

THE FUTURE OF HEADPHONES

INTRODUCTION TO THE FUTURE OF HEADPHONES

Currently, most headphones are wireless, easily visible and mostly used for listening to music and making phone calls. In the far away future (30+ years) I believe them to change into devices that we use for direct brain-to-brain and brain-to-machine communication that allow us to send and receive information such as images or sound without any other input devices.

The way towards this future will progress in several periods [1]:

- Now (next twelve months)
- Near-term (one to five years)
- Mid-range (five to ten years)
- Long-range (ten to twenty years)
- Far-range (twenty to thirty years)
- Distant (more than thirty years)

In the next pages, I am going to describe how I imagine this future to unfold.

[1] Time zones based on Amy Webb

Note that I will use headphones, earphones and, hearables (smart headphones, a category of wearables) interchangeably.



Apple's AirPods

NOW (NEXT TWELVE MONTHS)

Within the next twelve months, I am expecting to see more wireless and smart headphones.

Wireless headphones

In the next twelve months, the market share of wireless earphones will keep growing. Sales of Bluetooth headphones have already slightly surpassed wired ones in 2016. The removal of headphone jacks on several mobile devices (rumor has it that Google's new Pixel 2 will come without a headphone jack as well) is maybe the best indicator that the wireless trend will continue. Furthermore, as consumer electronics companies like Apple, Samsung, and Motorola all have wireless headphones in their offering, we can expect them as well as other firms (e. g. Google) to invest more in that field. Moreover, if it is indeed true that mobile video consumption fuels demand in wireless headphones, we have another reason to expect growing sales of wireless headphones as the latter, mobile video consumption, is projected to increase as well. Besides that, wireless is simply a "natural" progression; tangled headphones are annoying.

Convergence towards smaller

earphones

Closely related to wireless will be a convergence towards smaller sized earphones as shown with Apple's AirPods, Bragi's The Dash Pro or the Samsung Gear IconX.

Smart headphones

Another thing that will become common place among wireless headphones is always switched on, always listening and instantly ready. We can observe these features with, for example, Apple AirPods. They automatically stop playing music when you take them out of your ears or connect immediately to your phone once you take them out of their case. Furthermore, they are always listening for Siri commands provided that you double tap them. With always listening devices such as Google Home or Amazon's Alexa we can expect more of such interactions in headphones as well. In this context of smart headphones, I will use the term hearables interchangeably. With hearables, I am referring to smart headphones as a sub-category of wearables.

NEAR-TERM (ONE TO FIVE YEARS): MORE INTEGRATED INTO OUR LIVES

In general, the use of headphones will increase over the next five years. Reasons for this are manifold. One of the biggest drivers will be FOBO (fear of being offline; see below), the need for feedback, interest in fitness and health, noisy environments, environmental detachment (e. g. not hearing or seeing cars while listening to music or using the smartphone while walking), an ongoing decentralization of the smartphone, increasing use of voice as input (for texting and as a mean of issuing commands), and the need for instant and ubiquitous access to people ("digital hangouts") and the internet (fueled by devices like Amazon's Alexa through which you can access the internet from anywhere anytime almost instantly by just saying "Alexa").

All this will result in changes along two categories. On the one side, headphones will become more context aware and integrate us better into our physical and social environment. On the other side, we will see a deeper integration of headphones into our everyday lives which will eventually lead to us wearing headphones not only longer but also wearing them in situations where we would usually take them off.

FOBO

The FTI has identified FOBO (fear of being offline expressed in uneasiness when having a weak Wi-Fi signal or a weak phone battery) as a trend of 2017 [2]. This will lead to increased headphone-use because with them we can be more online. Waterproof headphones are one example.

Although I have not yet heard of people talking calls under the shower, sending voice-messages while in the ocean has a certain appeal.

Custom-made audio and plugs

For more wearing to be possible, we might need tailor made headphones (audio and plugs) similar to prescription glasses. I am still uncertain about the probability of this as off-the-rack earphones might become comfortable enough. Air protection foams, for example, can be worn for extended periods of time, although they are similarly off-the-rack. However, the German earphone manufacturer Bragi, for instance, is already offering headphones tailored to your ear [1].

No changes in size

Although companies like Third Skin are working on almost invisible headphones (hearing aids size), people are buying Beats for their optics, Ariana Grande is producing some really eye catching headphones, and Apple AirPods are also relatively large (compared to other models). In the long run, I expect headphones to be almost invisible, but during this period, I think that they will stay in the size of available earphones. They will become smaller because technological advancement will allow compressing more features into less space and because smaller headphones are more comfortable for transportation and wearing. Furthermore, they won't disappear visually yet, because it might look weird if you are talking but people

cannot see to whom or what.

More context aware headphones leading to more proactive headphones

Context aware headphones are headphones that know what you are doing, where you are, how you are feeling etc. and help you based on this information. One of the first applications in the context awareness will be automatic movement detection for fitness tracking and falling detection. For fitness tracking, headphones will automatically detect what you are exercising and start tracking your workout. In fact, Bragi's The Dash Pro already has this feature. Furthermore, headphones worn by people who have troubles walking will detect that they have fallen and inquiry whether they can get up. If they cannot, a first responder will be alerted via the connected phone.

Another area where context aware headphones will help is preventing detachment from the environment. Listening to music or using smartphones in public can not only be annoying by not hearing people or announcements around you (e. g. coworkers or train schedule) but also dangerous by running into somebody or something [1]. This detachment issue is especially annoying when walking. It will be solved either through hardware or software.

On the hardware-side, we have headphones that transmit audio via bone conduction and therefore leave the ear canal open so you can listen to your music and hear the environment simultaneously. One example for that is Trekz Titanium (see headphones with bone

[1] <https://www.bragi.com/thedashpro/customize/>

[2] <https://futuretodayinstitute.com/2017-tech-trends/>

conduction technology).

[1] Admittedly reports on headphone wearing related accidents do not paint a life-threatening picture. From 2004 to 2011 there were “only” 81 deaths caused by pedestrian wearing headphones. However, these issues will be enhanced by increasing headphone-usage and growing availability of electric cars which are quieter than cars with ICEs. Death is always a tragedy and by using “only” I am expressing their small number relative to other causes of death.

Safety coaching and software-based detachment solutions through augmented sound

On the software-side, we will have more and more AI-enabled headphones with augmented sound that can manipulate environmental noises. Examples for such headphones include Bragi's The Dash Pro, Here One or Nuheara IQbuds. Here we can compare headphones to sunglasses and prescription glasses. The way sunglasses filter out sound, headphones will be able to mute the noise around us (entirely or just specific sounds). Furthermore, as prescription glasses enhance our vision, headphones will improve our hearing (e. g. turn up the volume of specific voices such as sirens or co-workers). Moreover, they will come with keyword spotting that enhances outside voices based on a clue like your name or a siren (Amazon, for example, has patented such noise-canceling headphones with keyword spotting).

Headphones as smartphone controls (touch, KUIs and in/on

body controls) for more context aware people

Using smartphones is not only cumbersome (by bowing your head down) but also a dangerous detachment from the environment. Based on this, we will see headphones with all kinds of controls for operating our smartphones. Among them, headphones with (touch) interfaces for gestures such as pressing or swiping, KUIs (Kinetic User Interface) and beginnings of in/on body controls. Bragi's Shortcut feature is an early example of such an in/on body control. This function allows you to activate specific tasks (that you can determine on your own) by tapping on your cheek while wearing the headphone.

Bragi's virtual 4D menu is an example for a KUI which allows more complex interactions than with the examples listed above. In this 4D menu you choose actions based on the position of your head.

Whereas I am unsure whether we will see more of these

advanced controls (referring to the Shortcut function and the 4D menu) within the next five years, I do expect similar things to come in the more distant future.

Side note: All the here listed controls will also be relevant from a health perspective because looking down on your phone can lead to health problems such as neck pain.

Using headphones during social occasions enabled by augmented sound will be the first step into all day wearing

Headphones with augmented sound are leading us into a future where we will wear headphones during occasions where we would usually take them out such as when talking to other people. Whereas it is acceptable to wear hearing aids while with other people, keeping your headphones in, is not only rude (you might still be listening to music) but also impractical (you might have difficulties understanding the other person). In the next five years, I believe this to change and that

HEADPHONES WITH BONE CONDUCTION TECHNOLOGY

A review from The Verge considers the mentioned Trekz Titanium decent bone conduction headphones but criticizes their weaker sound performance relative to “standard” headphones as well as sound leaking (people around you can hear what you are listening). As I believe that these issues apply to all headphones with bone conduction technology, I doubt that such earphones will become mainstream within the next five years, especially as their advantages will become available through headphones with augmented sound. However, I do expect bone conduction technology (or any other technology that makes headphones almost invisible) to become relevant at a later stage.

Link to review: [Are bone conduction headphones good enough yet?](#)

we will see people without hearing loss using headphones in social settings. As mentioned above, headphones with augmented sound enhance our hearing and, therefore, let us hear things that we would usually miss. Examples for that are conversations with others in noisy restaurants, lectures, and pubs.

Whereas initially, these headphones will serve as over-the-counter hearing aids for people with hearing disabilities (similar to reading glasses you can buy at supermarkets), I expect them to move to other audiences and in essence be used in every situation where you — despite perfect hearing — have troubles understanding what is being said. Whereas this might sound strange at first, we must recall that nowadays it is almost normal for two people to be on their phones while together.

Digital hangouts for socializing through instant access to the Internet and people

Another thing that headphones will enable are digital hangouts for socializing and remote working. In regards to socializing, headphones will give us instant access to people. Sony's Anytime Talk, a chat app for their headphones Xperia Ear is one example for that. With the app you log into a chatroom, your microphone is always on, and you can talk to other people whenever you want. In a work environment, instead of picking up your phone and calling somebody, you can instantly ask your remote colleague for her opinion on your idea. Furthermore, the hangout feature could also find application in industrial settings

where they would allow walkie-talkie like communication between workers.

First step into all day usage through light based notifications

Although the time spent wearing headphones will increase, we will still take them out from time to time. In this case, earphones would be of use by providing light-based notifications through built-in status LEDs. Today we already receive one very basic information through light, namely battery status. In the future, I expect status LEDs to supplement smart watches. For example, they might blink when we have an incoming call or glow red when we have a missed one.

More stand-alone headphones through hardware improvements leading to a decentralization of the smartphone

In general, we will see a decentralization of the smartphone in the following years. This decentralization means that smartphone components will move from the smartphone to our environment and bodies (also referred to as ambient or ubiquitous computing). As a consequence will use our smartphone's software more but its hardware less. Augmented or virtual reality headsets are one example where the screen moves from the smartphone to our head. Another example are hearables. With them, several components will move from the smartphone to the ear or be simultaneously available on

both devices and thus increase headphones' stand-alone functionalities.

For example, over the ear headphones like Vinci already have Wi-Fi built in, so we might see Wi-Fi ready earbuds as well in the next five years. Combined with mesh Wi-Fi routers that allow seamless switching between endpoints I can imagine certain settings (like a large campus) where we can go longer distances without needing a smartphone. There, Wi-Fi enabled headphones would allow us to stream music (e. g. Spotify) or access personal digital assistants (PSDAs) like Alexa on the go while leaving the smartphone at home. In addition to that, smartwatches with cellular connectivity could further enhance this decentralization of the smartphone when used in tandem with hearables. Whereas this might sound counterintuitive in a "mobile first" world, going smartphone-free has a certain appeal for activities like exercising.

First stand-alone devices for fitness

A range of simple stand-alone hearables combining fitness tracking with built-in storage and controls for music playback are already available. One example are Samsung's Gear IconX. Thus, you can already go smartphone-free, at least for exercising.

More stand-alone headphones through software improvements leading to a decentralization of the smartphone

Software for and on headphones will improve

significantly over the next five years. These improvements will result in more apps for headphones, more OSs for headphones and apps on headphones. Eventually, all these developments will lead to headphones with more stand-alone capabilities and less dependence on smartphones.

Apps for headphones

As apps are available for fitness trackers, there are also apps for headphones. For example, you can link Bragi's headphones to iTranslate (real-time voice translation) or health apps like Apple HealthKit.

Headphones-OSs and apps on headphones

Coming from Bragi is further, as far as I know, the first OS for hearables, called BOS (short for Bragi OS). Although BOS currently cannot do more than a firmware, I expect it to allow direct installation of apps in the future. In fact, the Dash can already be used as a stand-alone device for listening to music or tracking activities. So, in a way, there are already apps running on headphones. Based on this, I can imagine more apps on and for headphones and a greater choice of OSs or more headphones with updatable firmwares in the future.

Where real-time spoken word translation is going (Bragi is not the only one working on it; there are also Skype or Waverly Labs, for instance) I am unsure, but I do expect to see more chat apps for headphones.

Voice-chat apps for hearables

As far as I know, Sony's Anytime Talk is the first chat app developed exclusively for a headphone. It allows you to

create voice-based group chats with Xperia Ear users (Sony's hearable) to whom you can talk at any time as long you are in the group chat (similar to a phone conference). Based on this, I expect a range of voice-based chats apps with "voice-ready" interaction models to come. For example, chat apps that give you reply suggestions that you can confirm or neglect by nodding or shaking your head. For instance, as a response to an incoming message about a meeting, the app asks whether you want to reply with "no" because it sees that you are not free at that time (based on your calendar). Furthermore, a range of predefined text modules can be stored (like on the Apple Watch). From these you can, for instance, choose by nodding your head in the virtual direction of the predefined reply (like with Bragi's 4D virtual menu).

First step into ambient computing through integration into "device workflow"

In the realm of all these software improvements, I expect headphones to become better integrated into our daily "device workflow". For example, we will see seamless switching between input sources (smartphones, PCs, home devices like TVs, cars, etc.) and "continuance functionality" with which you could start responding to a text on your headphones (or any other task) and continue on your smartphone or PC. With Apple AirPods you can already easily switch between your Apple devices. Furthermore, Apple's Handoff feature allows you to start working on one Apple device (e. g. writing an email on

your phone) and continue writing the same e-mail on your Mac. Based on this it would not be too far-fetched to expect similar functions for other headphones as well. Whereas these features might seem insignificant, it is important to view their meaning in a broader context; such seamless switching between devices is one step into an ambient computing future where we are always surrounded by computers and can access them wherever and whenever we want.

More supportive headphones and over-the-counter hearing aids

Although I have indirectly mentioned it above, I want to reiterate here that in the next five years headphones will become more supportive. One example is fitness. As mentioned, headphones will have more advanced fitness features. Besides the above listed automatic movement detection, I expect them to move beyond fitness tracking into fitness coaching. Companies like Vi already have sophisticated fitness capabilities that not only track but also coach you (e. g. providing training suggestions while running). Another example are personal digital assistants like Siri. Simply put, they will become smarter and progress into all day present companions guiding you through your life with "how to" coaching (see next section) and similar. Finally, the above-mentioned augmented sound manipulation will also be helpful to people at risk of or with hearing loss. On the one side, such AI-based sound

manipulation could help people prevent hearing loss in the first place (by lowering environmental sound, alerting about too high sound pressure, etc.). On the other side, we can expect to see more over-the-counter hearing aids for people with mild hearing loss. With Congress making OTC hearing aids legal, such headphones are just a question of time now.

HEADPHONES WITH MORE STANDALONE CAPABILITIES ARE POINTING IN A FUTURE WHERE WE USE OUR SMARTPHONE'S SOFTWARE MORE BUT ITS HARDWARE LESS.

MID-RANGE (FIVE TO TEN YEARS)

One of the biggest changes that we will see in this period is significantly increasing wearing time of headphones. Wearing time will increase due to new form factors, rising standalone capabilities and a further decentralization of the smartphone, proliferation of Augmented Reality headsets, and more supportive headphones through Ubiquitous Learning. Another reason for increasing wearing time (and the biggest change in this period) will be headphones' changing product role. In this period they will start evolving from smartphone accessories to accessories for other devices (e. g. Augmented Reality glasses) or they will become one of many worn mesh networking wearables. Finally, we will see several developments that are leading into a future of cyber-humans through implantable headphones and light-based communication with the outside world.

Ubiquitous use in social occasions

At this point, headphones will

already be used in crowded spaces like restaurants. Based on this, I can imagine them being worn now in almost every situation with and without human contact where augmented sound could be useful.

New form factors such as glasses and implantable headphones leading to more wearing time

Coupled with the above-mentioned usage of headphones in social settings, we will see new form factors such as prescription glasses with built-in headphones. One example for that are Vue Smart Glasses with bone conduction technology. Furthermore, I think that latest by this period, bone conduction technology will become mainstream-ready if not already in wide use. For me, such formats are pointing in the direction of implantable headphones of which we can expect to see the first experiments in this period.

Regardless of the form factor, I expect a further decentralization of the

smartphone in which headphones with their ever-increasing stand-alone capabilities will play a role.

Pushing decentralization of the smartphone through interaction with other advanced technologies and the headphones' changing role

Latest by this period headphones must not be seen as smartphone accessories anymore. Whereas I expect smartphones to still play a role in the years following 2025, I think that headphones will either become accessories to other devices or be part of a worn mesh computing network where processing power is split between a range of devices the user wears. In either case, I believe Augmented Reality (AR) headsets to play a role. Although five years might be too soon, I do think that within 2035 we will be wearing some sort of reality augmenting glasses, at least for some occasions during the day. Another crucial part of smartphones, the camera, will as well become increasingly detached (see "Rising

decentralization of the smartphone due to new devices with cameras"). As a consequence, our smartphones would stay even longer in our pockets because we have the screen and camera right in front of us. In regards to the splitting of computing power, I am unsure which device will be the primary connector to the internet (either through cellular, Wi-Fi or anything else that might come). Based on current technological development, however, I wildly guess that this will either be headphones or smartwatches (as opposed to AR headsets and in addition to smartphones).

Vinci headphones, for example, already come with built-in 3G technology and smartwatches have had cellular technology for a while. The ubiquitousness of headphones as compared to smartwatches ("everybody" wears headphones) would be one reason to favor headphones as the primary source of (cellular) technology over smartwatches. There might be multiple sources as well.

Rising decentralization of the smartphone due to headphones with speakers

Moreover, I believe that we will also see a range of headphones that double as speakers. Apple, for example, has issued a patent for headphones with that very functionality. Furthermore, Human is expected to ship its Sound headphones with a loudspeaker mode (no shipping date yet). Whereas it might sound abstruse, this could lead us into a future of speaker-less smartphones. Using Augmented Reality glasses as screens, and headphones as speakers, the smartphone of the future might

not be a smartphone in the way we know it today, but simply a hub that connects these devices or provides computational power.

First step towards a robotic future through headphones with lights

Today, light is part of our communication between people and technology and people and people. Safety lights for children, running, biking and so on were probably the first "wearables" we used for light-based communication with people around us. Snap's Spectacles (sunglasses with an outward facing camera) are probably one of the first "real" wearables where light was used as a form of communication. Spectacles come with a light that glows when you are recording using the built-in camera. Furthermore, the Vinci are headphones with an outward facing display whose content you can personalize to be shown even when you are wearing them, and the screen is facing to people around you. Finally, devices such as headphones or TVs communicate with us through status LEDs (e. g. blinking for pairing mode or green for on). Based on this, I am curious which role lights will play in the communication with the outside world when headphones become more integrated into our lives. If at this point headphones are still visible (and not yet implanted or built into other devices such as the above-mentioned glasses) I can imagine them serving as a status indicator to people around us. For instance, red would mean that you are busy and cannot talk right now or violet that you

are browsing the web with your Augment Reality glasses. In a way, this can be seen as an evolution of the notification lights used for missed calls and similar mentioned above under "First step into all day usage through light based notifications". Finally, one must not forget the social function headphones already have today. Although not always respected, wearing headphones signalizes that we do not want to be bothered right now.

Ubiquitous learning

With Ubiquitous Learning, I refer to interactive learning supported by technology (such as wearables) that can take place anywhere, anytime, that is highly personalized to the user and its environment and is a mixture of "real reality" and virtual reality. Furthermore, it goes beyond book knowledge (e. g. learning programming) aiming at improving each aspect of life such as social interactions (e. g. keeping eye contact), sports or sleep. Headphones coupled with other worn input devices such as cameras enable a host of applications in the realm of Ubiquitous Learning. Instead of looking up things on wikiHow, headphones would instruct you, glasses would demonstrate it, and other wearables would track your movements and recommend adjustment if necessary. Based on available technology, speaking and sleeping coaching are two examples where I have high confidence that we will see more of (after the above-mentioned sports coaching).

Speaking coaching

Whereas companies like emolve try to improve your rhetoric skills using your PC's camera as input, I expect such applications to become more ubiquitous by a combination of all day worn cameras, headphones, and other devices. For instance, headphones and cameras would capture our conversations (including the other person's reactions) and advise us on our speaking. If we are talking too slowly, we will be told to slow down. If we are going off track, we will be told to focus on the topic at hand. If we are talking to complicatedly, we will be told to simplify our language.

Sleeping coaching

Kokoon, for example, has announced to ship "the world's first sleep sensing EEG headphones" in October 2017 [1]. Based on this, a host of other sleep tracking technology (such as an AI-based device that can remotely track sleeping patterns [2]) and the amount of people who would benefit from better sleep (not just people with sleep disorders) I am expecting more sleep coaching technology, of which headphones will be one part, in the future. Here, Ubiquitous Learning refers to the technology analyzing your sleeping patterns and recommending you ways for improvement (e. g. no caffeine after a certain time) so that you learn how to sleep better.

Rising decentralization of the smartphone due to new devices with cameras

I can imagine that the camera will completely detach from the smartphone in the future. In fact, today we can already observe this by products like Spectacles, consumer drones or

neck cameras like FrontRow by Ubiquiti. Based on the ever increasing presence of cameras (in cars, surveillance cameras, people wearing outdoor cameras like GoPros around their necks...) and our love for taking pictures and vlogging, we must consider a future where everybody will "be a camera" (there are dash cams for cars, so why not cams for us?). As people might have an aversion against everybody wearing a camera (e. g. due to privacy concerns) I expect them to start diffusing in niches. One niche would be blind people. There are already quite sophisticated smartphone apps for helping blind people see (e. g. apps that capture objects through smartphone cameras and describe it to the owner). But it seems to me that the smartphone's camera is not the most suitable input device for such apps, because, when holding it up, you only have one free hand. In such cases, neck cameras would be of great help. If introduced as a medical device, public aversion is sure to be lower than it would be with "consumer oriented" cameras (as it was the case with Google Glass, for instance). Through this and other niches, acceptance of all day cameras will rise and slowly become accepted for other purposes as well. Another solution to privacy concerns could be the storing of material taken with body cams on the Blockchain. In combination with object recognition algorithms, everybody could instantly look for pictures belonging to her and let them be automatically deleted or blurred to the extend her property is visible.

LONG-RANGE (TEN TO TWENTY YEARS)

I think that this period will yield the least drastic changes of all. Maybe the most exciting change will be emotion tracking headphones. Based on sleep and focus/concentration tracking, as well as speaking and sports coaching we will slowly move into the monitoring of emotions. Whereas feelings like tiredness, anger, and happiness are already detectable via facial recognition, I am expecting this recognition to start happening from the "inside". Besides that, most of the progress will center around new use cases for headphones such as in-ear ads and the move of hearables towards market saturation.

FAR-RANGE (TWENTY TO THIRTY YEARS)

Based on the saturation of hearables in the previous stage, I think that here we will see an uptick of Augmented Reality headset used in social settings, although still far away from market saturation. Furthermore, this period will show increased availability of implantable headphones.

DISTANT (MORE THAN THIRTY YEARS)

In this undefined future of 2047 and beyond it is justified to imagine Sci-Fi like scenarios. Headphones, as we know them today, will not exist anymore, screens will also disappear. An implantable chip will be our connection to the environment.

[1] <https://www.kickstarter.com/projects/1861630723/take-control-of-your-sleep-with-kokoon-eeg-headpho>

[2] <http://news.mit.edu/2017/new-ai-algorithm-monitors-sleep-radio-waves-0807>

We will use it to communicate to people and things around us (e. g. telling autonomous cars that we do not want to pass the street) and to interchange information (images and sounds). Controlling objects with thought through that chip will become the new default interaction model. Finally, Ubiquitous Learning will go beyond nudging (“you should eat less” or “you should speak more slowly”) to direct bioengineering and brain influence. As we now use an app to turn off the lights in our homes or start our cars, in this distant future, we will use apps to switch off parts of our brains. Say, for example, the craving for sweets.

The distant future might not be so distant after all

Whereas such a future might sound scary or highly unlikely, one must consider that we already have technology going in that direction. For instance, other (medical) devices such as hearing aids, can already be implanted into our bodies. Furthermore, an analogy (admittedly far-fetched) to seeing helps put the thought of implantable headphones into perspective. If you have problems with your sight, you can use contact lenses or undergo surgery to improve your vision. Similar to how contact lenses are a temporary implant to improve your sight, hearables or hearing aids are a temporary implant to improve your hearing. Furthermore, as eye surgery is a permanent enhancement of your vision, think of implanted hearables as a permanent enhancement of your hearing.

Additionally, only in July, the

Startup Neurable announced the “world’s first brain-computer interface for virtual reality” [1]. Neurable has developed a Brain-Computer-Interface headset for HTC’s Virtual Reality headset Vive. With their headset, you can play their game Awakening solely with your thoughts captured through the headset. The company is planning to make the game commercially available in 2018.

And finally, MODIUS a headband looking for funding on Indiegogo is supposedly able to trick your brain into storing less fat by sending electrical pulses to parts of your brain. The brain sees these pulses as an indicator to store less fat and thus activates your metabolism and makes you less hungry.

[1] Announcing the world’s first brain-computer interface for virtual reality