SPOTIFY: A DESIGN PERSPECTIVE

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I. Relevant Facts

A. History

Spotify is a music service that allows users to stream over 35 million songs. According to BBC, it started as a "Swedish music service" (BBC, 2018) and launched in 2008. Spotify's current competitor is Apple Music; however, during their startup they had a completely different competitor. Spotify was created as a "response to the growing piracy problem the music industry was facing" (BBC, 2018). During this time, pirated music was a major problem and music companies were losing money fast. The initial goal of Spotify was to offer a "free service with advertising" (BBC, 2018). This gave listeners an alternative way of obtaining free songs, and music companies benefited from the decrease in pirated songs.

B. User Experience

One of the main reasons Spotify is successful is that they set goals and strive to meet user demands and requirements. A common user demand/requirement from users is that Spotify should be as accessible as possible. Since it is in Spotify's best interest to keep their system accessible, they have ensured their system can be used in a number of different ways. Spotify can be used through their website, their app, common web browsers, and "apps otherized by Spotify" (Spotify, 2019). Spotify lists "chrome, firefox, edge, [and] opera" (Spotify, 2019) as the web browsers that support their web player. In addition, Spotify ensures that its system remains up to date when it comes to IOS, Mac OS, Android OS, and Windows. Spotify can run on IOS 11 and up, Mac OS 10.10 and above, Android OS 4.1 and above, as well as Windows 7 and up (Spotify 2019). This basically covers every possible way a user could try to access

their system. Other demands from users include background music play and functionality on minimal data. Users want to be able to listen to music while other apps are open on their phone; Spotify has ensured this capability. A lot of the time, users find themselves short on data. When they are out and about, they want to still be able to surf Spotify while their phone is in data saving mode. As expected, Spotify allows this function as well.

In order to have a successful system, it needs to give the user a reason to keep coming back. Users will only come back if they have a positive user experience. Spotify does multiple things to ensure that each user has a positive UX. One of the first things a user will notice is the popular dark mode (McGowan, n.d.). More and more systems are incorporating this feature, and Spotify is no exception. Dark mode is less strenuous on the eyes and the color pallet is more subtle, whilst still allowing important features to stand out. When analyzing the Spotify UX, it is often compared to Apple's Apple Music streaming service. Unlike Apple, the Spotify music player has two buttons, shuffle and repeat, on either side of the play button (McGowan, n.d.). In contrast, Apple has these features hidden away, resulting in users struggling to find those features. Finally, Spotify ensures that text does not flood the system. Oftentimes, too much text can make a user feel overwhelmed. Spotify's solution is to put an emphasis on album art (McGowan, n.d.). Rather than listing the songs or albums, songs are identified by their respective cover art. The balance between text and images creates an all-around positive experience for the user because of how the interface is laid out.

C. System Purpose

Spotify came to be back in the year 2008 when the company set out to become the first major audio streaming service on the market. At this time Apple had been making a tremendous amount of money selling individual copies of songs to its users through iTunes. With this in mind, Spotify set out to create a new platform for enjoying music. Knowing that paying for individual licenses on music is a rather costly endeavor, Spotify came up with the idea to offer a streaming subscription. With this subscription, users could listen to unlimited music as long as they paid their monthly fee. Many individuals were skeptical of this model at the start, the most notable of whom was Steve Jobs. Jobs criticized the company's vision calling “the streaming business model "bankrupt," (Witt, 2018). Just a bit over 10 years later, Spotify is by far the largest music company on the planet. Spotify is now more than just a music streaming service for your phone exclusively. The service is now supported on most major smart TVs, gaming consoles, PCs, Macs, and many other devices along these lines. Many newer cars, with built in cellular, even have Spotify downloaded by default and simply need a premium account to associate with. Spotify initially aimed to give users a much more inexpensive way to enjoy a wide variety of music. A welcomed byproduct of this was that the number of users that went out of the way to pirate music greatly declined. This made the platform very popular among producers, who saw this as a more sustainable way to gain revenue for their creations.

Spotify at its core has two major services that it provides to its users. The first and most important is a reliable and diverse music library. The second and more recent addition is a wide range of podcasts. With podcasts, users can listen to a wide variety

of speakers talk about any number of topics. Podcasts serve as a great minor distraction during a walk, or a great source of entertainment to make those long morning commutes feel a bit less painful. The service also has a great deal of default stations for users to check out. These range from current top hits on the charts, all the way to genre by genre stations. With a premium subscription, Spotify will even learn your tastes over time. With this information they will create tailored playlists that they think will meet your musical tastes. These playlists are updated on a very frequent basis and are broken up into subsections of the genres that the user tends to listen to. That way, if an individual is not in the mood for a certain genre, they can avoid that generated playlist completely. One of the most popular listening-based playlists is the Discover Weekly section. The Discover Weekly section "is a playlist that's automatically updated by Spotify each Monday and includes a number of different songs based upon what you've been listening to recently" (Willings, 2020).

For users who want to have their music saved locally, premium users have the ability to download their music to their device. This is not the same as having a license to a song, as you would if you bought the song on iTunes. This means that you cannot download a bunch of songs and then cancel your membership. As soon as Spotify reconnects to the internet, all downloaded songs will be removed if premium is no longer active. This download feature is especially appealing to users who do not have unlimited mobile data, since streaming can take a lot of data, especially if a user sets the streaming quality to a higher bitrate.

Spotify is a diverse system that is designed for any individual that loves music. The company achieved this mission by making the app very accessible to individuals

on any budget. This goes as far as a free subscription with ads, for users who cannot afford monthly payments. Premium also has many opportunities for discounted rates. Spotify has a half-price premium subscription available to students who go to an accredited college. For larger families of up to five, Spotify even offers promotions for family accounts, which can have up to five concurrent accounts, rather than the standard one account limit. The "Spotify Premium for family payment option is also available for $14.99 per month" (Stephenson, 2020). This option is far superior to paying upwards of $50 a month for the whole family to listen to music.

D. System Operation

User demands and requirements are met by gathering data. Data gathering is an effective way to gauge user demands and satisfy user requirements. By collecting data, trends will start to appear over time. By using those trends, Spotify can adjust each user's individual preferences, as well as the user base's overall preferences: "As the company accumulated data from its growing user base on music tastes and preferences, Spotify expanded from utility to discovery, offering users data-driven personalization that drove both discovery and engagement" (Goodwater, 2018).

Spotify operates by using a large server that contains all the tracks that are used by the app. Spotify "relies on several ways to smoothly deliver music to you with no delays" (Gilmour, n.d.), meaning that Spotify wants to keep the latency, or the delay between requesting a song and actually hearing it, low so as to not have a big gap between choosing your favorite song and hearing it on your device. But, how does the music end up on your device? Since Spotify stores all its music on servers, Spotify first "looks to see whether you already have that track in your cache"

(Gilmour, n.d.). The cache in this case is a folder that will store tracks that have already been listened to. If the track is already in the cache, Spotify will pull the song from there. If it isn't, Spotify will start to retrieve the track from its servers. Then, Spotify will cross-reference with other devices that use Spotify to see if they have similar versions of the tracks in their caches. Using this method, Spotify becomes faster and more efficient than all the Spotify users overloading the servers. Also, Spotify will pre-load the beginning of the next song even before the current song has finished playing, so as to limit the amount of delay between songs.

E. Data Management

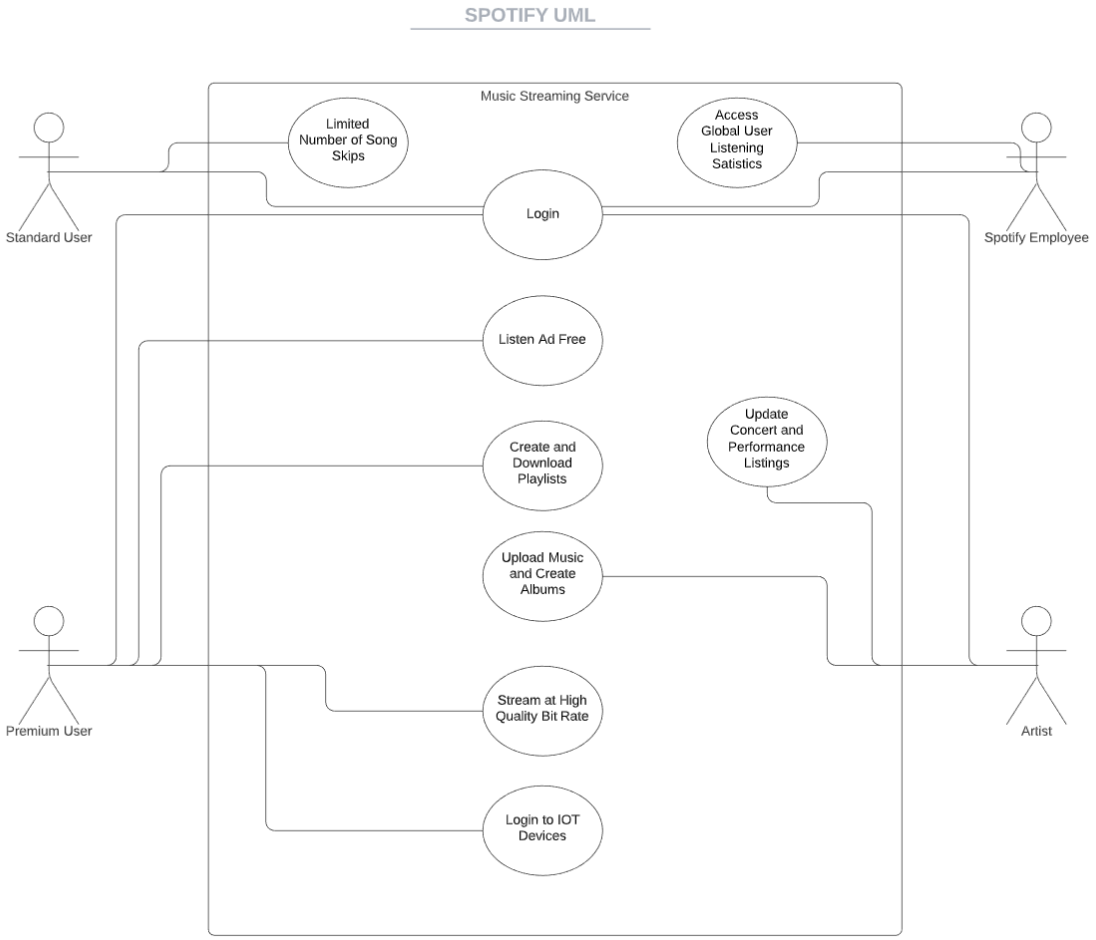
Prior to 2016, Spotify was "leasing datacenter space, PC hardware and network gear" (Leygues, 2016) to store and stream data to its users. Instead of using their own servers, which they have been running from conception, they have since switched over to a cloud-based solution. Without maintaining their own physical data center anymore, it allows Spotify to grow at a greater rate because space and physical components are no longer an issue for them. Spotify chose Google Cloud as their service of choice. With Google Cloud, they also have access to and have already implemented both of Google's Cloud Datastore and Cloud Bigtable. Cloud Datastore is a "highly-scalable NoSQL database for web and mobile applications" (*Cloud Datastore*, 2015). As Spotify has both a web component and a mobile application, this kind of database fits their already working business model. The Cloud Bigtable serves to provide fast and consistent operations with little to no downtime. As Spotify serviced over 217 million active users in April 2019 (Ek, 2019), and are constantly growing, their database needs to be able to handle many queries and still

function and play the audio it is designed to do. Not only does Spotify use Google and its cloud-based services to store its data and host its application, but it also uses it to stream. This is done through Google Cloud Pub/Sub which "provides a simple and reliable staging location" (*Cloud Pub/Sub*, 2014) for the audio on its way to the user.

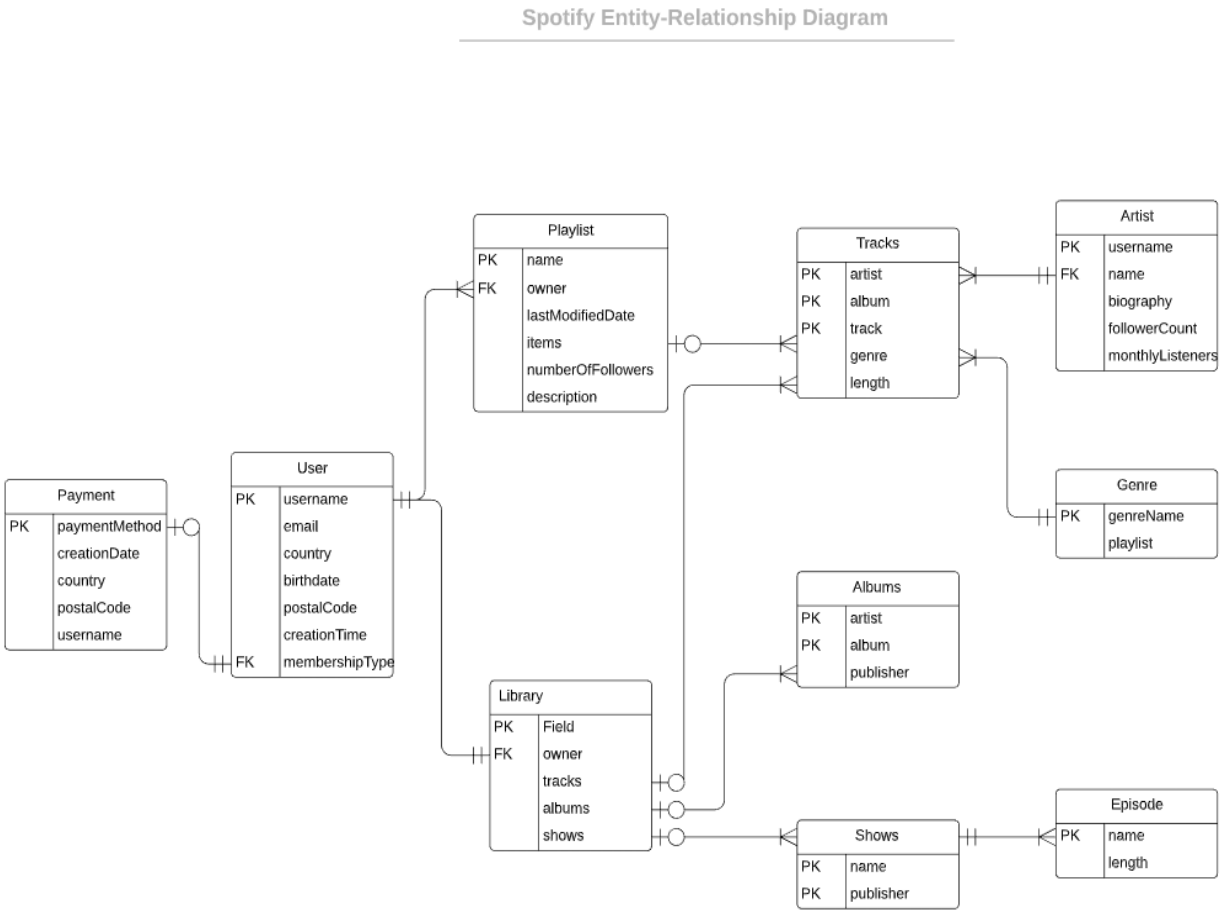
From a user's perspective, their data should always be present. All playlists created on Spotify are backed up to their cloud, such that if a user were to accidentally delete one, it is easily recoverable. Most likely due to good practice, Spotify has yet to have a large or noticeable occurrence of lots of data, both user data or audio files, being corrupted and lost. From a user standpoint, Spotify has audio available twenty-four hours a day, seven days a week, without fail. For more user specific data, such as a playlist, streaming history, payments, and personal information, Spotify gives the user the ability to download and view this data.

II. System Specifications

A. Use Case Diagram



B. Data Models: E-R Diagram



A. Relationships

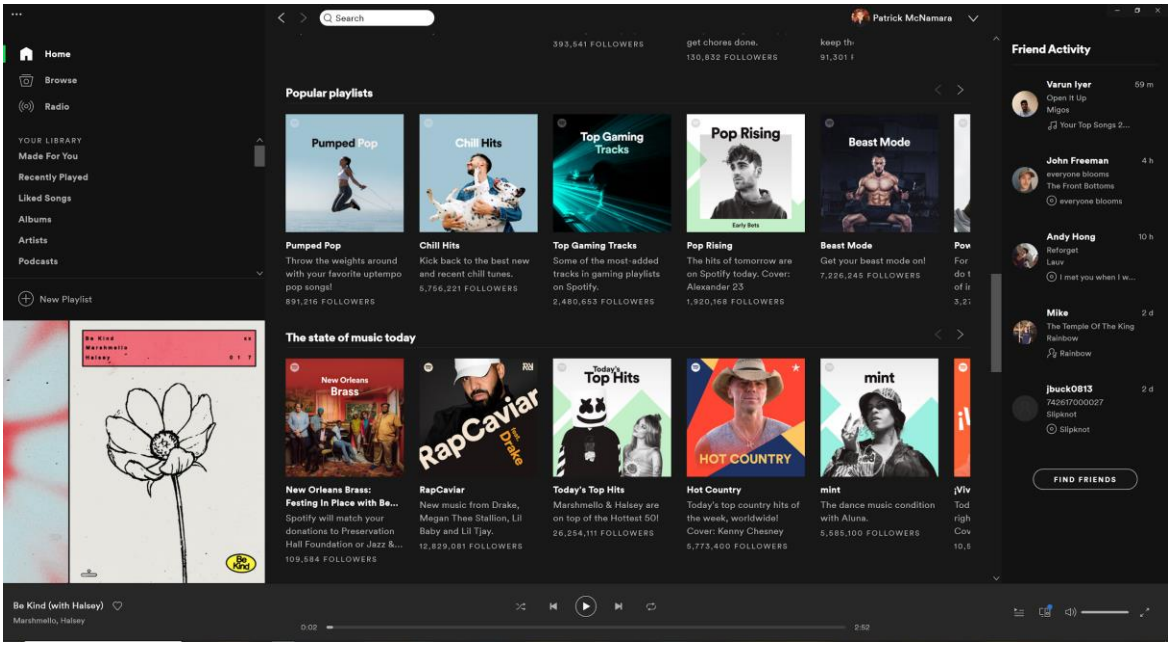
1. There is a none-to-one relationship between user and payment because a customer can either choose to pay, or have one method of doing so.

2. There is a one-to-one relationship between payment and user because each payment is applicable to the one user doing the purchasing.
3. There is a one-to-many relationship between user and playlist, which implies that a user can create one or more playlists.
4. There is a one-to-one relationship between playlist and user because a playlist can be owned by one and only one user.
5. There is a one-to-one relationship between user and library because a user can only have one library on their account.
6. There is a one-ton-one relationship between library and user because a library can only belong to one user.
7. There is a one-to-many relationship between playlist and track which means that a playlist can have one or more tracks on it.
8. There is a none-to-one relationship between track and playlist because a track is either on the playlist or is not and cannot appear more than once.
9. There is a none-to-many relationship between library and track because a library can have no tracks, or a lot of them.
10. There is a none-to-one relationship between track and library because a track can, if at all, appear in a library only once.
11. There is a none-to-many relationship between library and album because a library can contain anywhere from none to multiple albums.
12. There is a none-to-one relationship between album and library because an album can either appear in once in a library, or not all.

13. There is a none-to-many relationship between library and show because a library can hold zero shows, or a lot of them.
14. There is a none-to-one relationship between show and library, which implies that a show is either in the library once, or not at all.
15. There is a one-to-one relationship between track and artist because each track is made by only one artist.
16. There is a one-to-many relationship between artist and track due to the fact that each artist must have at least one track.
17. There is a one-to-many relationship between track and genre because each track belongs to one, or a few genres of music.
18. There is a one-to-many relationship between genre and track because a genre of music can host either one or several tracks.
19. There is a one-to-many relationship between show and episode, which means that a show has at least one episode, if not more.
20. There is a one-to-one relationship between episode and show because each episode is created and owned by one and only one show.

C. Human-Computer Interaction: Navigation and Interface

1. Aesthetics



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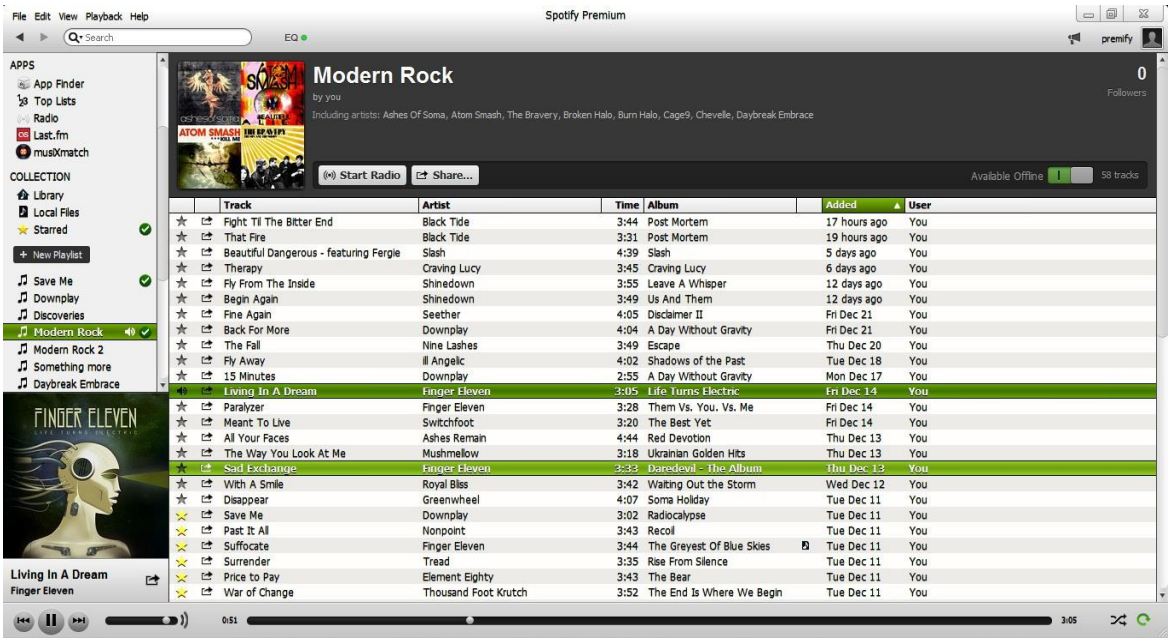


Clatix. (2106, June 19). Early Spotify Interface. Retrieved May 1, 2020, fromm https://community.spotify.com/t5/Desktop-Windows/How-to-change-the-Spotify-skin-theme-Tutorial/td-p/211610/page/10

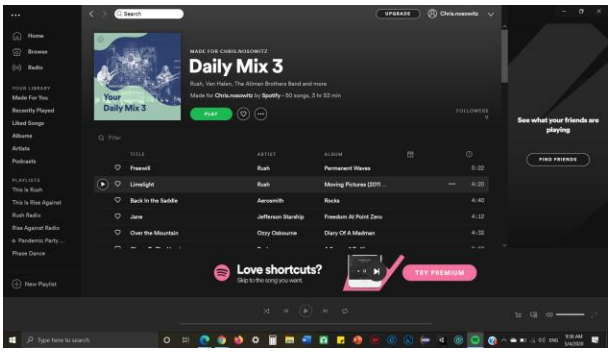
The overall appearance of Spotify has greatly evolved over the years. As you can see in the image above, the original interface had a highly dense feel to it. One of the first things that jumps out is the overwhelming amount of text. When looking for music, users often want this to be a quick and easy process. The new interface has a much cleaner look with much less text and more images, a welcomed change. While on the topic of text, there should be a certain amount of whitespace, or black space in this case, on any page. Most users of Spotify tend to be more frequent users, especially if they pay for premium. Since this is the case, the developers of Spotify can go slightly under the 50% threshold for overall whitespace. Much of the whitespace is taken up by images, which is much better than it being taken up by text like it was in the old interface. The dark appearance of the new Spotify interface is also a welcomed change. For many people, this makes the interface much easier on the eyes and gives it a much cleaner look. Spotify made the newer interface highly modular, which makes the transition between the desktop platform and mobile platform seamless. This divides the discovery and personal sections of Spotify nicely. Navigation through playlists is easy by simply scrolling through the library on the left and scrolling through the discovery section in the center.

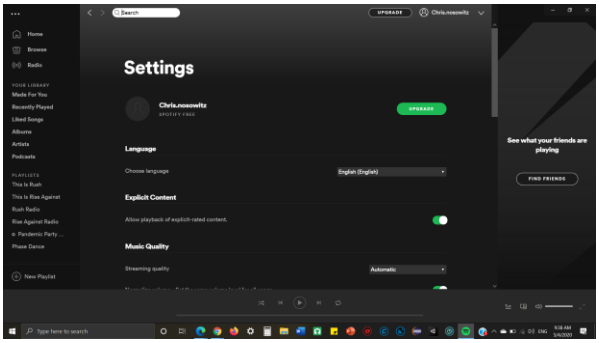
One of the most important aspects of the aesthetic of any page is the font used. Spotify “uses Proxima Nova, a common online alternative to the more well known Gotham” (Coles, 2013). This is a sans serif font, which promotes high readability for phone and computer screens. The developers use boldface and a slightly larger font size to emphasize important words like playlist names and

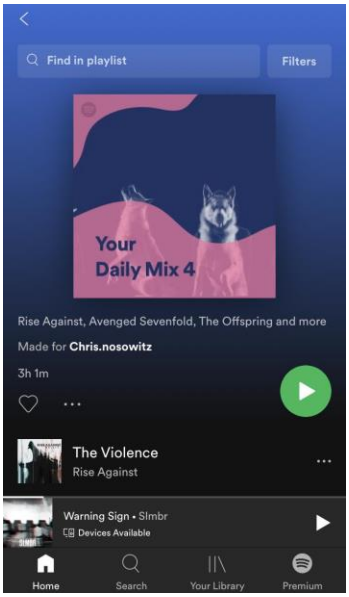
section headings. These immediately grab the user's attention and identify the most important information. They also identify the less important information by putting it in a slightly gray color, which makes it closer to the color of the background. This makes it stick out less than the important white text, since the white really contrasts the black background.

2. Consistency

The consistency of Spotify is very prevalent. No matter where the user goes, the layout, the aesthetics, the way that the content is presented, the user experience, and the effort that the user has to put in are all the same. On the desktop app, if the user goes to either the settings page, a recommended playlist, or even tries to search for a song, the layout of the screen is still the same, with the navigation bar on the left side, the song information on the bottom, the friends tab on the right side, and the information about the page in the middle. On mobile, if the user goes to either the settings page, a recommended playlist, or even tries to search for a song, the layout of the screen is still the same, with the navigation bar and the song information on the bottom and the information about the page right in the middle, and the aesthetics of the page are still the same.






Find in playlist
Filters
Your
Daily Mix 4
Rise Against, Avenged Sevenfold, The Offspring and more
Made for Chris.nosowitz
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Devices Available
Home
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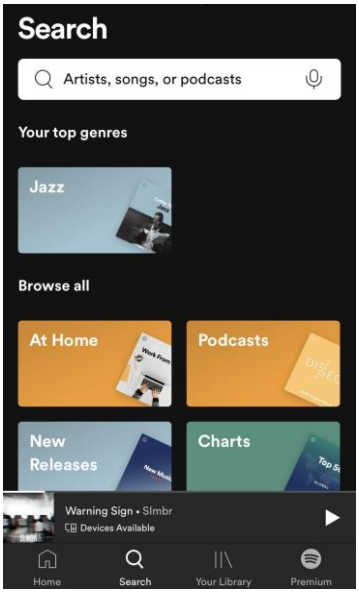
Your Library
Premium


Search
Artists, songs, or podcasts
Your top genres
Jazz
Browse all
At Home
Podcasts
New Releases
Charts
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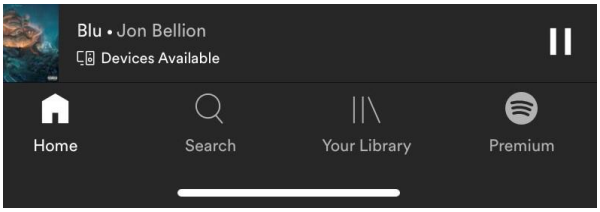
Devices Available
Home
Search
Your Library
Premium

3. Content Awareness

When it comes to creating a positive user experience, content awareness must be implemented. Content awareness ensures “the ability of an interface to make the user aware of the information it contains with the least amount of effort on the user’s part” (Dennis, 2015). In other words, users should never feel lost or confused when within a system. Some implementations include “navigation, titles, menus, and previous locations.” (Dennis, 2015). Spotify does well ensuring its menu is always available. For mobile devices, the menu is located at the bottom of the screen and consists of four sections: Home, Search, Library, and Premium. To ensure users are aware of where they are, the section they are within is highlighted in white. If a user decides to search, they will be brought to a new page with the word ‘search’ in bold white letters. The word ‘search’ stands out greatly in contrast with the black background of Spotify. The way the search title and bar stand out makes it obvious to the user where they are with minimal effort. As far as navigation goes, they could have provided more information to assist the user. For example, when browsing through Spotify, it does not tell you what the previous page is. The only thing available is a small back arrow in the top left corner of the screen. This lack of information could result in users not knowing how to get back to where they were before. One solution would be instead of a back arrow, change it to the title of the previous page, so you know where you came from. However, the most important function is being able to listen to and control your music. If you want to browse Spotify while listening, a media player bar will appear just above the menu bar. This gives the user instant access to their

song and other key actions such as play and pause. Ultimately, their most important feature, listening to music, is always available to the user from any spot in the app, so Spotify does a fine job when it comes to Content Awareness.

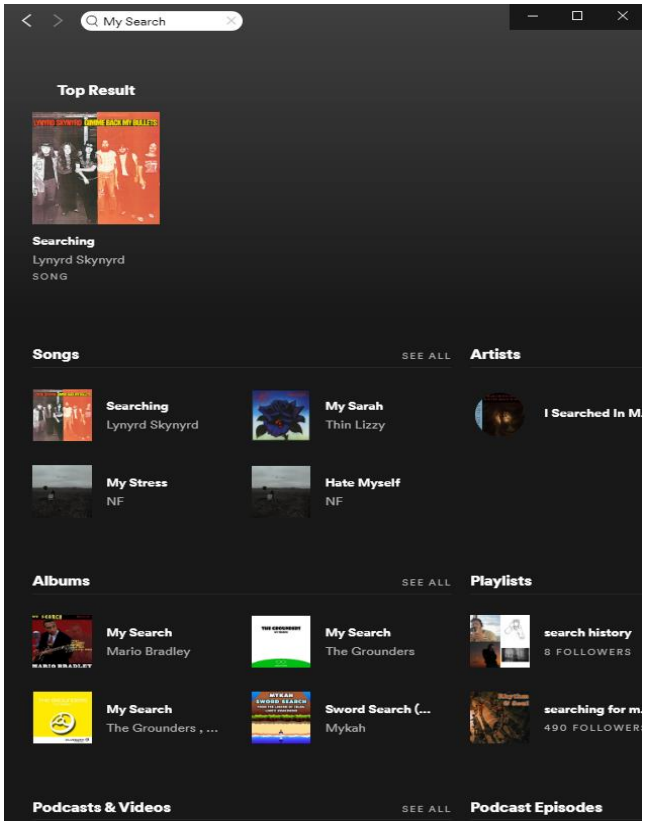


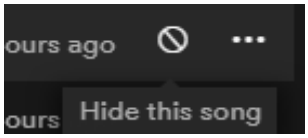
4. Decide For Me But Let Me Have The Final Say

One of the most common ways an interface can help a user is with the search function. Here the user can find what they are looking for. Some search bars will try to guess what the user is typing and fill the bar in for them, which goes against the design principle of letting the user get the final say. By doing the guessing, the interface can guess wrong, the user can get frustrated, and more time will be wasted. Spotify's search bar works as an active filter. As the user types, it provides the top result, based on what they were typing, as well as other songs, artists, etc. that may match. The search bar remains untouched throughout so the user can keep typing, but if their desired query appears, they can just click on it. In this instance, Spotify decides for the user by showing a bunch of potential matches but lets the user have the final say, as it does not select anything.

When Spotify automatically generates a playlist for its user based on what they like to listen to, it knows that the user may not like all their choices. A Spotify "Made For You" playlist can have upwards of twenty-five songs. If the algorithm did a good job, the user would most likely enjoy most of the songs in the playlist. In the event the user liked most of the songs and wanted to keep the playlist, they can do so without having to add each song individually. In this case, Spotify is making a decision for the user and created a playlist for them. The chances are there are at least a few songs the user would not like. Here, the user does not need to recreate the playlist without the few songs they disliked. The user still gets the final say in a Spotify automatically generated playlist. Next to each song is an icon that, when clicked on, hides the song and removes it from the

playlist, which in turn gives the user the final say they need. In order to improve the searching algorithm and increase the chances of not disliking any songs on these playlists, the user can then select that they either did not like the song itself or the artist, again ensuring that the user has the final say.





5. Get To Know Me

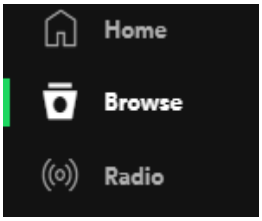
One of the most applicable android design principles to Spotify is definitely "get to know me." This principle states that the app should learn the preferences of users over time. In doing this, software should keep track of the most common sections of the app and make these sections the most easily accessible. Spotify does exactly this by tracking your most frequent playlists as well as genre tastes. Over time you will see that the layout of the app transforms to become more personalized. Your top genres will start appearing at the top of the home page, making it so that you no longer have to scroll to find what you want. Also, the playlists that you tend to play the most are tracked. These will all be gathered and put into a cleverly named section called "on repeat" or "uniquely yours," for example. This is only the start of the features aimed at getting to know the user. For a music streaming app, the ability to get to know the user's taste is key to the retention of customers. If all of the recommendations the app is making are off, the user will look elsewhere.

The place where Spotify really distinguishes itself from other apps is in the "Made for You" section. This breaks up the genres that you tend to listen to and puts them into daily mixes. These are comprised of songs that you have on repeat, along with songs similar that you might like. The most popular Spotify curated playlist according to stats from The Verge is "Discover Weekly." In 2016, Spotify announced that the "feature has been used by 40 million users, an audience that has collectively streamed over 5 billion tracks" (Popper, 2016). Since then, this feature has only grown, and its success comes from just how great

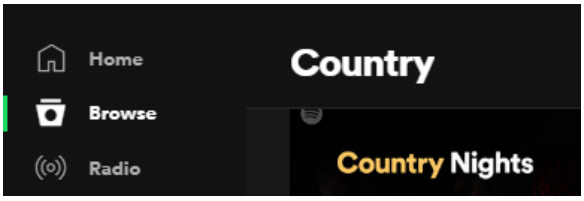
the recommendations are. Spotify has noted that over the years, they have put in a lot of effort to fine-tuning these recommendations. This is done by creating better machine learning algorithms that track listening habits and can more reliably determine what song a user might actually like.

6. I Should Always Know Where I Am

An interface should inspire confidence in the user. The user should, at all times, know where they are (Android, 2013). When browsing through multiple genres and pre-generated playlists, it would be easy for the user to get lost, but Spotify makes it hard. Whether the user just entered the browse category or is multiple clicks deep looking at super specific playlists, the "Browse" tab is always highlighted. This is one of the ways the Spotify interface reminds the user that they started at this tab. If the user has selected a genre and is now in a more



specific category, there is now a header that follows the user as they scroll to remind them of that specific category. No matter how far down the user scrolls, there is no need to scroll all the way back to the top to see the genre because the header remains.



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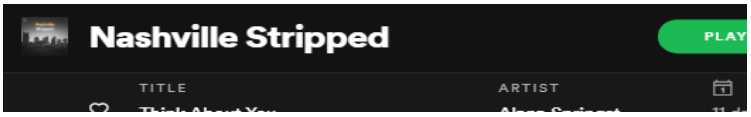
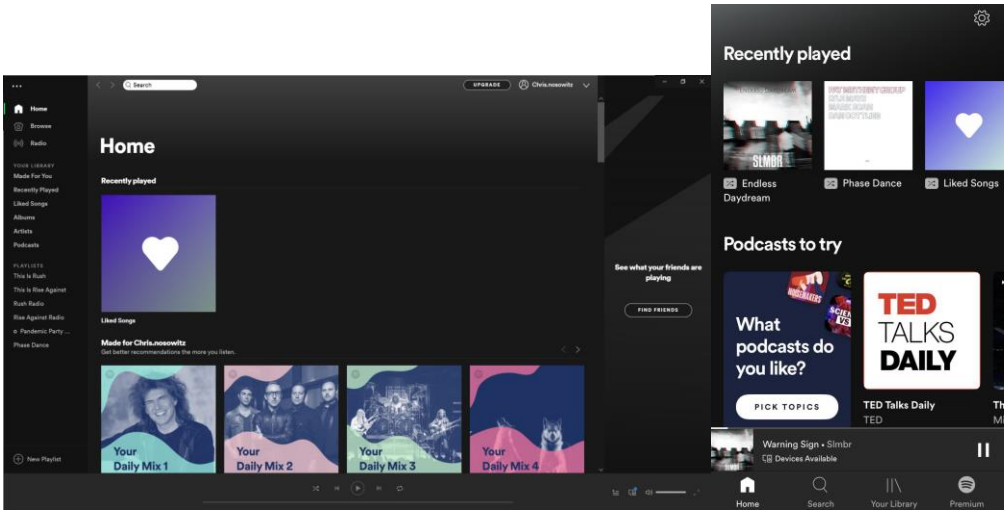


The same applies when the user enters any playlist, whether created by themselves or one of Spotify's pre-generated ones. No matter how far down the user scrolls on the playlist, the name of the playlist remains at the top of the client. The way the header is fixed to the top of the client, along with the lit-up icon showing where the user started their searching journey. Spotify makes it hard for a user to forget where they are, ensuring that the design principle of always knowing where you are is upheld.

7. Layout

The layout of the Spotify desktop app is different from most normal sites. The navigation bar is on the left-most side of the window, containing your personalized playlists and libraries. The user also can create a new playlist with songs from their favorite groups with a button on the lower left-hand corner. The main information is still displayed in the middle of the window, containing your personal playlists and other suggested content. But there is also a bar on the right-most side of the window that shows who you have connected with and what they are listening to. At the bottom of the screen, there is a bar that displays the song that is currently playing, song controls, and other song features.

However, the layout of the mobile app is even different from the desktop app. All the navigation tools and song information are displayed on the bottom of the screen. But, much like the desktop app, your playlists and other suggested content takes up the majority of the middle of the screen.



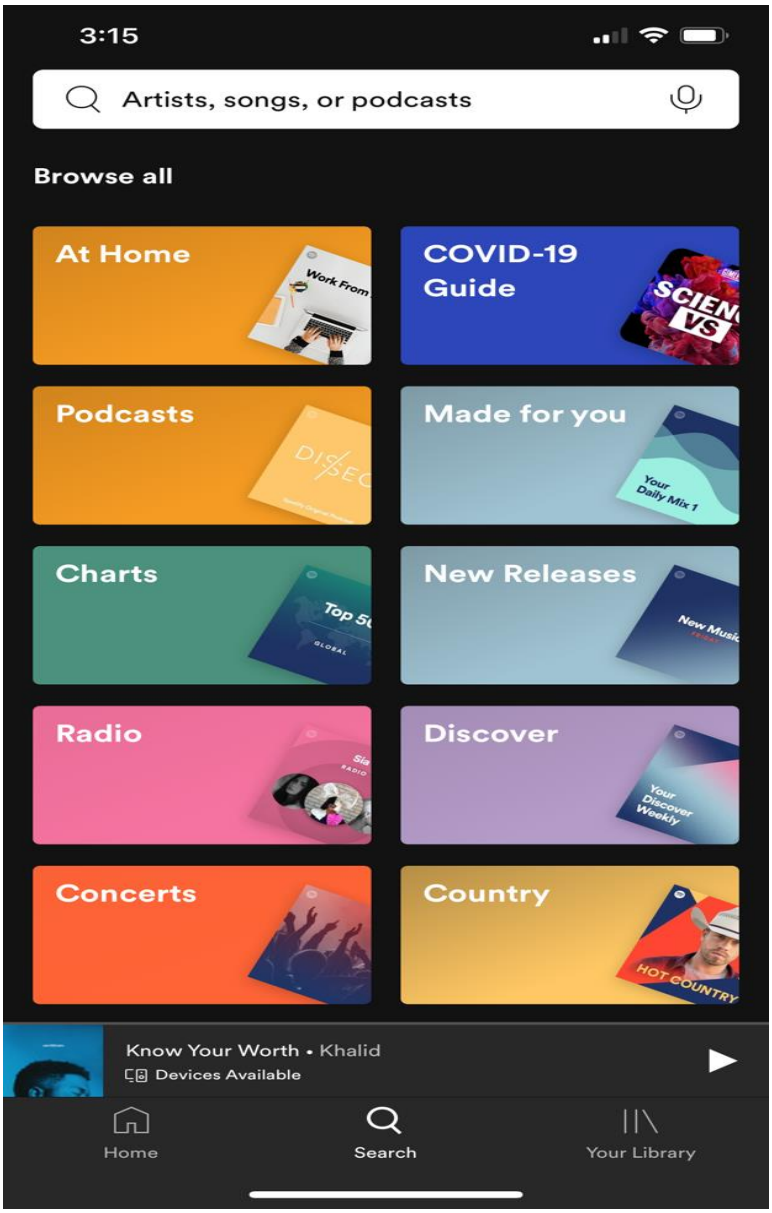
8. Make Important Things Fast

Spotify takes this design principle to heart. As Spotify is a music streaming service, the main feature that was made important and fast was the music control, specifically the play/pause button and the seeking functions. As mentioned previously, when skipping from song to song, Spotify pre-loads the next song so as to have more fluidity between songs. Concurrently, this logic can be applied in a similar manner with the play/pause function. The play/pause function is quick so as to reduce the amount of lag between pausing the song and playing it again. This is especially true with the desktop version, where the music controllers are right at the bottom of the screen. All of this contributes to the entirety of the Spotify app being fast and efficient.

9. Minimal User Effort

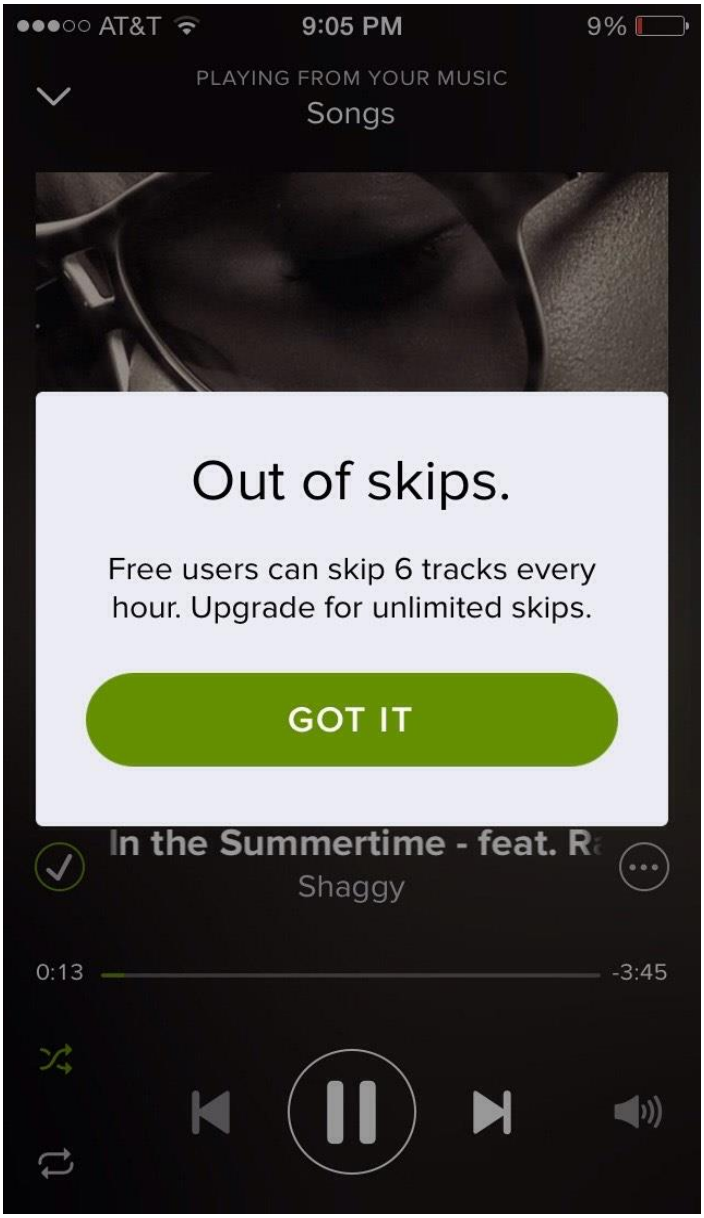
The amount of effort necessary to use the Spotify app is among the lowest in the industry. From the time of launching the desktop or mobile app, you can begin listening to music in two or less clicks. This of course upholds the three clicks rule by making the number of clicks so small. While this is the case, the interface also upholds Krug's Principle. This principle states that the number of clicks to navigate the interface is not relevant as long as navigation is clear. On the Spotify app, navigation is very clear, and you always know exactly where you are. On the desktop app, the side navigation bar is always visible, making it very easy to return to any page and making future navigation a breeze. The mobile app version of this is very similar, as the bottom navigation bar, while simplified, never moves. This makes the return to the home page or your personal library always a single click away. The search function also promotes minimal user effort by providing instant recommendations on the mobile app. As you can see in the mobile app to the left, the search function provides useful recommendations that might help to inspire search queries if the user is unsure what they are in the mood for. The designers of the pages clearly had the ability to scan in mind when creating the pages. This is the case since there are no long strings of text anywhere, making browsing much easier, as users do not want to read large descriptions while searching for music. The last important function of Spotify relating to minimal user effort is constant feedback. There is never a question as to whether music is currently playing back. Even if sound is muted, one can easily see that music is playing by looking at the bottom of the app, which shows a clear

moving progress bar. There are also all of the standard feedback indications such as a spinning progress wheel if something is taking longer than usual to load.



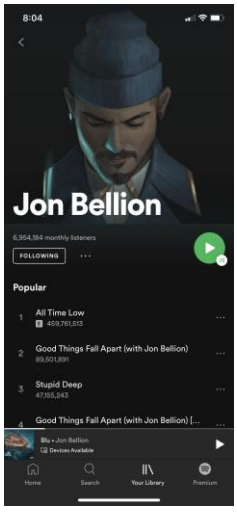
10. Only Interrupt Me if it's Important

One design principle Spotify fails to incorporate is Android's principle: Only Interrupt Me if it's Important. Android feels that systems should not interrupt the user "unless it's critical and time-sensitive" (Android, 2013). Due to Spotify being a free service, they need ways to profit. Their way of profit comes in the form of ads in between songs. However, it should be noted that users can upgrade to a paid premium version if they do not want to be interrupted by ads. Android points out how interruptions can be "taxing and frustrating." (Android, 2013) The fact that the interruption is an ad just adds to the frustration of the user. An ad is not critical or essential for the user, thus it is understandable why they may feel frustrated. To add to the frustration, Spotify only allows the user to skip a certain number of songs before they no longer have the privilege to do so. In this case, the users privileges are being interrupted. The combination of ads and losing certain privileges can result in users feeling they have no control over the system. When that is the case, there is a good chance the user will not continue to use the product. Although premium Spotify is an option, it is not a free option, which is what Spotify was created as: a free streaming service. Instead of audio ads between songs, visual ads could be placed throughout the app's interface. This way, songs would not be interrupted, and the main purpose of the app would remain uninterrupted. Additionally, there is no reason why a user should be allowed to skip songs and then not allowed during other times. If skipping songs is allowed, then it should always be allowed to create consistency throughout the system.


AT&T
9:05 PM
9%
PLAYING FROM YOUR MUSIC
Songs
Out of skips.
Free users can skip 6 tracks every hour. Upgrade for unlimited skips.
GOT IT
In the Summertime - feat. R
Shaggy
0:13
-3:45

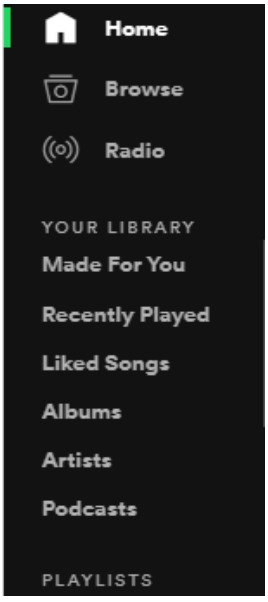
11. Pictures Are Faster Than Words

Spotify's interface definitely resembles Android's design principle: Pictures are Faster than Words. Unlike Apple Music where pages are drowned in text, Spotify does a great job not overwhelming its users with text. In order to create a balance, they incorporate and emphasize pictures on almost every page. According to Android, pictures "get people's attention." (Android, 2013) Not only that, but pictures also are "more efficient" (Android, 2013) than reading through lots of text. Spotify clearly made a conscious choice to use album cover art to identify songs within their system. For example, when a user opens the app to the home screen, they are greeted with an assortment of album covers that are very pleasing to the eye. In case the art does not do the job, there are also small, subtle lines of text underneath with more specific details about the song or album. The emphasis on the album art creates a balance so that users do not feel overwhelmed by text. Spotify also does this with artists as well. When searching for artists or just browsing, the first thing a user will see is pictures of artists. Furthermore, once a user selects an artist, they will be taken to a new page where the artists' photo takes up half the page. Not only are pictures an efficient way of identifying songs and artists, but they also create an aesthetic that feels customized to each individual user.



12. User Experience

Whether the user is a novice who has never touched a system like this before or is an expert veteran user, the user experience should be positive and do its best to cater to both. For a novice user, the Spotify interface is not too overwhelming and the most important features are the easiest to find. Spotify is first and foremost a service to stream mainly music, but also podcasts. Novice users are concerned with "how quickly they can learn [the] new system" while the experts want to be able to "use the system [quickly] once they have learned" it (Dennis, 2015). Upon opening up the Spotify client, the sidebar on the left provides all users with almost all the information they would need. A new user who opens the system for the very first time can see the various options and can play whatever they desire. Their homepage would be very basic, as Spotify does not have any record of what this new user likes to listen to. But this new user can still easily access the browse page, which serves as a way to filter music and help narrow down what to listen to. For a new user, the radio station would serve almost the same purpose, allowing users to play music based around a specific genre, song, artist, etc. As the user progresses from a novice to expert user, the "Your Library" feature and the "Home" tab become more useful. Over time, Spotify is able to populate the homepage with recently played playlists as well as those playlists that are most frequently listened to, new music by the artists the user listens to, and also recommendations based on the user's listening history. As the user keeps on



listening, the “Made For You” tab would become populated, allowing users to go right there to see the best fitting music for them, along with creating their own simple to access playlists. Spotify is a system that “will end up being used by many people on a daily basis,” which will result in “having a majority of expert users” (Dennis, 2015). Due to this, the new users would not be expected to be a novice user for long, so it would make sense for Spotify to offer a lot of features that are more handy to expert users. The interface is simple enough so new users have a positive user experience and continue to use Spotify, making the transition to an expert user. Spotify learns what the user listens to, allowing them to quickly maneuver the system, which is what they desire, ultimately allowing Spotify to have a positive user experience.

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