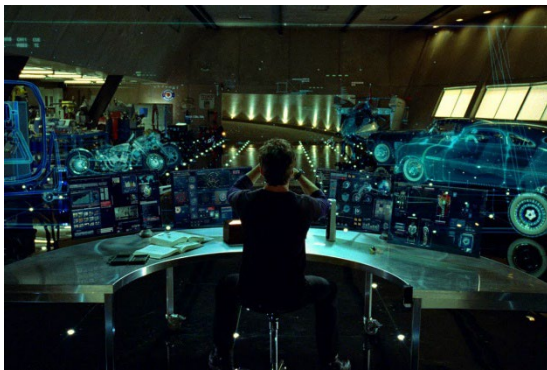


## JARVIS

Just A Rather Very Intelligent System (Fandom, 2021) or JARVIS, first introduced in Iron Man (2008) is number two on Arthur C Clark's seven predictions for 2000, "*Intelligent Machine in the form of Artificial Intelligence either inorganic or mechanical intelligence*". JARVIS is the equivalent of an assistant for Tony Stark, this makes JARVIS a prime example of skeuomorphic design. In Anon's work titled, *What is Skeuomorphism*, "skeuomorphism makes interface objects familiar to users by using concepts they recognize", JARVIS is exclusive to Tony Stark, and as he is the only who uses JARVIS, he will know "how it works, and what operations are possible: discoverability" (Norman, 2013, p.10).

In Normans, *Design of Everyday Things*, he mentions five key principles which makes up the foundation for discoverability, one of these is affordances. Affordances is inherently linked with skeuomorphic design as the interface is used to "mimic their real-world counterpart" (Anon). JARVIS appears in many forms throughout the Iron Man movies, whatever form JARVIS takes, Tony is aware on how to interact with JARVIS, this is supported by signifiers which communicate to Tony as well as the audience "where the action should take place" (Norman, 2013, p.14). In the hologram form of JARVIS this is very apparent as pieces of visual form float around Tony for him to move at will.



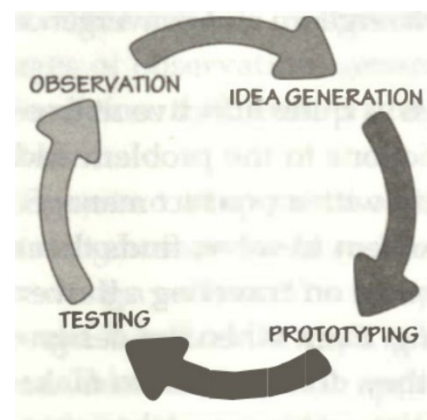
**Figure 1.** Tony interacting with JARVIS

Another concept of discoverability is Feedback, this one is obvious for JARVIS as he is a system which talks and moves according to Tony's will, therefore, a very responsive system and almost an immediate one. However, that's not to say JARVIS does not think for themselves, in the few situations Tony is incapable of asking for assistance or struggling for an answer JARVIS may act by itself to help Tony. This is another one of Don Normans theories, Design Thinking, (design of everyday things, 2013) it follows the concept of finding the root issue of a situation

before coming up with multiple solutions. JARVIS can be seen to follow Normans model of Human-Centred Design (HCD), JARVIS is a system that within nanoseconds can observe a situation, generate multiple ideas, run a test and identify the best solution, this is JARVIS finding the "core underlying issue... and trying to understand the company and its needs" (Norman, 2014) in this case Tony Stark is the company in which JARVIS is proposing a solution for.

JARVIS being exclusive to Tony works almost like a 'second brain' for Tony, while achieving the highest form of intelligence in its industry, as Clark predicted. JARVIS "unsettles the present" and works as a "means of speculating how things could be" (Raby and Dunne, 2013), JARVIS is an AI which controls all of Tony's technological equipment from showers to his suits, while JARVIS only supports Tony, this could very soon "act as a catalyst for collectively redefining our relation to reality" (Raby and Dunne, 2013). This can be seen in JARVIS's assistance in aiding the Avengers in their missions.

JARVIS gives humanity a glimpse as to what could be a possible future, one we are stepping closer to each day, with AI intelligence already assisting humanity now in smaller forms



**Figure 2.** Iterative Cycle of Human-Centred Design

such as Amazons Alexa, one could speculate it won't be long before a more advanced system such as JARVIS come to fruition.

## Spotify

In 1998 Shawn Fanning started development of the Napster code - which would soon change the future of the music industry forever. By 1999 the Napster code was finished and launched (New York Times, 2014) - the main purpose of Napster was a file sharing service in which you gave others on the internet access to your hard drive. This was key to crippling the music industry because until then if you wanted an individual song you would have to buy the album. However, Napster allowed a user to download a specific song and the main thing was the fact it was free.

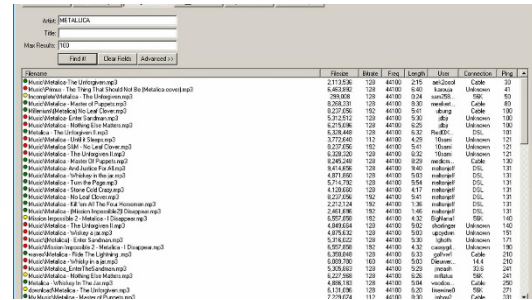
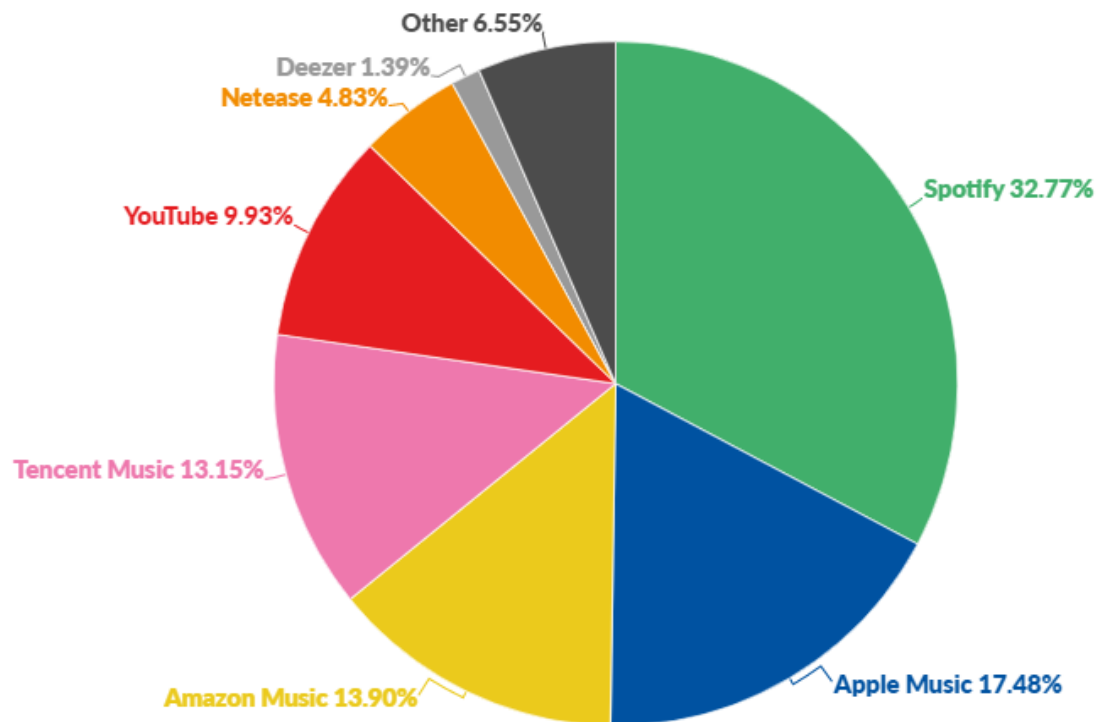


Figure 3. Napster interface

In July 2001, Napster lost the legal battle against pirating and stealing music, having to shut down its service to more than 70 million members (New York Times, 2014). However, this didn't discourage people from the idea Napster had set and people continued to pirate music. In 2003, iTunes was founded and made music distribution cheaper, accessible, and legal with the idea of downloading music but download sales are now on the decline as online streaming services become more accessible.

Spotify was founded in 2006 and truly disrupted the present by setting the standards for the future of the music industry and providing an online streaming service which “decouples from the industry” (Raby and Dunne, 2013). Spotify is a perfect example of a model following the iterative cycle of HCD (Norman, 2013) on its launch Spotify was available in only six large countries and had multiple prototypes before its ‘final’ model. In 2011 Spotify was finally available in the USA and started its global hold. By 2019 Spotify is available in seventy-nine countries (Company Man, 2019). Spotify can now be considered a monopoly within the music industry which is shown through the pandemic of its stock increase of 70% (Company Man, 2019). Furthermore, Spotify have recently branched out into acquiring more assets such as the Joe Rogan podcast. This can be seen as Spotify's push to take over the audio industry with the amount of people listening to podcasts increasing by 175% (epicstudios, 2019).



**Figure 4.** Music Streaming Market Share

To hold its status Spotify must deal with its competitors, it successfully achieves this by being one of the only streaming services focused globally. Whereas other services such as Tencent, is predominantly focused on China and Apple Music is focused on the USA. Unlike other competitors Spotify has a free service which is most likely their strongest aspect, while it plays adverts, most of the adverts push for a user to become a premium member, this is most likely due to 90% of Spotify's revenue being from premium membership (Company Man, 2019) Spotify's biggest pitfall is its revenue problem, with 10% of their income coming from advertisement, it needs more revenue to improve its services, Spotify pays 70% of a stream to its artists, while the rest of the money goes to them, however this is still insufficient to fund the company (Company Man, 2019) In Spotify's 2018 annual report it is stated, "We have incurred significant operating losses in the past, and we may not be able to generate sufficient revenue to be profitable, or to generate positive cash flow on a sustained basis. In addition, our revenue growth rate may decline". Unlike Spotify's other competitors Spotify only has business in the music industry meaning with insufficient funds it cannot pay for investments to improve their service and therefore maintain their monopoly status. While this may not be a problem in the present, that cannot be said for the future, with companies such as Tencent adding new features such as karaoke, it is only a matter of time before another service becomes just as good as Spotify if not better.

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