It is not immediately clear to the user where to go to review the people they follow or their followers.

**Severity:** High

**Recommendation:** Under the "Main" section in navigation add a section for follows and followers. This will make it much easier for the User to review both sections.

**Task 2: Update privacy settings to restrict what other users can see in the user's profile.**

When a user wants to update their profile settings they must click on a V next to the user name to bring down account options, including the settings. While the icon is somewhat standard as a drop down menu indication, it blends in with the UI and is not the most recognizable item. When clicked the user can choose settings. The settings options inside the application are very limited. Under social the user only has limited options. The user can connect (or disconnect) from Facebook, set a session private, Publish their activity, and show current Top Artists and set new playlist to public. These very limited options and none offer any real privacy settings.

**Problem Description:** Profile settings are not immediately accessible.

**Severity:** **Low**

**Recommendation:** Include a profile section under "Main" in the menu listing.

**Problem Description:** Profile settings options are limited in the applications.

**Severity:** **Average**

**Recommendation:** Include options to adjust notifications, increased privacy options such as giving non-followers a limited view and options to choose notification types.

## COGNITIVE WALKTHROUGH - MOBILE

### PERSONAS: ANTONIA AND ANDY

**Antonia** started using Spotify recently. She's planning to go on a road trip with some friends and wants to create a playlist with songs from their favorite band. She also wants to share it with them.

**Andy** has been using Spotify for a couple of years. He wants to follow his colleagues and fellow musicians to see the music they are sharing. He also wants to update his notification settings to determine who will see his activity.

Results were same for both.

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**Task 1: Create a new playlist.**

On the Spotify mobile application, a user has no direct option on the hamburger menu or any other internal menu to create a new playlist. The only way in which a user can create a new playlist is when he/she searches for songs, the user can click on the 3 dots beside the song that indicates options available. User then gets to choose if he wants to save a song or add to playlist where in he gets an option on the next screen to create new playlist in the form of a plus button

**Problem Description:** There is no way to create a playlist first and then add songs to it. A user has to browse/search for songs and only then can he/she add a particular song to the playlist.

**Severity:** Average

**Recommendation:** There should be an option to create a playlist in My Music.

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### Task 2: Search for songs

To search for a song the user has to use the hamburger menu first by clicking on it. This menu consists of various functions that the app can perform, the first being searching for songs. User can enter the song he/she is searching for and get results stacked in an orderly fashion. The app shows "Top Result" first, followed by "artists", "albums", "playlists", "Profiles" and then "songs"

**Problem description:** When you search for a song, the application gives you various versions and remixes of that song simultaneously. This confuses the user as he / she has to waste time to find the right song from the existing list.

**Severity:** Average

**Recommendation:** Remixes should be shown only when that particular keyword is put into the search engine along with the song.

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### Task 3: add songs to playlist

On the Spotify mobile application, a user has to firstly search for songs to create a new playlist, because there is only one way in which a particular song can be added to your playlist i.e. search -> find the song you wanted from the unlimited options available -> open album / artist / already created playlists / list of available songs -> add song to existing playlist / new playlist

**Problem Description:** User has only one way to add songs to a playlist i.e. by searching a song first. User cannot open the already existing playlist and add songs from there.

**Severity:** High

**Recommendation:** Option to add songs once user opens his/her playlist should be available.

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### Task 4: Share playlist

The app has an option to share an Artists top song with friends and on social media. Once user opens an artist's page and clicks on the options button he/she gets an option to send / post that artists songs.

One can select people and send them a link privately via WhatsApp, email or message or post songs onto Facebook or twitter.

**Problem Description:** The share option is available only for artists and not for albums.

**Severity:** **Low**

**Recommendation:** Make option to share available for albums also.

**Problem Description:** User has no clue about who else is sharing the playlist along with them except for the person who shared the playlist with them.

**Severity:** **Average**

**Recommendation:** Participants / followers of that particular playlist should be available to view at least when user clicks on the options button if not upfront.

**Problem description:** Once the user is added to a playlist, he/she does not receive any notification that says so. Hence the user has no clue unless and until he/she opens their list of playlists.

**Severity:** **Average**

**Recommendation:** There should be a notification sent to the user once a playlist is shared with them.

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### Task 5: follow people

By searching for that particular person or artist on the search engine and then clicking the follow button, that changes to following on click. If user wishes to unfollow that person he/she can click on the same button again and it changes back to follow or he can click on the options and say stop following.

**Problem description:** If a user logs into Spotify with a personal account and not a Facebook account, the application does not let you connect through Facebook to find or add friends.

**Severity:** **High**

**Recommendation:** Functionality needs to be improved.

**Problem Description:** The user has no way of understanding who is following a playlist

**Severity:** **Average**

**Recommendation:** Add an option named followers next to the play button. Upon clicking the user should get a list of the followers for that particular playlist.

---

#### **Task 6: have friends add to playlist**

If the user wants to allow other friends to add to the playlist, they first need to create a new playlist. The user then will need to choose “Collaborative Playlist” to enable friends to add songs.

#### **Problem Description:**

The option to make a playlist collaborative is direct but it is a two way process where one must first make it collaborative and then share songs with people whom they want to collaborate with.

#### **Severity: High**

**Recommendation:** Tedious process and user cannot figure this out quickly. The two step process should be a single step process where one gets an option to choose people with whom they want to collaborate with.

**Problem Description:** After making a playlist collaborative the user cannot see the number of participants collaborating on the playlist and which participant has added in which song.

#### **Severity: Average**

**Recommendation:** There should be an option to view people working on the playlist.

**Problem Description:** No way of easily knowing if a playlist is set to collaborative

#### **Severity: Average**

**Recommendation:** Add an indication (whether by icon or text) on the playlist main screen that lets the user know the playlist is collaborative.

### **UNRELATED TASK**

One of the major drawbacks of the Spotify free mobile application is that it does let you play songs. All one can do is add songs to a playlist and click on shuffle play to listen to the songs on one's playlist.

User has no way to remove a song from playlist once the playlist is created. He/ she can only add/ remove from my music but not from the playlist itself.

## HEURISTIC EVALUATION - DESKTOP

The recommendation for each heuristic evaluation can be found in the Redesign Page Template section.

Heuristic	Visibility of system status
Description	<ul style="list-style-type: none"> <li>1. The “Find Friends” button is difficult to locate. Users have to scroll a lot to locate the “Find Friends” button at the bottom right column.</li> <li>2. Low discoverability of submenu (Kebab Menu)</li> <li>3. When share a playlist with friends, there is no notification or icon showing the playlist is shared.</li> </ul>
Screen / Scope	Various screens
Severity	Medium
Solutions / Recommendation	<ul style="list-style-type: none"> <li>1. The “Find Friends” button can be placed at the top beside the “Upgrade” button.</li> <li>2. Make submenu more obvious, like enhance color Contrast, etc.</li> <li>3. Add an icon on the shared playlists.</li> </ul>
Image	
Heuristic	<b>Match between system and the real world (Mental model accuracy):</b>
Description	<ul style="list-style-type: none"> <li>1. After sharing with followers, the followers have no direct feedback channel to leave comment.</li> <li>2. Too much navigation options and submenus.</li> </ul>
Screen / Scope	Menu
Severity	Medium
Solutions / Recommendation	<ul style="list-style-type: none"> <li>1. Add “comments” option to the shared playlist.</li> <li>2. Simplify the submenus, and speak the user's language.</li> </ul>

Heuristic	User control and freedom
Description	The permissions for shared and collaborative playlists are not clear.
Screen / Scope	Shared playlists / collaborative playlists
Severity	High
Solutions / Recommendation	Add icons to for shared / collaborative playlists showing the status of the playlist

Heuristic	Consistency and standards
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Description	<ul style="list-style-type: none"> <li>1. User cannot sort or filter the search results.</li> <li>2. The labels are identical in width. Also, all capital lettering does not help users differentiate either.</li> <li>3. The “+” sign is ambiguous. In the search results it appears that its usage is to add a song to the playlist. The same “+” sign is also used for the “Follow” action which is used to follow artists.</li> <li>4. “Share” buttons are different in different places.</li> <li>5. There is “FOLLOW” button next to every “friends”; however, there is no such button next to Albums or playlists. The users have to right-click to follow.</li> </ul>
Screen / Scope	Various screens
Severity	Medium
Solutions / Recommendation	<ul style="list-style-type: none"> <li>1. Add sorting or filtering tools based on song title, artist album or music type. A drop-down can be added to select the category.</li> <li>2. Remove the all caps from the labels, to differentiate easily. Adding a colored header for each section would be helpful.</li> <li>3. As the users are comfortable using the “+” sign to add a song to a playlist; It can be used to add a song to an existing playlist or create a new playlist and add the song to that playlist.</li> <li>Different icons can be used to indicate “Save to Your Music” and “Follow”.</li> <li>4. Keep the “share” buttons consistent.</li> <li>5. Provide “FOLLOW” button for every albums, to keep consistency and avoid any confusion.</li> </ul>

Heuristic	Error prevention:
Description	If a folder is deleted, the playlist(s) in this folder are still available. The warning message displayed while deleting the folder does not specify this.
Screen / Scope	Playlists
Severity	Medium
Solutions / Recommendation	The warning message should specify this behavior. Warning message could be, “Playlists in the folder will not be deleted. Do you really want to delete this folder?”

Heuristic	Recognition rather than recall:
Description	<ul style="list-style-type: none"> <li>1. When users browse other playlists while playing a song from one of their playlist, there is no easy access to return to the playlist currently being played.</li> </ul>

	2. When users share the collaborative playlist with their friends, a message appears in the user's Spotify Messages (Inbox). There is no other way to see the shared and collaborated playlists.
Screen / Scope	Various screens
Severity	Medium
Solutions / Recommendation	<p>1. The "Return to Current Playlist" option should be provided.</p> <p>2. A "Shared Playlist" category displaying all the shared playlist can be created. Small icons could appear beside each playlist indicating if the playlist is only a shared playlist or collaborative and shared playlist.</p>

Heuristic	Flexibility and efficiency of use:
Description	<p>1. No immediate notification that a playlist or album has been share.</p> <p>2. Limitation to customize the search results view.</p> <p>3. The scrollbar is not easily visible.</p> <p>4. Users can not share the whole playlist with their follower.</p> <p>5. "Follow" is under "Activity" in the "Main" menu. Users have to click "Activity" and then follow people or albums. As one of the most used function, It's not efficient.</p>
Screen / Scope	Search
Severity	Medium
Solutions / Recommendation	<p>1. Provide immediate notification when users share a playlist or album.</p> <p>2. Add a customized filler tool to provide the freedom to users allowing reorganizing the search results view. Users should also be able to customize other settings to hide or show information based on their preferences.</p> <p>3. The color of the scrollbar can be changed to make it more visible.</p> <p>4. Add on button allow users to share the full playlist by one simple click.</p> <p>5. In the "Main" menu, add drop-down for "Activity", making it's easy for users to select follow people or albums.</p>

Heuristic	Aesthetic and minimalist design:
Description	Search results look similar visually; it is difficult for the users to easily identify what they are looking at in the search results.
Screen / Scope	Discover
Severity	Medium
Solutions / Recommendation	In each section, small changes can be made to the visuals by adding extra elements. For example, different color tones for different sections.

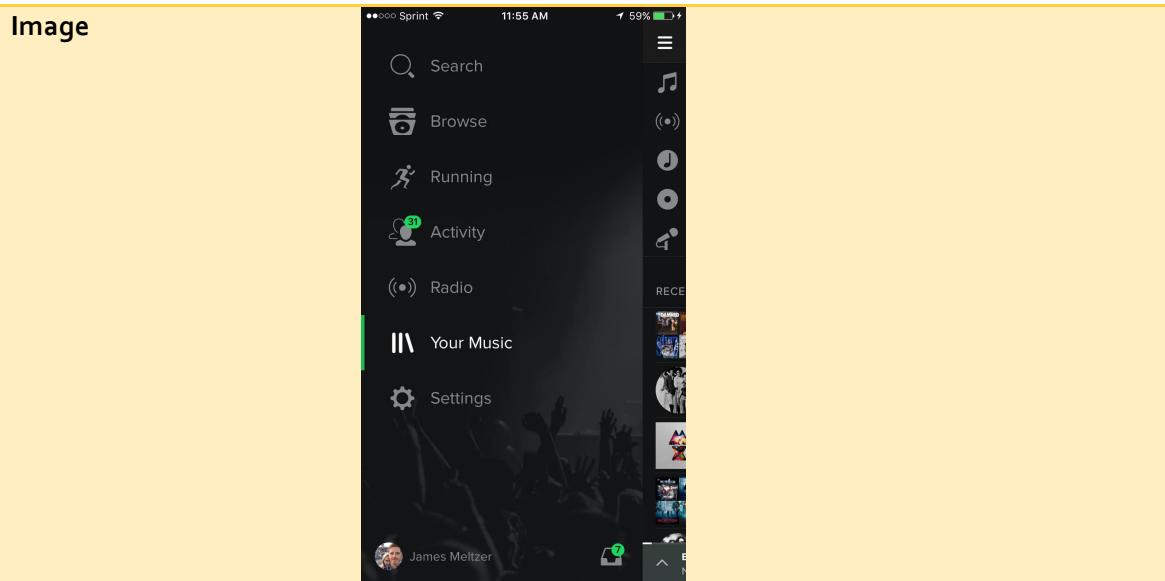
Heuristic	Help users recognize, diagnose and recover from errors
Description	If the search returns zero results, it suggest changing the word or trying different keywords
Screen / Scope	Playlist
Severity	Medium
Solutions / Recommendation	Suggest a different playlist or to use the main search function

Heuristic	Help and documentation
Description	<p>1. Users can not see their sharing history.</p> <p>2. It's hard for the users to track which artist or album they are already following.</p> <p>3. It is difficult to understand the process of adding a song to the collaborative playlist. Users are expected to understand that songs can be added only to the collaborative playlist that they follow. Also the difference between shared playlist and collaborative playlist does not appear to be clear to new users.</p>
Screen / Scope	
Severity	Medium
Solutions / Recommendation	<p>1. In "User Profile" Provide a dashboard to show what the user shared and related information.</p> <p>2. Add a "Follow" page to show users a list of the artists/albums they are following. The page could be under "Activity" page.</p> <p>3. A help icon can appear beside the "Collaborate Playlist" option. On clicking this icon a dialogue displaying the important actions (add/remove songs) that can be performed in collaborative playlist can appear.</p>

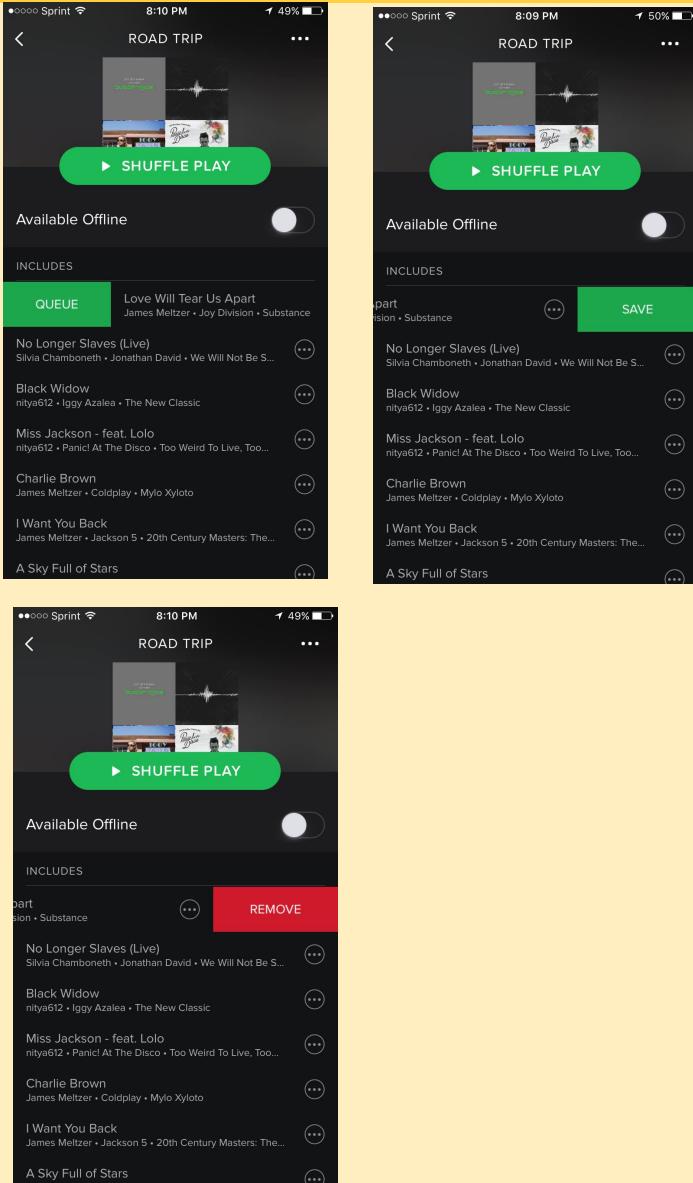
## HEURISTIC EVALUATION - MOBILE

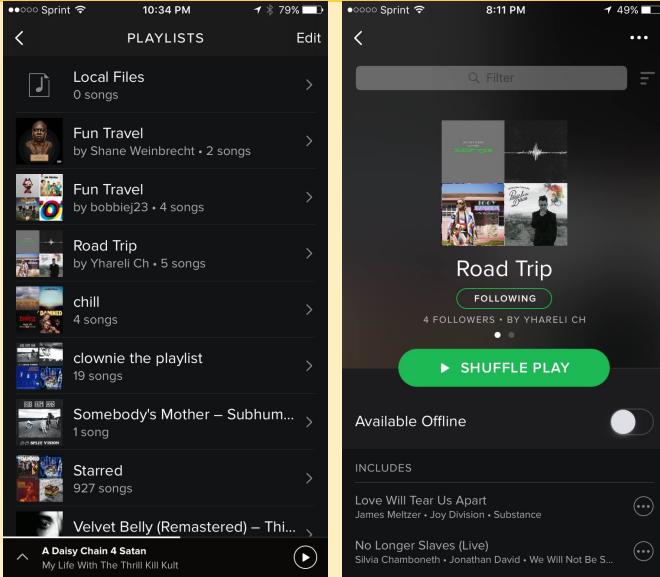
Heuristic	Visibility of system status (What is going on?)
<b>Description</b>	<p>Search results are confusing for a specific song by an artist</p> <ul style="list-style-type: none"> <li>• Top Result does not always show original performing artist</li> <li>• Top Result does not show specific song only “performed by” and “appears on”</li> <li>• Priority is given first to Albums, then Playlist, and finally Songs, assuming all three are available.</li> </ul> <p>Collaborative Playlist</p> <ul style="list-style-type: none"> <li>• No feedback to show the playlist is collaborative</li> </ul>
Screen / Scope	Search and Playlist
Severity	Low
<b>Solutions / Recommendation</b>	<ul style="list-style-type: none"> <li>• Change order of priority: Songs, Albums, and then Playlist.</li> <li>• Add the word “shared” next the number of songs</li> </ul>
<b>Image</b>	

Heuristic	User control and freedom: (Oops)
<b>Description</b>	Low discoverability of the Home menu (hamburger button)
<b>Screen / Scope</b>	Various screens
<b>Severity</b>	Medium
<b>Solutions / Recommendation</b>	Instead of hiding navigation use the tab bar to make items visible and instantly accessible

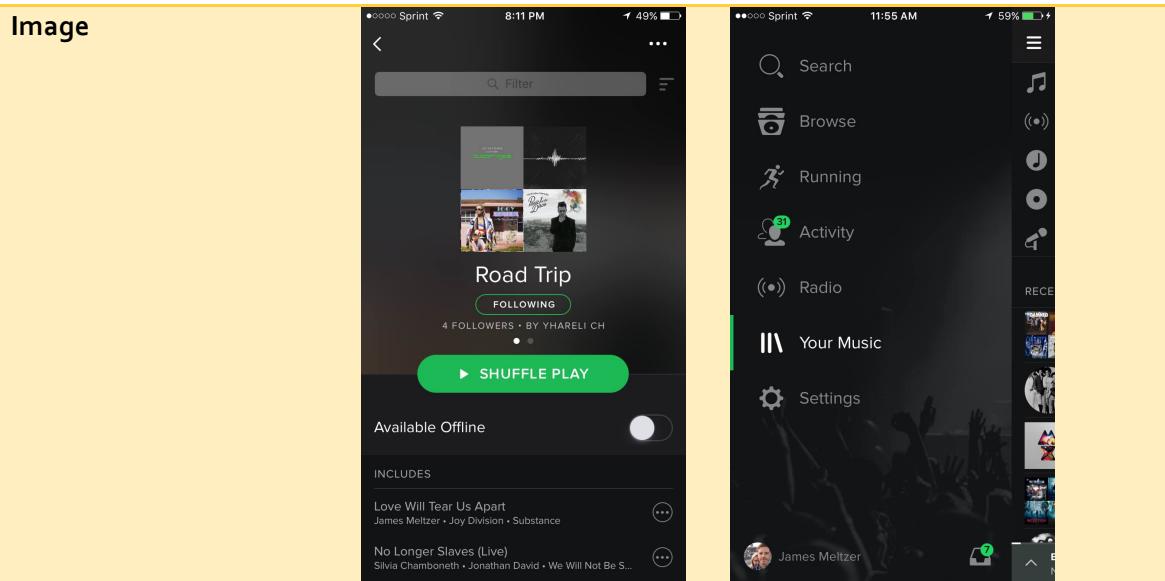


Heuristic	Consistency: (Oh, I know that!)
<b>Description</b>	The same more-menu icon (kebab button) is used for two different purpose: <ul style="list-style-type: none"> <li>• Top-left as part of navigation: edit a specific playlist</li> <li>• Next to the song: various actions</li> </ul>
<b>Screen / Scope</b>	Various screens
<b>Severity</b>	Low
<b>Solutions / Recommendation</b>	Replace kebab icon with the word "edit"
<b>Image</b>	<p>This screenshot shows a specific screen within the Spotify mobile app, likely a playlist or album screen. It displays a grid of song covers and a title 'Road Trip'. Below the title is a 'FOLLOWING' button, indicating the user follows the playlist. A large green 'SHUFFLE PLAY' button is prominent. At the bottom of the screen, there is a list of tracks under the heading 'INCLUDES'. Each track entry includes the song title, artist(s), and a small kebab menu icon (three vertical dots) to its right. The overall design is consistent with the home screen, maintaining a dark theme and a focus on the music content.</p>

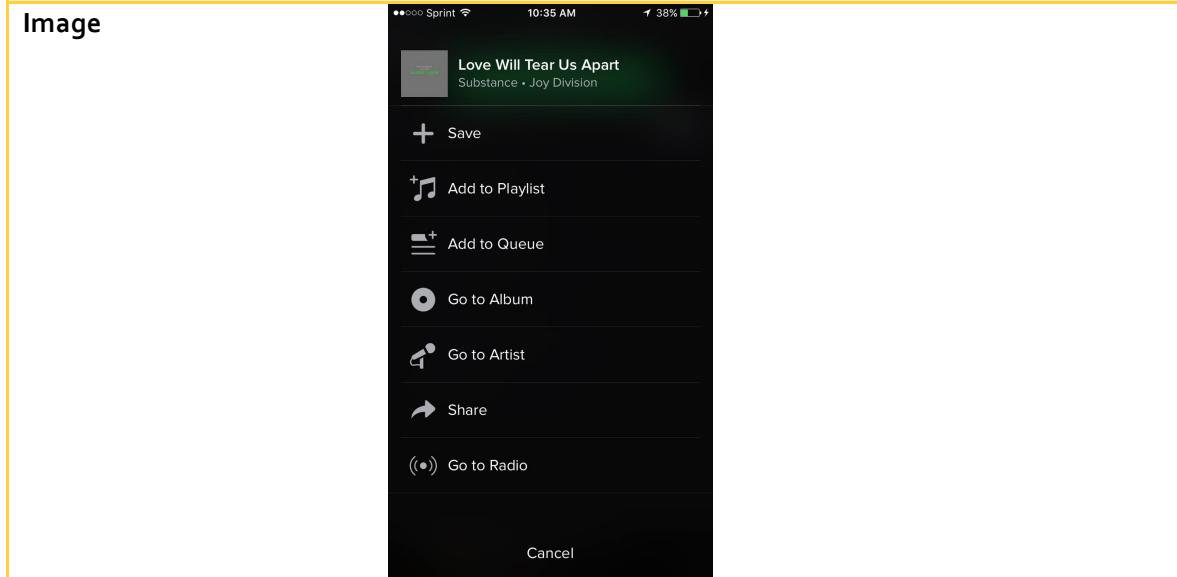
Heuristic	Error prevention (Glad, I didn't do that)
Description	Same interaction to "save or remove from your library" a song
Screen / Scope	Playlist screens
Severity	Low
Solutions / Recommendation	<p>Left swipe: save to library.</p> <ul style="list-style-type: none"> <li>Right swipe is currently used to "Add to Queue," yet that's already an option in the more-menu.</li> </ul> <p>Right swipe: remove from library</p>
Image	

<b>Heuristic</b>	Recognition rather than recall: (Wait, what was that again?)
<b>Description</b>	Low discoverability of "sort by" menu (3 dash lines)
	Playlist is hidden within Your Music requiring more recall and sometimes confusion when first using the application
<b>Screen / Scope</b>	Various screens
<b>Severity</b>	Medium
<b>Solutions / Recommendation</b>	Add Playlist to the main navigation
<b>Image</b>	

<b>Heuristic</b>	Aesthetic and minimalist design: (wow...and woah)
<b>Description</b>	Low discoverability of the Home menu (hamburger button) Low discoverability of "sort by" menu
<b>Screen / Scope</b>	All screens
<b>Severity</b>	Medium
<b>Solutions / Recommendation</b>	Instead of hiding navigation use the tab bar to make items visible and instantly accessible

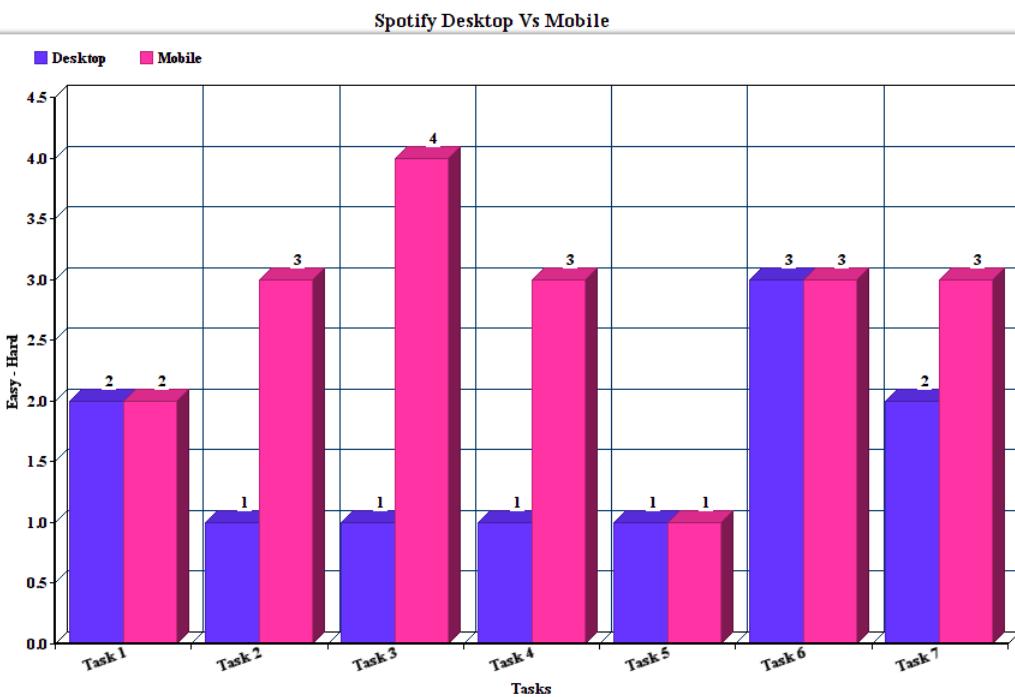


<b>Heuristic</b>	Help users recognize, diagnose and recover from errors (My bad)
<b>Description</b>	iOS users cannot delete songs from playlist
<b>Screen / Scope</b>	Playlist
<b>Severity</b>	Medium
<b>Solutions / Recommendation</b>	Include a "Remove from this playlist" option similar to the Android platform



## USER TESTING RESULTS FOR TASKS

### QUANTITATIVE RESULTS



**Figure 1: Ease of use for tasks performed Desktop Vs Mobile Application**

In both the platforms, all 7 tasks were common and have been compared in the above graph to understand the difference in comfort level from user's perspective in using Spotify. The results in the graph show that users had the same comfort level for some of the tasks in the Spotify desktop and mobile application. Overall the tasks in the desktop application were very easy for users to perform as compared to the tasks in the mobile application. The score rating was obtained from the "post-task questionnaires" that each participant filled at the end of each task. From the graph above, it is evident that the overall rating for the ease of use for tasks performed on the desktop application was much higher than that of the mobile application. This suggests that the website application is more usable than the mobile application.

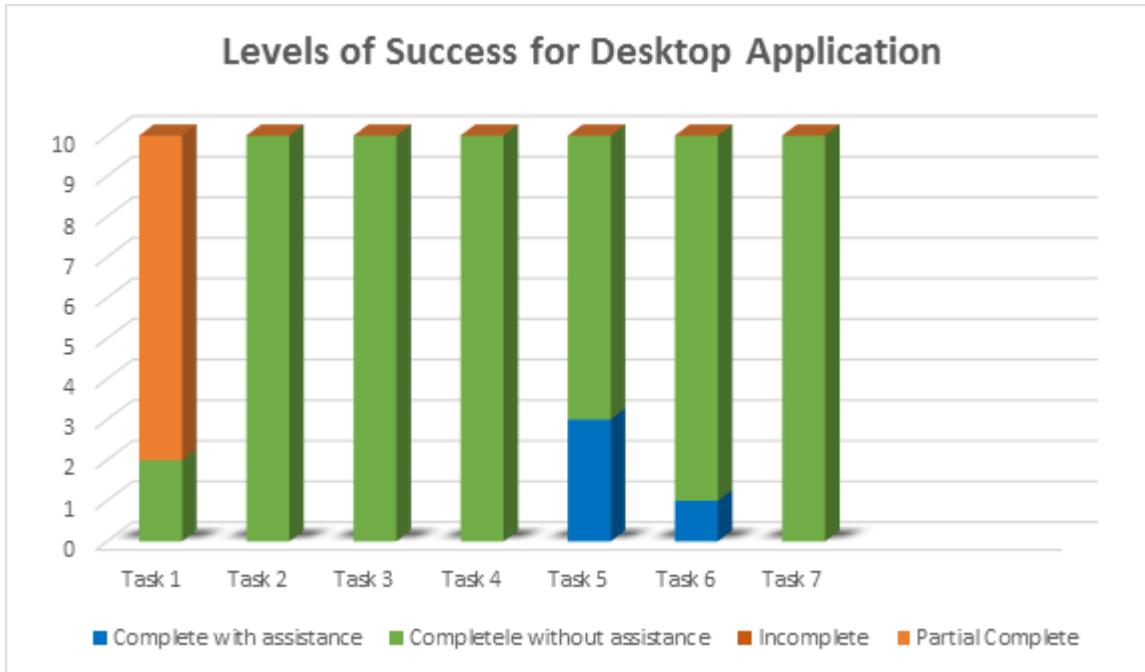


Figure 2: Level of Success Rate (task completion) for Desktop Application

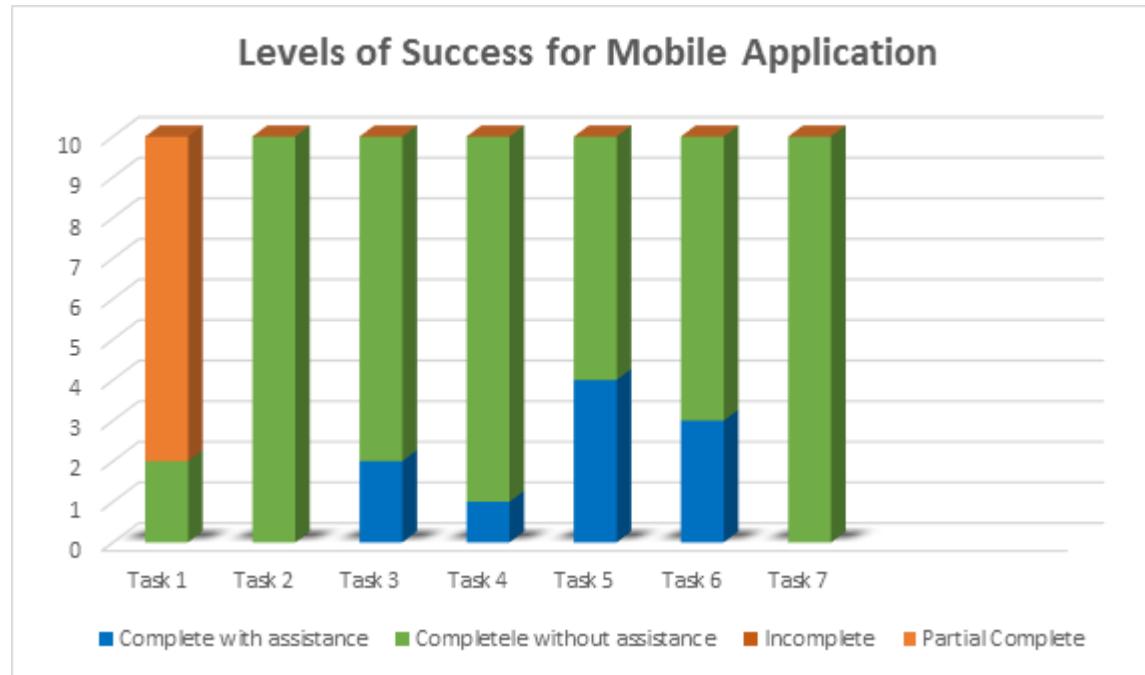


Figure 3: Level of Success Rate (task completion) for Mobile Application

Figure 2 and 3 above indicate the level of task completion on Spotify desktop and mobile application. The observers marked the tasks as:

- Complete without assistance: User completed the task without any help
- Partially complete: Completed a part of the task successfully

- Complete with assistance: Completed the task with some assistance by the facilitator
- Incomplete: Could not complete the task altogether

The graphs offer an understanding of the task completion ratings compared over the two platforms. The graph shows that the tasks were more easily completed when performed on the desktop application.

## QUALITATIVE ANALYSIS

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### **Task one: Search for Songs**

**Task Description:** You're planning to go on a road trip with some friends and you want to create a playlist where all of you can collaborate. First, you want to search for two songs "Shake it off" by Taylor Swift and "Paradise" by Coldplay. How might you go about doing that?

**Issue:** User does not receive feedback if a certain artist is not available on Spotify

**PLATFORM: MOBILE**

**Severity Rating:** **High**

**User Expectations:** User expects to find the song at least when he/she searches by the artist or looks into collections by artists. User gets more confused about the system because the system does display songs by the names but has different artists singing the same song.

**Recommendations:** System needs to give required feedback to users so that users know that a particular artist is not available on Spotify.

**PLATFORM: DESKTOP**

**Severity Rating:** **Average**

**User Expectations:** User expects to find the song at least when he/she searches by the artist or looks into collections by artists. User gets more confused about the system because the system does display songs by the names but has different artists singing the same song. Although the system does give feedback that a particular song is not available on Spotify, this is after the list of songs. Hence, a user might not see this message as there will be a lot of scrolling to do before one finds this message

**Recommendations:** System needs to give required feedback to users in the beginning itself and not at the end of the list.

**Issue:** Although a particular song is available on Spotify, the search results that are provided are under different categories. However, these categories are not seen clearly because of the same monotonous black, grey and white tone used.

#### PLATFORM: MOBILE AND DESKTOP

**Severity Rating:** **Average**

**User Expectations:** The user expects to see exactly what the application is showing but in a better visual fashion.

**Recommendation:** Change the color of the search results categories (Top Results, Playlist, Album, and Song) to match the Spotify green accent color

---

#### Task two: Create a playlist

**Task Description:** You want to create a playlist called “Fun Travel”, how might you go about doing that?

**Issue:** Creating a playlist is a complex task

#### PLATFORM: MOBILE

**Severity Rating:** **Average**

**User Expectations:** There is more than one way to create a playlist and users found this task doable but users expected to see a create new playlist option when they open the list of playlists

**Recommendations:** Provide a direct option to create new playlist in the mobile just as the desktop.

---

#### Task three: Add/Delete songs to a playlist

**Task Description:** You want to add/delete songs to the playlist. You are going to search the song “Paradise” by Coldplay again, and add it to “Fun Travel” playlist. And then, you are going to search another song of your choice and add your song to the playlist. After you add two songs into the playlist, you are going to delete one of them. How might you go about doing that?

**Issue:** Deleting a song from the playlist is a complex task that most users did not find

**PLATFORM: MOBILE****Severity Rating: Critical**

**User Expectations:** User expected to see the remove song from playlist when they click the kebab against the song but deleting the song option is three clicks away after the user clicks the kebab against the playlist. This was not something any user did.

**Recommendations:** Provide a direct option to remove a song from playlist on click of the kebab against the song.

**Issue:** Adding a song to a playlist gets confusing because the “Save to your music” (+) icon on/off feature is not clear to the user. Users mistakenly clicked to add to playlist. Changes to a check mark, which the user was unclear as to what this indicated

**PLATFORM: DESKTOP****Severity Rating: Average**

**User Expectations:** User expected to click on the + symbol and add that particular song to a playlist.

**Recommendations:** Change wording (+): Save to Songs

---

**Task four: Follow your friends**

**Task Description:** You are going to follow your friends. First, you will search one for your friend, and then follow him/her. How might you go about doing that?

**Issue:** Following your friends becomes complex if a user’s account is not linked to Facebook.

**PLATFORM: MOBILE AND DESKTOP****Severity Rating: Critical**

**User Expectations:** User expected to find friends via Spotify without linking one’s account to Facebook

**Recommendations:** Provide a way to find friends on Spotify platform or make connecting via Facebook a more easier and efficient function.

---

**Task five: Share your playlist**

**Task Description:** You are going to share the playlist with your friend. How might you go about doing that? Can you verify that it’s shared?

**Issue:** User does not get any visual feedback that a playlist has been shared.

**PLATFORM: DESKTOP****Severity Rating: Critical**

**User Expectations:** User expected to see a feedback or an alert message, which showed that a particular playlist has been shared.

**Recommendations:** Provide feedback in the form of an alert message and by showing a shared symbol or a word that says shared against a playlist

**Issue:** Visual feedback is only available for the moment but not for later reference

**PLATFORM: MOBILE****Severity Rating: Average**

**User Expectations:** User expected to see which of his/her playlist was shared and which was not.

**Recommendations:** Add the word "SHARED" in green to show that playlist has been shared.

**Issue:** No iconography is shown in the side panel to indicate that a playlist is shared

**PLATFORM: MOBILE****Severity Rating: Average**

**Recommendations:** Change the color of the note to green to show that it's shared.

---

**Task six: Make your playlist collaborative**

**Task Description:** The playlist that you just shared can you allow your friends to add songs? How to make the shared playlist collaborative? Do you have any control over permission with the people it's shared with?

**Issue:** Visual feedback provided is not effective

**PLATFORM: DESKTOP****Severity Rating: Average**

**User Expectations:** User expected to see a feedback in the form of an alert message when the playlist was made collaborative and although the word collaborative was shown against the playlist name, it was not visible because of the visual tones used.

**Recommendations:** Provide feedback in the form of an alert message and also change the color of the Collaborative word to the green used by Spotify to make it more visible.

**Issue:** Iconography for collaborative playlist is not clear

**PLATFORM: DESKTOP AND MOBILE**

**Severity Rating:** **Average**

**Recommendations:** Enclose music notice with a green circle to show that it's collaborative

---

**Task seven: Add / Delete Songs from a Collaborative Playlist**

**Task Description:** If you are going to add/delete a song to the shared playlist? How might you go about doing that?

**Issue:** Deleting a song from the collaborative playlist has too many steps involved, hence it is difficult for the user to find how to delete a song

**PLATFORM: MOBILE**

**Severity Rating:** **Critical**

**User Expectations:** User expected to find an option that removes song from the playlist when he/she clicks on the kebab against the song.

**Recommendations:** Provide an option to remove song from playlist on clicking the kebab.

## RECOMMENDATIONS

Below are the overall issues and recommendations to improve the experience and functionality of Spotify, which integrates the usability testing and expert evaluation results.

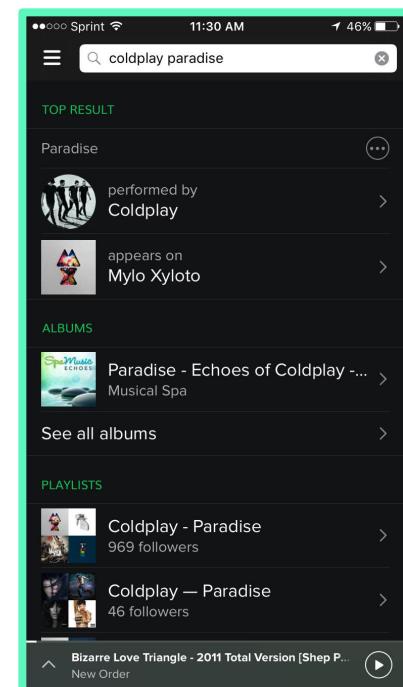
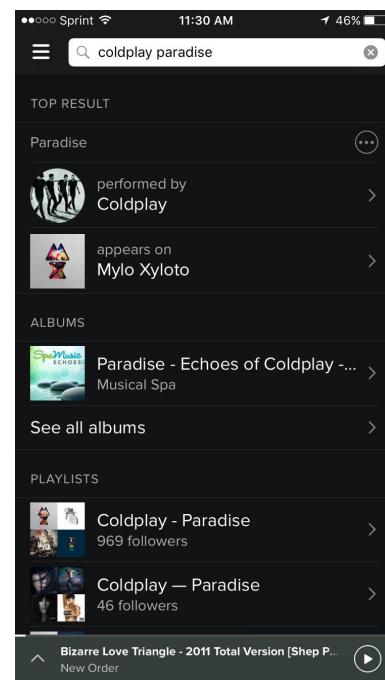
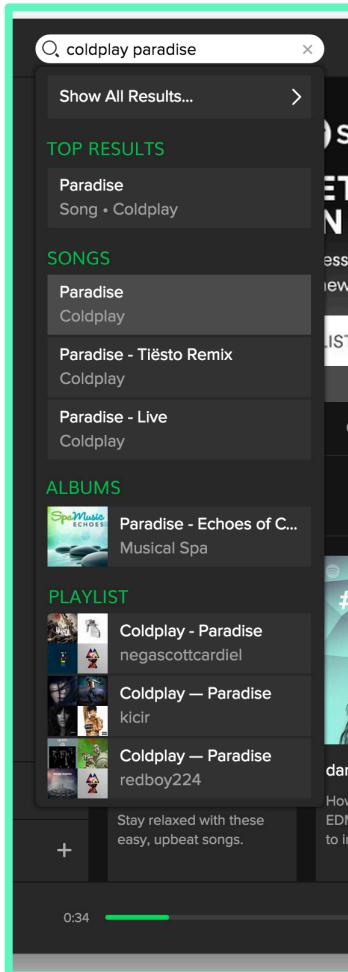
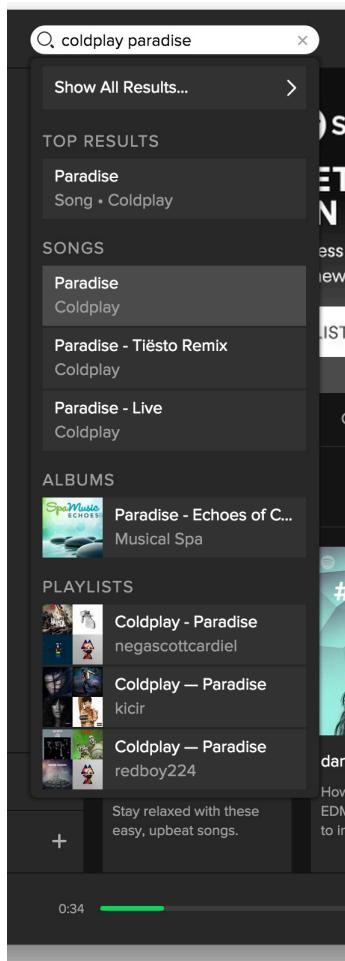
**General issue:** There are multiple inconsistencies among the platform experiences.

- **Functionality**
  - Users with a Facebook account are able to connect and perform certain tasks faster, such as finding friends, following, and sharing playlist.
  - The visibility of system status is better on mobile compared to desktop. There's almost immediate feedback when the user performs an action on mobile but it's almost non-existent on desktop. On the other hand, desktop is more clear.
- **User Interface**
  - Certain iconography is not easily recognized by the user or may not be easily seen.
  - Several users complained about the desktop application having too many layers to

## Recommendation

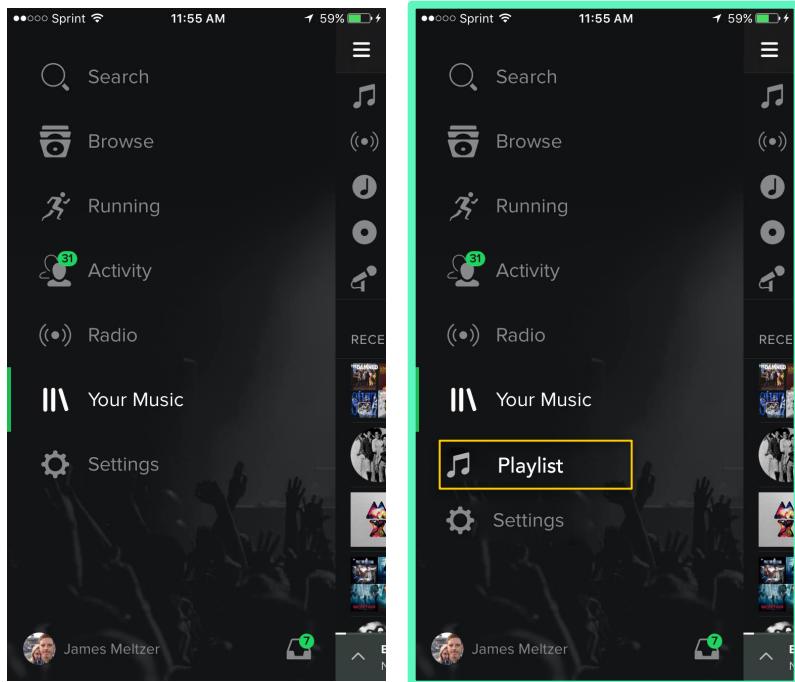
### Search results

**Recommendation applies both platforms:** There is confusion between songs, albums, and playlist with similar name. Also, there is enough contrast between background color and text colors, which reduces the readability. Change the color of the search results categories (Top Results, Playlist, Album, Song) to match the Spotify green accent color

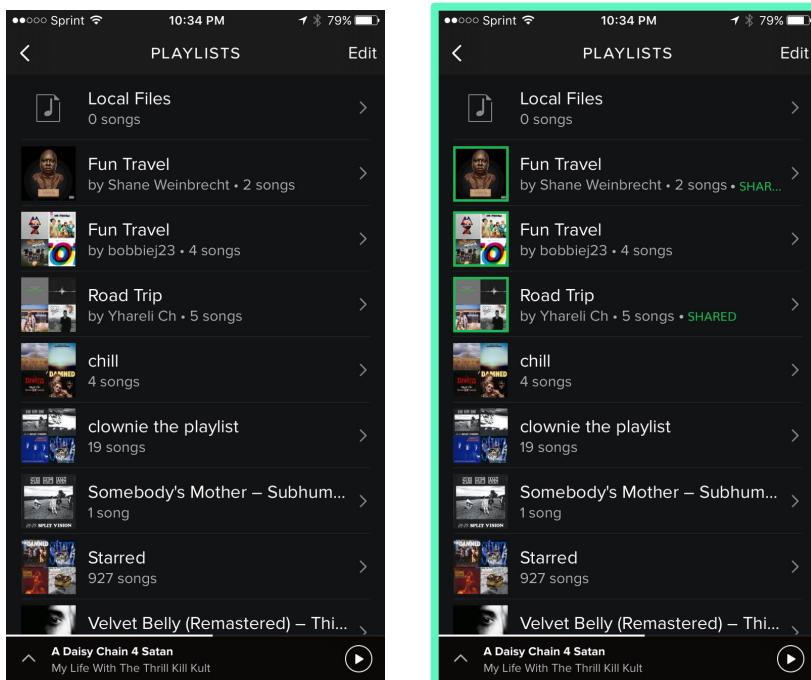


### Creating a playlist

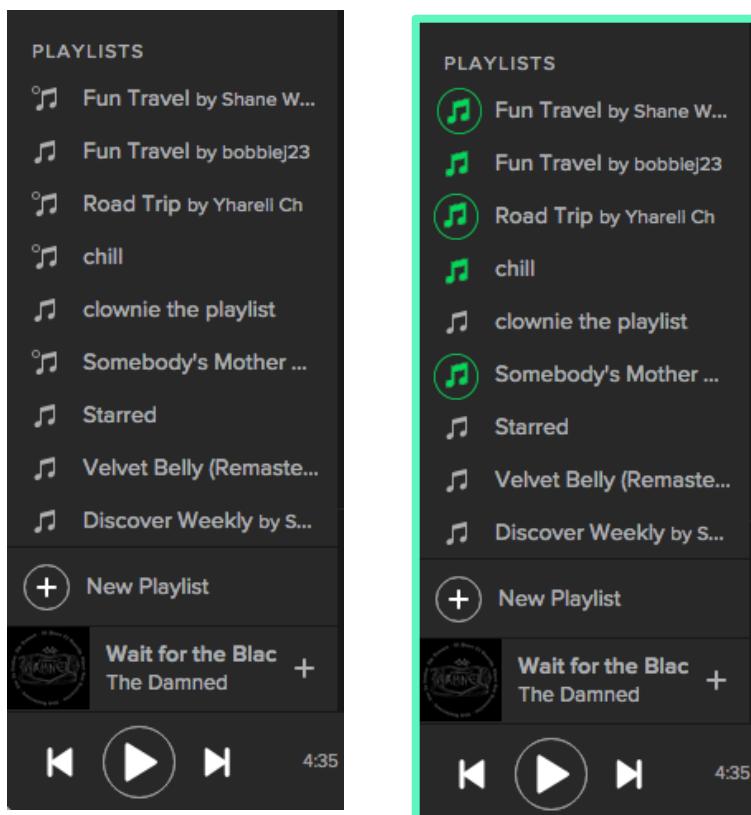
**Recommendation for Mobile:** It is more challenging to create a playlist in mobile than desktop. Add Playlist as part of the main menu items; below “Your Music” and On the Playlist screen replace the edit option with “create new playlist” icon.



## Collaborative Playlist



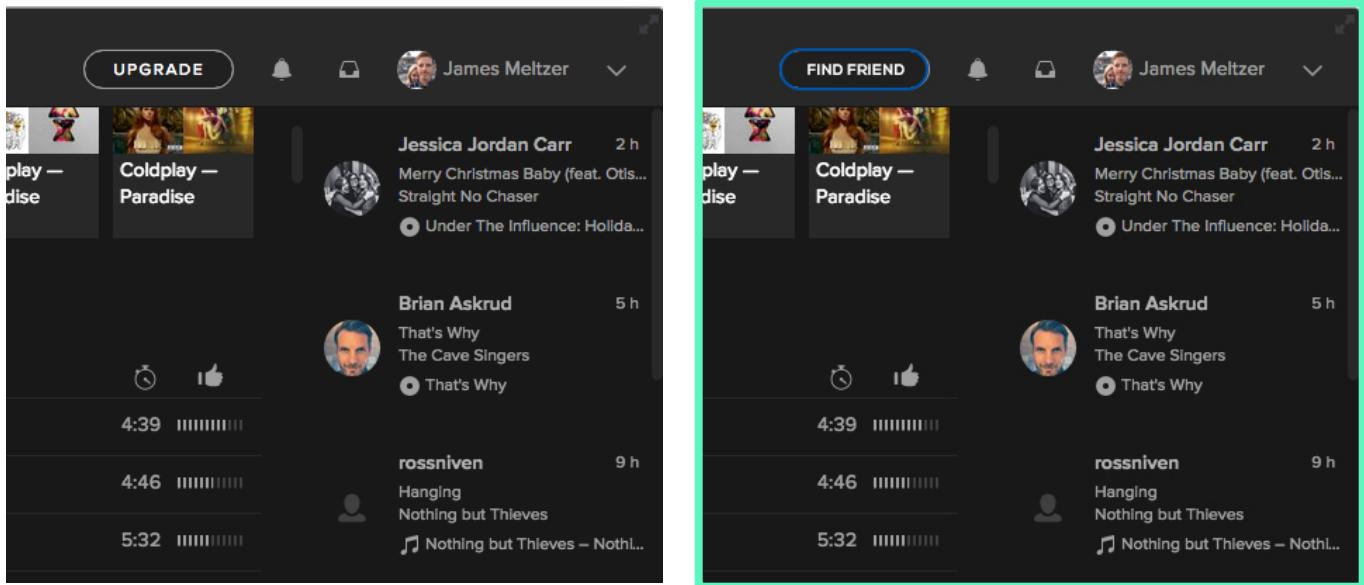
**Recommendation for Mobile:** The mobile application has no visual cue that shows a playlist is collaborative. We propose enclosing the music note with a green circle to show that it's collaborative. Add the word "SHARED" in green to show that playlist has been shared.



**Recommendation for Desktop:** The visual cue is limited and almost dismissible by participants. Instead, Enclose music note with a green circle to show that it's collaborative. Change the color of the note to green to show that it's shared.

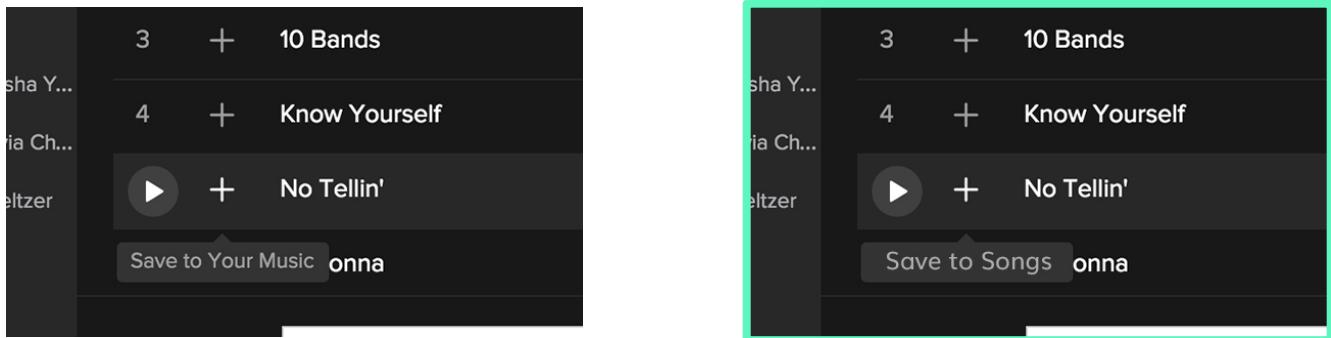
## Following people

**Recommendation for Desktop:** Although overall users found it easy to locate the “Find Friends” buttons, on the desktop applications it would be more visible next to the notification icon instead of having the upgrade button.



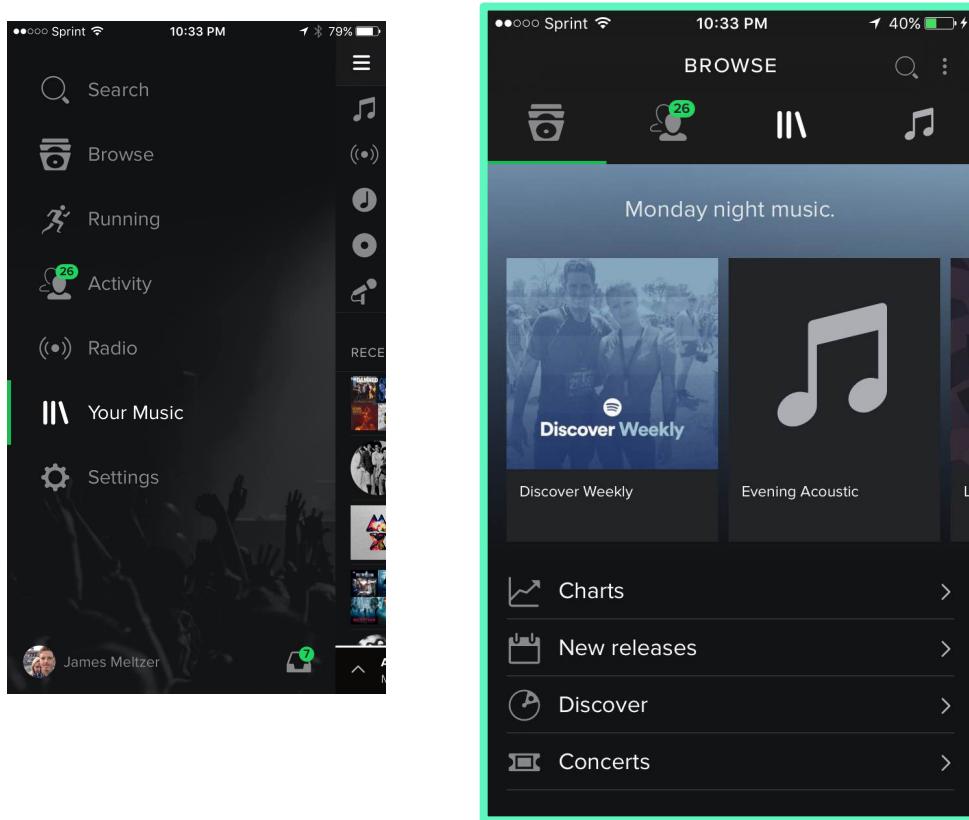
## Iconography

**Recommendation for Desktop:** The “Save to your music” (+) icon on/off feature is not clear to the user. Users mistakenly clicked on it thinking it would add the song to their playlist. Then it would change to a check mark and the users were unclear what this indicated. A simple solution is to instead, change the wording to say “Save to Songs” when user hovers over the (+) icon.



## Navigation

**Recommendation for Mobile:** Since the navigation relies mainly on recognition rather than recall, the users would not be able to remember what each action meant, where they were, and thought it was confusing to have multiple ways to complete a task. Instead we propose replacing hamburger menu with a tab bar menu to make items (Browse, Activity, Your Music, Your Playlist) visible and instantly accessible. Additionally, a Kebab menu could be used to hide secondary items, such as settings.



## Visibility and design

**Recommendation applies both platforms:** Color contrast between font and background is minimal. For instance, users did not notice when a playlist was collaborative even though a light-gray text appeared above next to it. As a result, we suggest changing the color of the menu items and some of the iconography to match the Spotify green accent color.

The design proposals can be seen in the previous recommendations.

**APPENDIX****APPENDIX A****CONSENT FORM****A/B Comparative Study of Spotify Desktop Application vs Mobile Application:**

Thank you for participating in this study!

This is a study is about....

--PURPOSE: This study is part of an assignment for a graduate-level Human Computer Interaction course at IUPUI taught by Mike Wilson ([mlarew@iupui.edu](mailto:mlarew@iupui.edu)).

-- RISKS: There are no risks anticipated with participation in the study. The study will involve observation of and questioning about activities that are familiar to you.

-- CONFIDENTIALITY: No personal data will be collected in this study. No personal information will be distributed or shared with anyone outside this study, unless required by law.

-- VOLUNTARY: Your participation is voluntary and you may choose not to take part or you may leave the study at any time.

-- CONTACTS: For questions about the study, contact the researchers: James Meltzer ([jmeltzer@iupui.edu](mailto:jmeltzer@iupui.edu)) or Shanglei Zhang ([sz27@iu.edu](mailto:sz27@iu.edu)) or Rehab Tambe ([rehabtambe@iupui.edu](mailto:rehabtambe@iupui.edu)) or Yhareli Chamboneth () or Nitya Pannala ([nitpanna@iu.edu](mailto:nitpanna@iu.edu)). Also, for questions about your rights as a research participant or to discuss problems, complaints or concerns about the research study, or to obtain information or offer input, contact the course instructor.

-- SUBJECT'S CONSENT: Participation in this study is an acknowledgment that you understand the nature of the study and has given your permission to participate.

Signature of the participant: \_\_\_\_\_

**USABILITY TESTING SCRIPT****A/B Comparative Study of Spotify Desktop Application vs Mobile Application:**

Date: \_\_\_\_\_  
Facilitator: \_\_\_\_\_  
Participant: \_\_\_\_\_  
Year & Major: \_\_\_\_\_

**PRE-TEST CHECKLIST****1. Supplies:**

- a. Usability Testing Script
- b. Pen
- c. Notepad/Paper
- d. Recorder (e.g. video, iPhone, laptop)

**2. Legal**

- a. Non-disclosure Agreement

**3. Setup**

- a. Noise Proof Enclosed Room
- b. A Desk/Table
- c. Chairs
- d. Computer

**Introduction Speech:**

Hi, \_\_\_\_\_. My name is \_\_\_\_\_, and I'm going to be walking you through this session today.

Before we begin, I have some information for you, and I'm going to read it to make sure that I cover everything.

You probably already have a good idea of why we asked you here, but let me go over it again briefly. We're asking people to try using Spotify so we can see whether it works as intended. The session should take about an hour.

The first thing I want to make clear right away is that we're testing Spotify, not you. You can't do anything wrong here. In fact, this is probably the one place today where you don't have to worry about making mistakes.

As you use Spotify, I'm going to ask you as much as possible to try to think out loud: to say what you're looking at, what you're trying to do, and what you're thinking. This will be a big help to us.

Also, please don't worry that you're going to hurt our feelings. We're doing this to improve Spotify, so we need to hear your honest reactions. Whatever you think is dumb, please tell me.

**Scenario**

Ok, for our scenario today, we are going to ask you to use the Spotify desktop/mobile application. You're planning to go on a road trip with some friends and you want to create a playlist where all of you can collaborate.

**Background Information:**

- How do you normally listen to music? (phone? computer?)
- Do you listen to music very often?
- Do you share music with friends?
- Do you have a preferred platform to use or share music?
- If yes, what is your preferred platform to use or share music?
- If no, have you used Spotify before?
- How familiar are you with Spotify? (1=Infrequent, 2=moderate, 3=frequent user)
- Which approach do you prefer to create a playlist?
  - Start with an empty playlist and then search/add music
  - Search for songs first, then create a playlist around them

(Allow user a minute or two to familiarize themselves with Spotify and create an account if needed)

**Usability Test:**

First, I'm just going to ask you to look at this application and tell me what you think it is, what strikes you about it, and what you think you would click on first. For now, don't actually click on anything; just tell me what you would click on. And again, as much as possible, it will help us if you can try to think out loud so we know what you're thinking about.

**TASK SHEET****TASKSHEET - Desktop**

Inspection Site: Spotify Desktop

Interview Date: \_\_\_\_\_

Participant Number: \_\_\_\_\_

Participant Name: \_\_\_\_\_

Facilitator Name: \_\_\_\_\_

Observer Name: \_\_\_\_\_

<b>TASK NO.</b>	<b>TASK DESCRIPTION</b>
1	You're planning to go on a road trip with some friends and you want to create a playlist where all of you can collaborate. First, you want to search for two songs "Shake it off" by Taylor Swift and "Paradise" by Coldplay. How might you go about doing that?
2	You want to create a playlist called "Fun Travel", how might you go about doing that?
3	You want to add/delete songs to the playlist. You are going to search the song "Paradise" by Coldplay again, and add it to Fun Travel playlist. And then, you are going to search another song of your choice and add your song to the playlist. After you add two songs into the playlist, you are going to delete one of them. How might you go about doing that?
4	You are going to follow your friends. First, you will search one for your friend, and then follow him/her. How might you go about doing that?
5	You are going to share the playlist with your friend. How might you go about doing that? Can you verify that it's shared?
6	The playlist that you just shared can you allow your friends to add songs? How to make the shared playlist collaborative? Do you have any control over permission with the people it's shared with?
7	You are going to add/delete a song to the shared playlist? How might you go about doing that?

<b>TASKSHEET - Desktop</b>	
Inspection Site: <b>Spotify Mobile</b>	
Interview Date: _____	
Participant Number: _____	
Participant Name: _____	
Facilitator Name: _____	
Observer Name: _____	
<b>TASK NO.</b>	<b>TASK DESCRIPTION</b>
1	You're planning to go on a road trip with some friends and you want to create a playlist where all of you can collaborate. First, you want to search for two songs "Shake it off" by Taylor Swift and "Paradise" by Coldplay. How might you go about doing that?
2	You want to create a playlist called "Fun Travel", how might you go about doing that?
3	You want to add/delete songs to the playlist. You are going to search the song "Paradise" by Coldplay again, and add it to Fun Travel playlist. And then, you are going to search another song of your choice and add your song to the playlist. After you add two songs into the playlist, you are going to delete one of them. How might you go about doing that?
4	You are going to follow your friends. First, you will search one for your friend, and then follow him/her. How might you go about doing that?
5	You are going to share the playlist with your friend. How might you go about doing that? Can you verify that it's shared?
6	The playlist that you just shared can you allow your friends to add songs? How to make the shared playlist collaborative? Do you have any control over permission with the people it's shared with?
7	You are going to add/delete a song to the shared playlist? How might you go about doing that?

**POST TASK QUESTIONS****Task Evaluation: Spotify - Desktop****Task: Search for songs**

---

1. **How was your overall experience searching for a song?**

*Mark only one oval.*

**Task: Create a playlist**

---

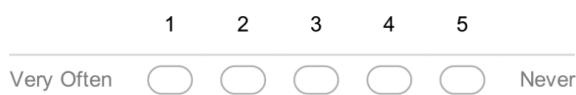
2. **How was your overall experience creating a playlist?**

*Mark only one oval.*



3. **How often would you create a playlist?**

*Mark only one oval.*

**Task: Add/Delete songs from playlist**

---

4. **Rate your difficulty to ADD a song**

*Mark only one oval.*



5. **Rate your difficulty to DELETE a song**

*Mark only one oval.*



## Task: Follow people

---

**6. How was your overall experience FINDING a way to search for a friend?**

*Mark only one oval.*

1      2      3      4      5

Easy                     Hard

---

**7. How was your overall experience SEARCHING for a friend?**

*Mark only one oval.*

1      2      3      4      5

Easy                     Hard

---

**8. Rate how often you would search for a friend**

*Mark only one oval.*

1      2      3      4      5

Very Often                     Never

---

**9. How was your overall experience FOLLOWING friend?**

*Mark only one oval.*

1      2      3      4      5

Easy                     Hard

---

**10. Rate how often you would follow for a friend**

*Mark only one oval.*

1      2      3      4      5

Very Often                     Never

---

## Task: Share playlist

---

**11. How was your overall experience sharing a playlist?**

*Mark only one oval.*

1      2      3      4      5

Easy                     Hard

---

**12. Rate how often you would share a playlist***Mark only one oval.*

1      2      3      4      5

Very Often      Never**Task: Make playlist collaborative**

---

**13. How was your overall experience making a collaborative playlist?***Mark only one oval.*

1      2      3      4      5

Easy      Hard**14. Rate your how often you would make a collaborative playlist***Mark only one oval.*

1      2      3      4      5

Very Often      Never**Task: Add/Delete to songs to a shared playlist**

---

**15. Rate your difficulty to ADD a song to shared playlist***Mark only one oval.*

1      2      3      4      5

Easy      Hard**16. How often would you add a song to a shared playlist?***Mark only one oval.*

1      2      3      4      5

Very Often      Never**17. Rate your difficulty to DELETE a song to shared playlist***Mark only one oval.*

1      2      3      4      5

Easy      Hard

**18. How often would you delete a song to a shared playlist***Mark only one oval.*

1      2      3      4      5

Very Often                        Never**Task Evaluation: Spotify - Mobile****Task: Search for songs**

---

**1. How was your overall experience searching for a song?***Mark only one oval.*

1      2      3      4      5

Easy                        Hard**Task: Create a playlist**

---

**2. How was your overall experience creating a playlist?***Mark only one oval.*

1      2      3      4      5

Easy                        Hard**3. How often would you create a playlist?***Mark only one oval.*

1      2      3      4      5

Very Often                        Never**Task: Add/Delete songs from playlist**

---

**4. Rate your difficulty to ADD a song***Mark only one oval.*

1      2      3      4      5

Easy                        Hard**5. Rate your difficulty to DELETE a song***Mark only one oval.*

1      2      3      4      5

Easy                        Hard

## Task: Follow people

---

**6. How was your overall experience FINDING a way to search for a friend?**

Mark only one oval.

1	2	3	4	5	
Easy	<input type="radio"/> Hard				

**7. How was your overall experience SEARCHING for a friend?**

Mark only one oval.

1	2	3	4	5	
Easy	<input type="radio"/> Hard				

**8. Rate how often you would search for a friend**

Mark only one oval.

1	2	3	4	5	
Very Often	<input type="radio"/> Never				

**9. How was your overall experience FOLLOWING friend?**

Mark only one oval.

1	2	3	4	5	
Easy	<input type="radio"/> Hard				

**10. Rate how often you would follow for a friend**

Mark only one oval.

1	2	3	4	5	
Very Often	<input type="radio"/> Never				

## Task: Share playlist

---

**11. How was your overall experience sharing a playlist?**

Mark only one oval.

1	2	3	4	5	
Easy	<input type="radio"/> Hard				

**12. Rate how often you would share a playlist***Mark only one oval.*

1      2      3      4      5

Very Often      Never**Task: Make playlist collaborative**

---

**13. How was your overall experience making a collaborative playlist?***Mark only one oval.*

1      2      3      4      5

Easy      Hard**14. Rate your how often you would make a collaborative playlist***Mark only one oval.*

1      2      3      4      5

Very Often      Never**Task: Add/Delete to songs to a shared playlist**

---

**15. Rate your difficulty to ADD a song to shared playlist***Mark only one oval.*

1      2      3      4      5

Easy      Hard**16. How often would you add a song to a shared playlist?***Mark only one oval.*

1      2      3      4      5

Very Often      Never**17. Rate your difficulty to DELETE a song to shared playlist***Mark only one oval.*

1      2      3      4      5

Easy      Hard

**18. How often would you delete a song to a shared playlist***Mark only one oval.*

1      2      3      4      5

Very Often                        Never**Post-Tasks Questions: Spotify - Desktop***\* Required***1. What are your overall impressions of the application?**

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**2. If you had to give the application a grade, from A to F, what grade would you give it, and why?***Mark only one oval.*1      2      3      4      5      6  
A                         F**3. What are the three things you like **BEST** about Spotify? \***

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---

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**4. What are the three things you like **LEAST** about Spotify? \***

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---

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5. If you could make one significant change to Spotify, what change would you make?

.....  
.....  
.....  
.....

6. Would you recommend this Spotify site to a friend?

*Mark only one oval.*

Yes

No

Other: .....

7. Do you have any other comments about using Spotify?

.....  
.....  
.....  
.....

## Post-Tasks Questions: Spotify - Mobile

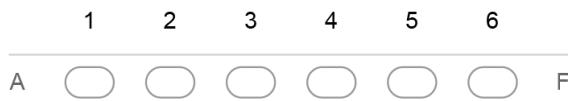
\* Required

1. What are your overall impressions of the application?

.....  
.....  
.....  
.....  
.....

2. If you had to give the application a grade, from A to F, what grade would you give it, and why?

Mark only one oval.



3. What are the three things you like BEST about Spotify? \*

.....  
.....  
.....  
.....  
.....

4. What are the three things you like LEAST about Spotify? \*

.....  
.....  
.....  
.....  
.....

**5. If you could make one significant change to Spotify, what change would you make?**

.....  
.....  
.....  
.....  
.....

**6. Would you recommend this Spotify site to a friend?**

*Mark only one oval.*

- Yes  
 No  
 Other: .....

**7. Do you have any other comments about using Spotify?**

.....  
.....  
.....  
.....  
.....

**SUS QUESTIONNAIRE****SUS questionnaire: Spotify - Desktop**

1. I think that I would like to use Spotify frequently

*Mark only one oval.*

1      2      3      4      5

Strongly Agree

Strongly Disagree

2. I found Spotify unnecessarily complex

*Mark only one oval.*

1      2      3      4      5

Strongly Agree

Strongly Disagree

3. I thought Spotify was easy to use.

*Mark only one oval.*

1      2      3      4      5

Strongly Agree

Strongly Disagree

4. I think that I would need the support of a technical person to be able to use Spotify

*Mark only one oval.*

1      2      3      4      5

Strongly Agree

Strongly Disagree

5. I found the various functions in Spotify were well integrated

*Mark only one oval.*

1      2      3      4      5

Strongly Agree

Strongly Disagree

6. I thought there was too much inconsistency in Spotify

*Mark only one oval.*

## SUS questionnaire: Spotify - Mobile

1. I think that I would like to use Spotify frequently

Mark only one oval.

1      2      3      4      5

Strongly Agree

Strongly Disagree

2. I found Spotify unnecessarily complex

Mark only one oval.

1      2      3      4      5

Strongly Agree

Strongly Disagree

3. I thought Spotify was easy to use.

Mark only one oval.

1      2      3      4      5

Strongly Agree

Strongly Disagree

4. I think that I would need the support of a technical person to be able to use Spotify

Mark only one oval.

1      2      3      4      5

Strongly Agree

Strongly Disagree

5. I found the various functions in Spotify were well integrated

Mark only one oval.

1      2      3      4      5

Strongly Agree

Strongly Disagree

**6. I thought there was too much inconsistency in Spotify***Mark only one oval.*

1      2      3      4      5

Strongly Agree                        Strongly Disagree**7. I would imagine that most people would learn to use Spotify very quickly***Mark only one oval.*

1      2      3      4      5

Strongly Agree                        Strongly Disagree**8. I found Spotify very cumbersome to use***Mark only one oval.*

1      2      3      4      5

Strongly Agree                        Strongly Disagree**9. I felt very confident using Spotify***Mark only one oval.*

1      2      3      4      5

Strongly Agree                        Strongly Disagree**10. I needed to learn a lot of things before I could get going with Spotify***Mark only one oval.*

1      2      3      4      5

Strongly Agree                        Strongly Disagree

## APPENDIX B

## TASK EVALUATION RESPONSES RECEIVED

## Task Evaluation Response (Spotify Desktop)

\	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18
U1	2	2	1	2	1	2	2	4	1	4	1	4	2	5	2	5	1	3
U2	2	1	3	1	1	1	1	4	1	3	1	3	2	4	1	5	1	2
U3	1	1	2	2	3	1	1	3	1	3	1	1	1	4	2	4	1	5
U4	2	1	3	2	1	1	1	3	1	3	1	4	3	5	N/A	N/A	N/A	N/A
U5	4	3	3	1	1	1	1	3	1	3	1	2	1	3	1	1	1	4
U6	3	2	3	4	4	1	1	5	1	5	3	4	2	4	N/A	N/A	N/A	N/A
U7	1	1	4	1	1	1	1	4	1	4	3	3	2	4	1	5	1	4
U8	2	1	4	1	1	1	2	3	1		3	1	2	2	1	1	1	5
U9	3	1	2	2	3	1	1	1	2	3	1	4	1	4	2	3	1	5
U10	1	1	4	1	1	3	2	5	1	5	4	5	4	5	2	4	2	5

## Task Evaluation Response (Spotify Mobile)

\	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18
U1	2	2	1	2	1	2	2	4	1	4	1	4	2	5	2	5	1	3
U2	2	1	3	1	1	1	1	4	1	3	1	3	2	4	1	5	1	2
U3	1	1	2	2	3	1	1	3	1	3	1	1	1	4	2	4	1	5
U4	2	1	3	2	1	1	1	3	1	3	1	4	3	5	N/A	N/A	N/A	N/A
U5	4	3	3	1	1	1	1	3	1	3	1	2	1	3	1	1	1	4
U6	3	2	3	4	4	1	1	5	1	5	3	4	2	4	N/A	N/A	N/A	N/A
U7	1	1	4	1	1	1	1	4	1	4	3	3	2	4	1	5	1	4
U8	2	1	4	1	1	1	2	3	1		3	1	2	2	1	1	1	5
U9	3	1	2	2	3	1	1	1	2	3	1	4	1	4	2	3	1	5
U10	1	1	4	1	1	3	2	5	1	5	4	5	4	5	2	4	2	5

---

**POST TASK QUESTIONS RESPONSES RECEIVED****Post Task Questions Responses Received - Desktop**

What are your overall impressions of the application? (10 responses)

Ayasha seldom use Spotify desktop version, she uses mobile more.

like it as all music is together. But there is no distinction how to go around and find things for people who are unfamiliar.

Desktop app is better than mobile app. Since there is more space it is more intuitive.

A lot easier to use than the phone app. It's better as well in terms of usability.

great, definetly better than using facebook messenger

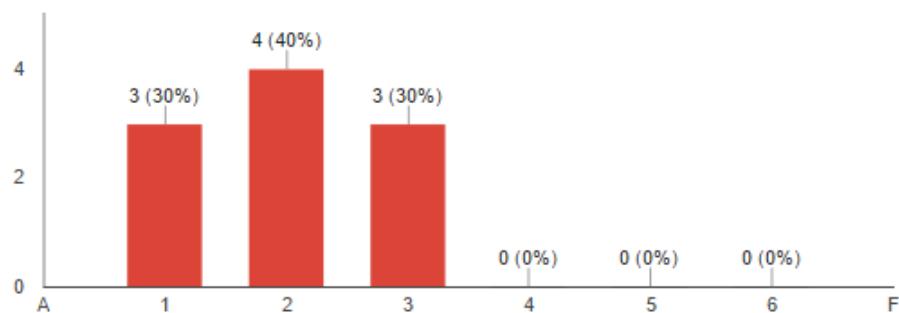
Interface is cluttered. Multiple layers and when user tries to go back it can confusing, and can get lost. Overall, it's nice but cannot see when playlist is collaborative. Never shared songs. Tell friends to look and search for song on Youtube.

Spotify's design is cool, and user-friendly.

Good layout, after using for a little while he can get around easily. Initially it was not easy.

If you had to give the application a grade, from A to F, what grade would you give it, and why?

(10 responses)



### What are the three things you like BEST about Spotify? (10 responses)

easy to search, color theme(black tone)

1. Access to a lot of song
2. Saves search history
3. Visual display of how many times a song is played. Number of hits is important to user.

Browse feature really good, genres and moods is nice. Categories cater to user needs.

2 color scheme, more option is great and consistant

1. She likes that it's free and that she need not download and waste storage
2. She likes that she can make playlists easily

Color theme, Browse

The desktop app provides the feature of playing the selected song and collaborative playlist

1. Link it to iTunes playlist and libraries
2. Lot easier to find music and see what my friends are doing
3. Feedback is good

Gives you songs based on moods and suggests songs based on songs in library so its helpful.

A little better than mobile version. Mobile just shows a short list, however, desktop version provides all the options when user is searching for a song, and can play it.

1. First one is the options for search results; 2. The main window is always showing and let users know what they have done.

### What are the three things you like LEAST about Spotify? (10 responses)

1. Adding to playlist
2. Connecting to FB
3. The layers
4. Saved to your music/playlist icons are not meaningful.

no feedback, random options everywhere so dont know what is for what.

when playing the song, hope it takes full screen, notification,

when she first signed-in, she was searching for the scrolling tab, very hard to see.

1. Sometimes you end with too many layers when you keep clicking on things.
2. Sometimes songs are not available and there is no explanation why. Confused if it is because of the wrong name or what.

1. The ads (too many back to back)

In collaborative playlist was sure about control, found that weird.

no indication if the song is already added to playlist

Search result

Navigating back to the original playlist that he was listening to while exploring other playlists.

If you could make one significant change to Spotify, what change would you make?

(10 responses)

take whole screen

Make it free

Make it easier to use

give feedback!

Let user add song to music and then put into the playlist. Adding song to playlist by making it one-click option. Replace the (+) option would be add to your playlist instead save to your music.

The design, updates are not clear. Discover page is monotonous not as good as in Pandora in terms of playlist.

Would simplify the interaction and if the song is not there then I will give an alert or an explanation.

add a feature to recognize song

No

More options. like different song types, etc

Would you recommend this Spotify site to a friend? (10 responses)



Do you have any other comments about using Spotify? (10 responses)

Make notifications more effective (following, deleting songs)

Fix the "play" thing.

N.A.

Different experience between Desktop and Web. Specifically search shows more options, visual icons, previous search history. There's redundancy between wording and icons. I would prefer web-version instead of desktop.

no

no

No

No

**Post Task Questions Responses Received - Desktop**

What are your overall impressions of the application? (9 responses)

Everything that he uses is available, but side navigation is confusing. No indication of his own playlist. Can control volume etc with phone so he likes that feature.

Pretty straight forward. Less cluttered. Easy to add songs to a playlist.

Ok, but restrictive than desktop version. Same basic functions.

Pretty good. I can only shuffle, I can't play a particular song.

A nice platform to share music with friends

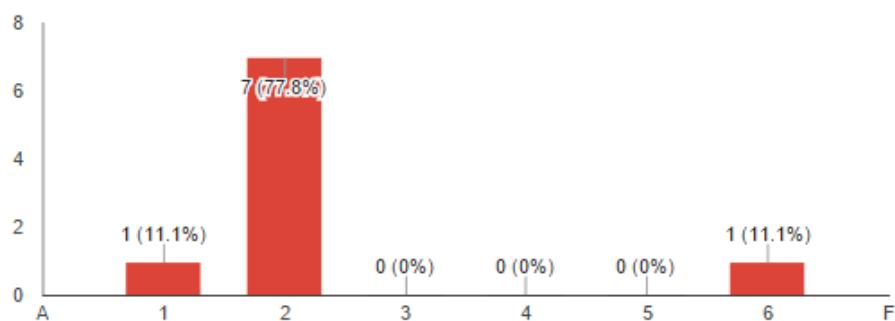
better than desktop coz mobile has min interactions and desktop has too many options and mainly mobile has feedback

Does not like the app. Too complicated.

seems

If you had to give the application a grade, from A to F, what grade would you give it, and why?

(9 responses)



### What are the three things you like BEST about Spotify? (9 responses)

Amount of songs available, creating playlists, that it is an app

1. Most of the music I want
2. Pretty upto date
3. Easy to make playlist

collaborative playlist

1. Easy/simple
2. Easy to follow friends
3. Easy to add songs to playlist
4. Clean interface

While sharing a song it popped a message and it showed that the song is shared so it was better than desktop.

Has every song he wants. UI is nice as he doesn't like many colors so likes dark UI and also gives him freedom to explore to songs.

1. She likes the running feature on spotify because she does not like to make the playlist and running has it all done for her.
2. When she changes from one playlist to other there is a smooth transmission from one song to other.
3. She does not like the interface but she does like the way it looks.

search is easier than desktop

min interaction, feedback, consistancy

### What are the three things you like LEAST about Spotify? (9 responses)

Its restrictive, the extended dialog that one has to go through is frustrating, for example while adding a song to playlist and to find your playlist.

1. Usability on phone is not that good
2. Free version is not great (too many ads) – be able to add free music

playlist should be upfront,

it doesnt show "collaborative", most use function are not showing in Hamburger menu in the first page

He is listening to a song from play list and goes to explore other songs but he wants to go back to the song he is listening to but cannot do it easily

Too many options.

No relation between mobile and desktop. Lack of consistency makes it confusing.  
Functionality issues are a serious problem. Could not add friends, find friends etc.

finding friends is too involved, too many steps to do most things, an overwhelming amount of actions

Just one! That is not being able to play the particular song unless added to the playlist

1. Notification does not always display activity
2. Too many steps to add song to playlist

If you could make one significant change to Spotify, what change would you make?

(9 responses)

cant think of any

Introductory free 3-months instead of 1 month

Having something like what's new or a tutorial to use spotify

add frequent button to the music menu

Adding songs to a playlist is easy but creating a new playlist is quite difficult. It should be a one step process. Make collaborative icon visible on app

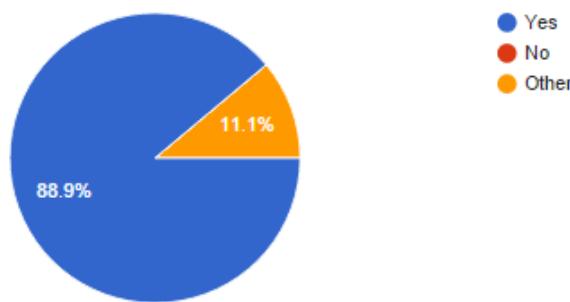
replace shuffle play by play for each song in the list.

get rid of everything but the core functionality of searching for songs and making playlists

Make it free, reduce the dialogs

more options in hamburger , visually they can reduce the font size

Would you recommend this Spotify site to a friend? (9 responses)



Do you have any other comments about using Spotify? (9 responses)

Nope

Make desktop and phone similar in usability

when you search for a song then there are a bunch of unnecessary options which is confusing

The only platform or few of the better platforms for free music. So not much choice.

No

No

Overall, Desktop is easier. searching is easier in Mobile.

**SUS QUESTIONNAIRE RESPONSES RECEIVED**

<b>SUS Questionnaire Response (Spotify Desktop)</b>										
\	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<b>U1</b>	1	3	2	5	3	4	3	2	1	5
<b>U2</b>	2	4	1	5	3	4	2	4	2	4
<b>U3</b>	1	4	1	5	1	2	1	5	1	4
<b>U4</b>	2	3	2	5	4	5	2	4	3	2
<b>U5</b>	2	3	3	5	4	1	4	3	4	4
<b>U6</b>	1	2	1	5	1	5	3	4	2	5
<b>U7</b>	4	1	3	5	3	2	1	2	3	4
<b>U8</b>	4	4	2	5	3	2	3	3	3	2
<b>U9</b>	2	1	5	3	5	4	5	5	2	5
<b>U10</b>	1	3	3	4	3	4	3	3	3	3

<b>SUS Questionnaire Response (Spotify Mobile)</b>										
\	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
<b>U1</b>	1	3	2	5	3	3	2	4	1	3
<b>U2</b>	1	3	2	5	2	2	2	2	1	2
<b>U3</b>	2	3	2	4	4	4	3	3	2	4
<b>U4</b>	2	5	1	5	1	4	2	5	2	2
<b>U5</b>	1	4	3	5	2	3	3	5	3	5
<b>U6</b>	1	5	2	5	1	5	3	4	2	2
<b>U7</b>	5	1	4	4	5	1	3	1	5	1
<b>U8</b>	3	2	2	5	3	4	3	3	2	4
<b>U9</b>	2	1	5	3	5	4	5	5	2	5
<b>U10</b>	3	1	5	4	5	4	4	1	5	2