

Literature Review

In the past few years, the media industry has changed significantly, not only with the content being created and these creation methods, but also the distribution and delivery methods available. With the advent of the internet, newly released media can be accessed within a matter of minutes using this global network. With this advanced connection technology brings new methods of ownership. In the past, massive libraries of physical media were ubiquitous in households, with users listening to the same music over and over and buying new media rather selectively. Recently with the advent of services like Pandora and Spotify, users have shifted from this traditional ownership method to a subscription model where new music is delivered constantly and massive libraries are available with a near-unlimited amount of music. As put by Luck (2016), 'Digital streaming represents the most radical development in the way we experience music since the invention of automatic playback technologies two centuries ago'.

Similarly, with the advent of mainstream computing devices for the general populous, user interfaces have had to adapt to become more intuitive, evolving from requiring handbooks with heavily complex interfaces to streamlined and aesthetically pleasing experiences. With the average American reported to listen to four hours and five minutes of audio each day (Peoples, 2014), companies hoping to capitalise on this have targeted this up and coming streaming model where users do not own any content and pay a recurring fee for access. 'From zero ownership and on-demand access to a virtually unlimited library of music via a disconnected financial transaction, typical streaming services challenge previous conceptions of how music is defined, experienced and consumed' (Luck, 2016).

Large players such as Apple and Google have tried to capitalise on this market, with the primary competing directly with itself with a more traditional ownership method. The problem these companies face is that their user interfaces heavily reference older styles of music ownership where users added to their library. With streaming services, although user favourites are important, the main focus is the massive library of new, undiscovered songs for the user. The distinction that has been made by Apple between ownership on the iTunes Store and streaming on Apple Music (and the fact that they did not discontinue the former) shows that the two distinctions of users exist. What it therefore means is that those subscribing to Apple Music are more likely to be focused on discovery (however not fully discounting their current favourites). I want to explore how this paradigm shift should affect the user interface of streaming services to encompass these new features previously not available.

Whilst the main content being supplied (the music) is a key part of the experience, companies must now find differentiating features between them to gain users. Using a previously popular Apple product as an example, 'the focal point of the iPod is neither the device nor the interface, but the content: music and video (in some models) are the stars' (Blair-Early and Zender, 2008). Rather than try to bombard users with customisation or massive selections, the iPod focused on delivering the content users wanted, whilst incorporating new features such as music recommendations in the form of Genius. I want to explore in a similar way how to facilitate music discovery and formulate new features.

Psychology of streaming services

My research into streaming services shows that not only has the delivery of content changed, but also the psychological construct surrounding it. Luck (2016) illustrates that although customers do pay for subscriptions, the disconnection of the financial transaction means users perceive that they are not spending as much money. Psychologically, the service 'may be perceived as being less financially risky, even free, even for paying subscribers' (Luck 2016). Therefore in this new user interface, users will feel a lot more free to explore new options that they previously would not have, and the user interface should

reflect this. The solution therefore looks to be to include as much content as possible.

However, as evidenced in *The Paradox of Choice* (Schwartz, 2009), more options does not equate to better experience for users. It can often lead to confusion with the abundance of options diverting the user's attention. The book describes the optimal consumer's strategy for good decision making however if the design of an application can circumvent the need for this 'effective decision making model', it will increase the validity of its advantages over competing services.

Furthermore, when faced with too many decisions, listeners will default back to familiar music they have heard before (Ward et al. 2014, cited in Luck, 2016), 'turning to an alternate activity that doesn't require such decision making effort' (Luck, 2016). It is therefore evident that guiding listeners through this decision making process is key, organising content into sections based on mood or presenting users with a few options to choose from in general. Luck (2016) suggests a solution that has become a staple in existing services 'Unique playlists comprised of tracks selected especially for each individual listener (can) provide a bespoke solution to the paradox of choice'. This makes use of the massive library available to the user and the mandatory data collection (for payment of artists) by the services, offering a more personal experience. I feel that this would be something I would like to research more with user testing to find out what people would like to listen to the most.

Music as a medium can evoke intense feelings to users in the form of nostalgia. According to a study by Wildschut and Sedikides (2006), 79% of participants indicated that they experienced nostalgia once a week or more. Playing on this nostalgia can help alleviate negative mood or feelings and thus create a positive view of the service. 'By providing access to virtually any track anytime, anyplace, anywhere, on-demand streaming services are not just great music discovery tools, but exceptional nostalgia-inducing and life-enhancing devices' (Luck, 2016).

Spotify heavily plays on this using its massively popular 'Time Capsule' playlist feature which collects the most 'nostalgic tracks from your teens and early twenties, creating the soundtrack for a trip down memory lane' (Löfgren, 2017). This was due to the massive popularity of the 'Your Summer Rewind' playlist which aimed to feature the most nostalgic songs from the past summers. The critical acclaim and user positivity received from these playlists shows the consumer's mass appeal for nostalgia which I aim to feature heavily within my redesigned interface.

Ownership

With the advent of enhanced Digital Rights Management (DRM), sharing media digitally has become inherently harder than in the past where users could physically hand it to each other. However with the availability of digital distribution, if two consumers use the same service, sharing has become even easier. With ownership, users had to make large decisions about buying media, whereas streaming services allow people to try new media and progress through different tracks at a higher rate. This movement to a culture of non-ownership has become ever prevalent within the media industry with a move to services such as Netflix rather than buying media.

Ownership also brings along with it risks and responsibilities. 'The burdens of ownership' by Betty and Maricle (1973, cited in Moeller and Wittkowski, 2010) include: product alteration or obsolescence, incorrect product selection, maintenance and repair, full cost of something which consumer only uses infrequently. 'The risks and responsibilities that accompany ownership of a good, are lifted, and music transitions from something we possess into something we access' (Luck, 2016). This transition means the user does not have to think about any of the previously mentioned burdens, allowing any artist updates to albums to be rectified immediately without input from the user.

As the transition to these new services increase, the concept of these services becoming akin to utilities (e.g. electricity and water) that people purchase without thinking have become more plausible. In 2002, David Bowie proclaimed in an interview, 'Music itself is going to become like running water or electricity' (David Bowie, 21st-Century Entrepreneur, 2002), essentially that music is freed from the shackles that accompanied the DRM. If promised as a utility, people would just use the services without thinking - a psychological transition that would mean the costs associated with music would in essence fade out of the thoughts of the user. Bowie, as someone who understands the music industry, could see that this paradigm shift was occurring and I hope to embrace this change in my user interface.

With music ownership, a user would have to think carefully about buying a song, making sure that they definitely like it. With streaming services, users can try listening to a song and just change it if they do not like it. Luck (2016) poses, 'With streaming services, each track must be 'sold' repeatedly, all the while constantly competing with millions of other tracks', in essence meaning that music must become repeatable if it is to succeed, rather than before where an initial attraction was enough. This puts more pressure on the service to suggest and provide these 'repeatable' songs.

User Interfaces

When talking about user interfaces, Bruinsma, Meulen and Weelden (2003) identified two separate generalisations; "the hunter", intent on the destination, and "the browser" with the journey in mind, sometimes with an undefined destination. This leads to a key difference in scanning behaviour, with the hunter able to scan lots of information efficiently to find information leading to their target and the browser just looking for general topics and following diversions if desired. I feel that this is certainly true as I have observed these different types of people however I feel that people change their 'type' depending on the situation; someone may be a 'hunter' when they are looking for a song to listen to quickly whereas they may transition to a 'browser' when they have more time to explore. I aim to design for both uses; quick and for more exploratory interactions.

Research into user interfaces continued with Bruinsma, Meulen and Weelden's different content structures (2003) which they anatomised into linear, hierarchy, matrix and web. Linear defines an interface that is fixed into sequential, logical steps. Hierarchy (or tree structure) refers to an interface with options following previous selection - transitioning from broad subjects to more specific. In a matrix, multiple options are presented at the same time, allowing a large set of data to be compared and judged quickly. Web defines a broader category of undifferentiated items, following a less organised strategy.

For different use cases, I will aim to target the correct content structure to the media. For example if the user is choosing artists or genres things they like, they will be presented with the linear style; if they are trying to narrow down songs by an artist, the hierarchy structure would be most logical; if viewing all content to choose from, a matrix structure may be more useful; if a very fluid interface for selection is needed, web. The source was credible as it has been referenced multiple times by other sources such as User Interface Design Principles for Interaction Design (Blair-Early and Zender, 2008).

Dumas and Redish (1999) created a consolidated list, referenced by Blair-Early and Zender (2008) that defined the general principles for Human-Computer Interaction (HCI): giving the user control, striving for consistency, smoothing human-computer interactions with feedback, and supporting the user's limited memory. From this, Blair-Early and Zender (2008) created a set of Interface Design Principles. I will be adhering to these rules when creating my applications as they have been thoroughly cited within similar work and have influenced the design of other applications.

Current streaming services

The current market of streaming services is dominated by Spotify and Apple Music. According to Fortune (2017), Spotify boasts 60 million paid subscribers and 140 million active users whilst Apple Music has around 28 million only 2 years after its launch. In 2016, the on-demand audio streaming share for music consumption surpassed digital sales for the first time (Nielsen, 2017). This massive market share has even led to streaming being added to the UK charts, with every 100 streams counting as the equivalent of a single being purchased (Griffiths, 2014). "In a sense, it's a lot fairer, because the chart becomes a measurement of the genuine excitement around certain songs, and how that changes over time even after people have started to listen privately" (McAlpine, 2014 cited in Griffiths, 2014).

When researching the current user interfaces of popular streaming services such as Spotify and Apple Music, there seemed to be a lot of complaints around the interfaces. These seemed to stem from the designs being based on what looked most aesthetically pleasing, rather than addressing what users were interacting with and enhancing these features. They also seemed to play on the problem the Paradox of Choice suggested, showing too many options for the users.

An interesting article I came across was a student's full redesign of Apple Music. Apple itself performed a design overhaul themselves a year after the release of their service however it was still met with criticism. Yuan (2017) proposed a design that targeted the 'FaceBook and Instagram generation', focusing on the trend of Complex Reduction (an ideal proposed by Horton (2016) focusing on: bigger, bolder headlines, simpler and more universal icons and the extraction of colour). He also defined two types of users: hoarders which have large libraries they add to and nomads which are looking for new content. He also crucially points out that those who are nomads probably are already using Spotify. Whereas in his design he targets the nomads, I feel that it is totally plausible to be able to target both.

Within their respective softwares, Spotify and Apple Music propose two completely different approaches, with Spotify users being the nomads and the Apple Music users being hoarders. This is even evidenced with the initial screen presented to users when they start each respective application; Spotify's a discovery window showcasing a mixture of new and familiar music, and Apple Music showing the user's library. Although both services can accommodate for both types, they ultimately target different types of user, resulting in a restriction of target audience. I feel that with proper integration, both users can be targeted at once with a service that caters for all, including the lost 'middle ground' users.

A key area where Spotify struggles is with its distinction between free and premium. It's advertisement-based service actually loses money, even before accounting for costs of operation (Dawson, 2017). Although this tier is important for bringing in new users, it ultimately hinders new users. In my design I hope to create a real distinction between the two services to try and get people to upgrade to premium without losing members because of new constraints.

Conclusion

From my research, I found that the psychology of streaming services differs drastically to that of music ownership. Psychology is very key in interface design, with the right balance of items available giving the user enough choice, without bombarding them with information. Key parts are very important to provide a pleasurable experience, including nostalgia inducing pieces along with new curated items based on the data being collected by the services.

With the change to non-ownership of media, the psychology of its cost also decreases

significantly meaning users are more likely to try out new items. This non-ownership has turned streaming service subscriptions into a cost akin to utility bills where users do not think as much about the costs, leading to a higher use base and allowing unique sharing capabilities.

User interfaces also play a massive role in whether users will like a service. With different styles of usage and different content structures, users should be able to use the interface how they like with ample customisation to put things they find important front and centre.

Finally, after looking at current services available, I find that they target different styles of use case and although most can cater for these differences, they still have preferred users in mind. I feel that this limits the target market and can lead to stagnation with 'middle ground' users. 'It is my view that streaming companies are missing a key piece of the puzzle by not focusing on how listeners perceive, understand or respond to music in a more tangible fashion' (Luck, 2016) and I hope to create a more personalised, friendly interface that users enjoy using.

Words: 2747

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Redesigning the Streaming Future - Design

Aim:

Redesign the concept of a streaming service through analysis of current software and creation of advanced new features to appeal to the change in psychology of the change from ownership to non-ownership through streaming. Catering to the different styles of interaction and carrying a consistent theme and design language across different devices.

Objectives:

Competitor benchmarking - research into the current streaming services available and what the shortcomings of the softwares are, identifying where they do not take advantage of available resources and the users that are restricted or hindered by the current designs.

Psychological analysis of current services and how they can exclude or restrict user's workflows based on their intention (Bruinsma, Meulen and Weelden, 2003).

Creation of mockups that effectively communicate the new system and its features, clearly showing how and why the features were integrated and who they target. Follow of Blair-Early and Zender's (2008) content structures to fabricate these and incorporation of key psychologically advantageous features such as nostalgia.

Analysis of business sense, whether improvements will be feasible and whether they make financial sense.

Demonstration of mockups and prototypes to users to confirm improvements suggested will be beneficial and will enhance experience rather than be unused add-ons.

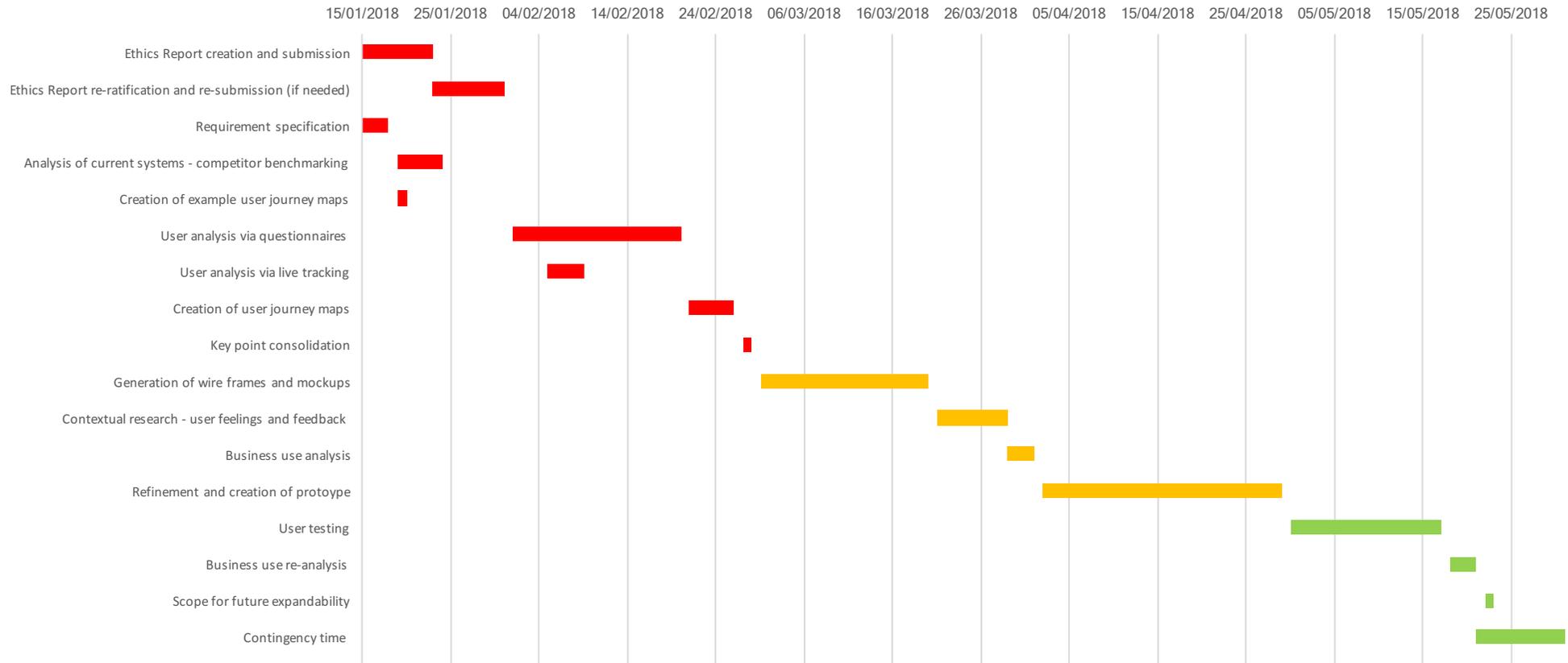
Psychological analysis of designed service to make sure that it does not interfere with any other rules such as the Paradox of Choice (Schwartz, 2009).

Fabrication of an interactive design model that shows new features and how they enhance the experience and streamline it compared to before.

Evaluation through user groups of whether design model is superior to other services and that improvements have been implemented correctly.

Exploration of future expandability and how this would lead to gaining more users.

Gantt chart:



Start: 15/01/2018
End: 31/05/2018

Red: Research phase
Orange: Design phase
Green: Validation phase

Task Name	Start Date	End Date	Duration (days)
Ethics Report creation and submission	15/01/2018	23/01/2018	8
Ethics Report re-ratification and re-submission (if needed)	23/01/2018	31/01/2018	8
Requirement specification	15/01/2018	18/01/2018	3
Analysis of current systems - competitor benchmarking	19/01/2018	24/01/2018	5
Creation of example user journey maps	19/01/2018	20/01/2018	1
User analysis via questionnaires	01/02/2018	20/02/2018	19
User analysis via live tracking	05/02/2018	09/02/2018	4
Creation of user journey maps	21/02/2018	26/02/2018	5
Key point consolidation	27/02/2018	28/02/2018	1
Generation of wire frames and mockups	01/03/2018	20/03/2018	19
Contextual research - user feelings and feedback	21/03/2018	29/03/2018	8
Business use analysis	29/03/2018	01/04/2018	3
Refinement and creation of prototype	02/04/2018	29/04/2018	27
User testing	30/04/2018	17/05/2018	17
Business use re-analysis	18/05/2018	21/05/2018	3
Scope for future expandability	22/05/2018	23/05/2018	1
Contingency time	21/05/2018	31/05/2018	10

Methods:

To gauge the current competitors I will research into the current streaming services available, exploring each interface fully. I will first analyse them based on how they base in comparison to Blair-Early and Zender's Process of Developing Interface Design Principles that encompass both Apple and Lynch's ideas. From this, I will create user workflows based on the actions a general user might want to do and compare how different services accomplish these, noting how and why a service succeeds or fails.

To further inform my design, I will do user research. The people I will choose for this research will include heavy users, medium users and new users to give my analysis the best scope. I will also guarantee that all information collected will be anonymised for the user's privacy. This is paramount as the project I am designing is something with the potential to be commercialised and the data I collect will psychologically analyse certain aspects of their personality, meaning any links could be construed as unethical.

My user research will comprise of a few different styles. The first will be simply gauging of what users do on their streaming services; whether they explore new music and if so how, whether they already have any complaints about the applications they use, what type of user they are (hoarder vs nomad (Yuan, 2017)), if they have tried other services, how much they use the services, how long it took them to become acclimatised with the system, and a general view on what features they do and do not like.

The second will consist of following what users do generally when they launch software and whether this spans multiple devices (phone, computer and/or smartwatch). This will be the broadest part of my research, trying to find out what features users interact with, whether intentionally, out of habit or even without knowing.

Finally, I will present my own user journeys to the users and analyse the different methods they have to getting to the solutions. I feel this will be very important to do as the inclusion of new users will show how consumers new to the software usually react.

I will consolidate all of this data into key points that will inform my final design, creating personas and general user journeys (different from my own). From this I will create initial mock-ups and wireframes to demonstrate my main ideas. These will be quite detailed and show who I will be targeting with each feature and how they can change to target different users. I will also include key business features such as how a premium account will differ from a free account as these will be key to how users interpret the software.

From this, I will take these new designs back to my original users and propose the new ideas. I will engage on any criticism proposed, questioning why and how my design could differ, taking on board these criticisms to further influence my design. I will spend a lot of time understanding these different ideas and potentially publish them to sites such as Behance for other views and feedback from different styles of user.

Following this, I will create a fully interactive prototype using tools such as Sketch and Principle. These will be prototypes that can be used for testing and evaluation and will be very close to my final designs. These will aim to be refined as possible, incorporating all the ideas whilst staying true to my psychological research. I will also analyse my design for its financial feasibility, making sure that it promotes premium features without removing so many items from the free tier that it will drive away current users.

Finally I will use these prototypes to demonstrate my proposed feature improvements to my original group and other users not incorporated within my initial testing. I will then evaluate my prototype to see whether it offers a solution to the problem space I am attempting to address. If there are any glaring omissions or problems I will address these within my

contingency time. I will then evaluate my prototype and explore how it will allow future expandability with user feedback and what changes would be important in the next iteration.