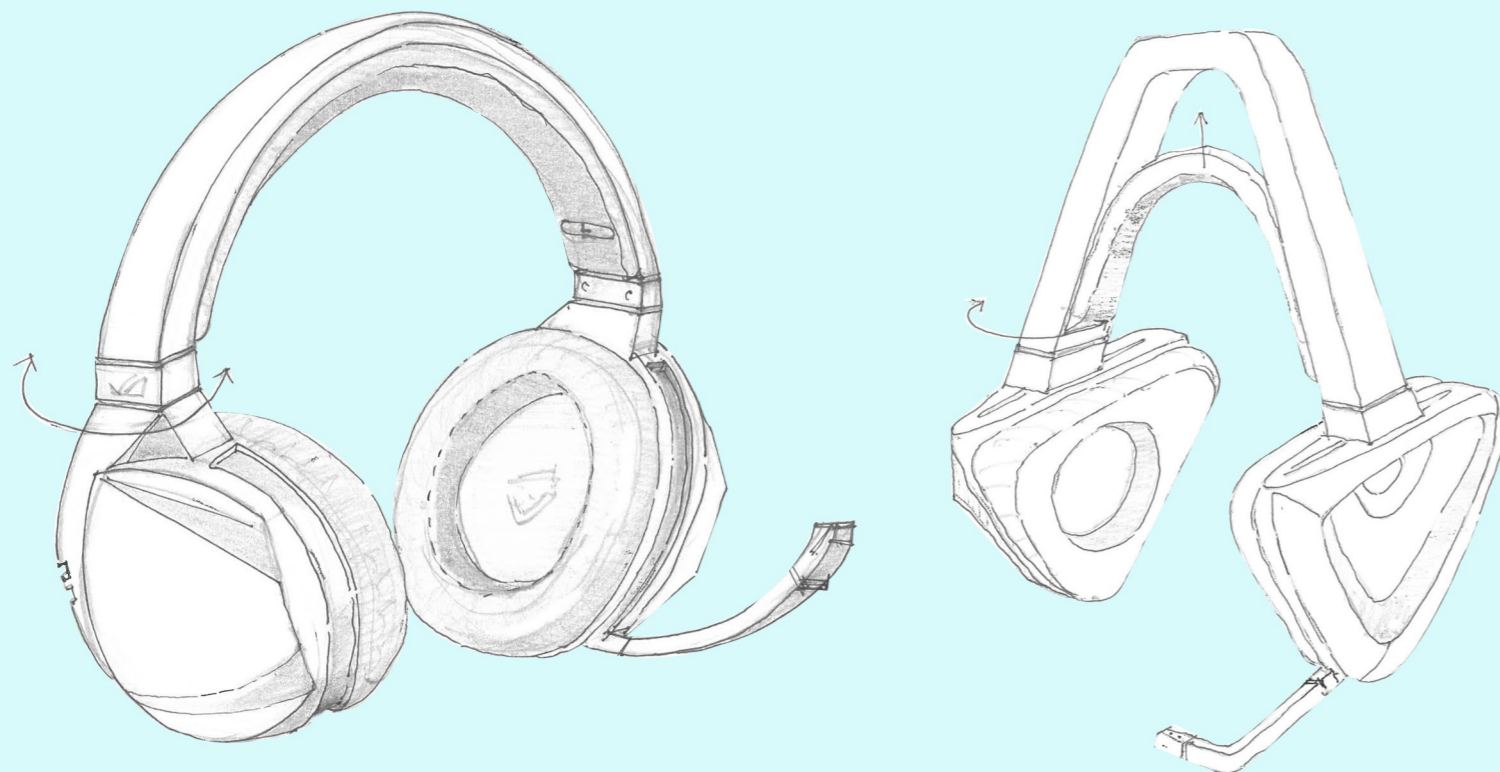
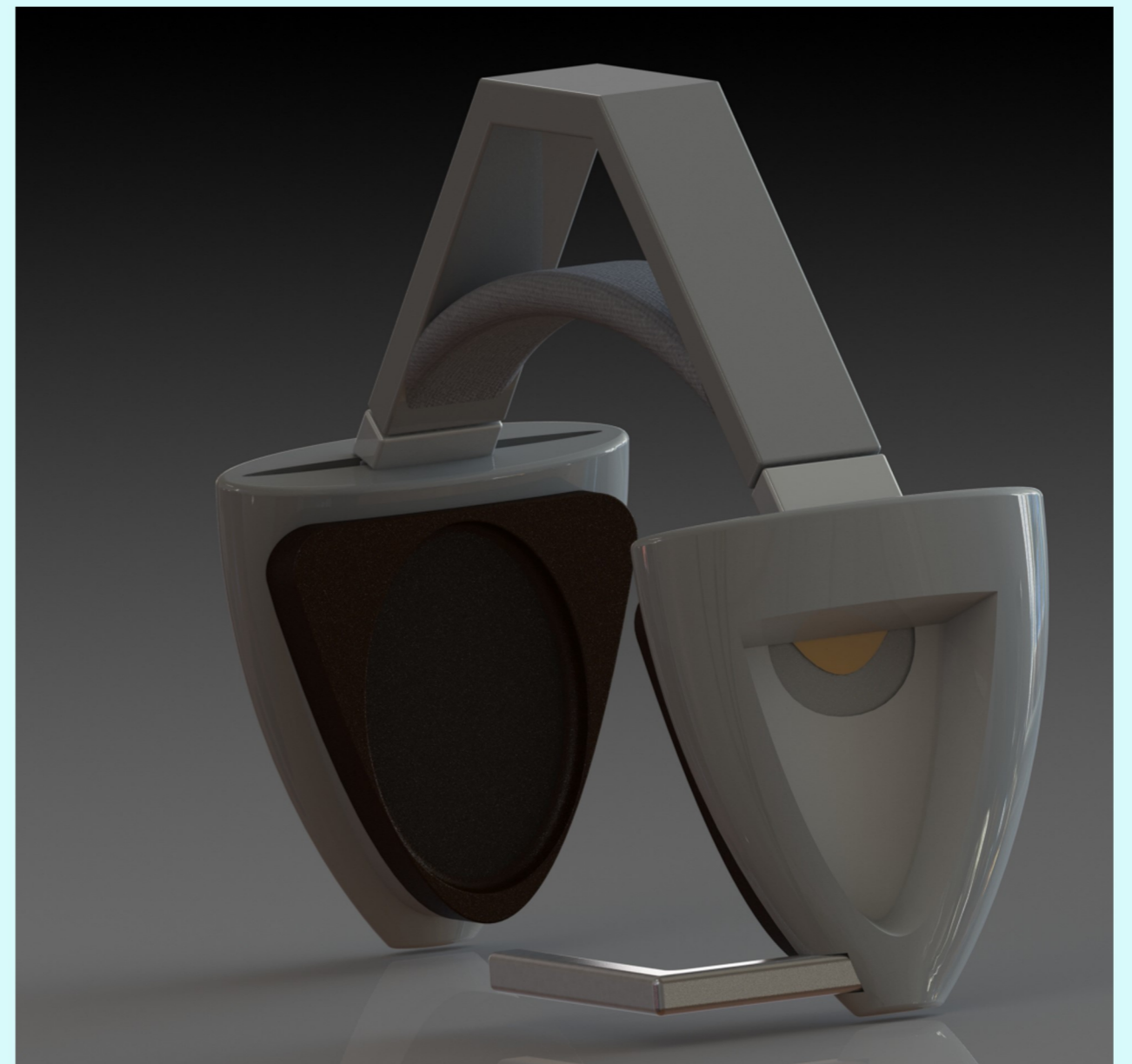
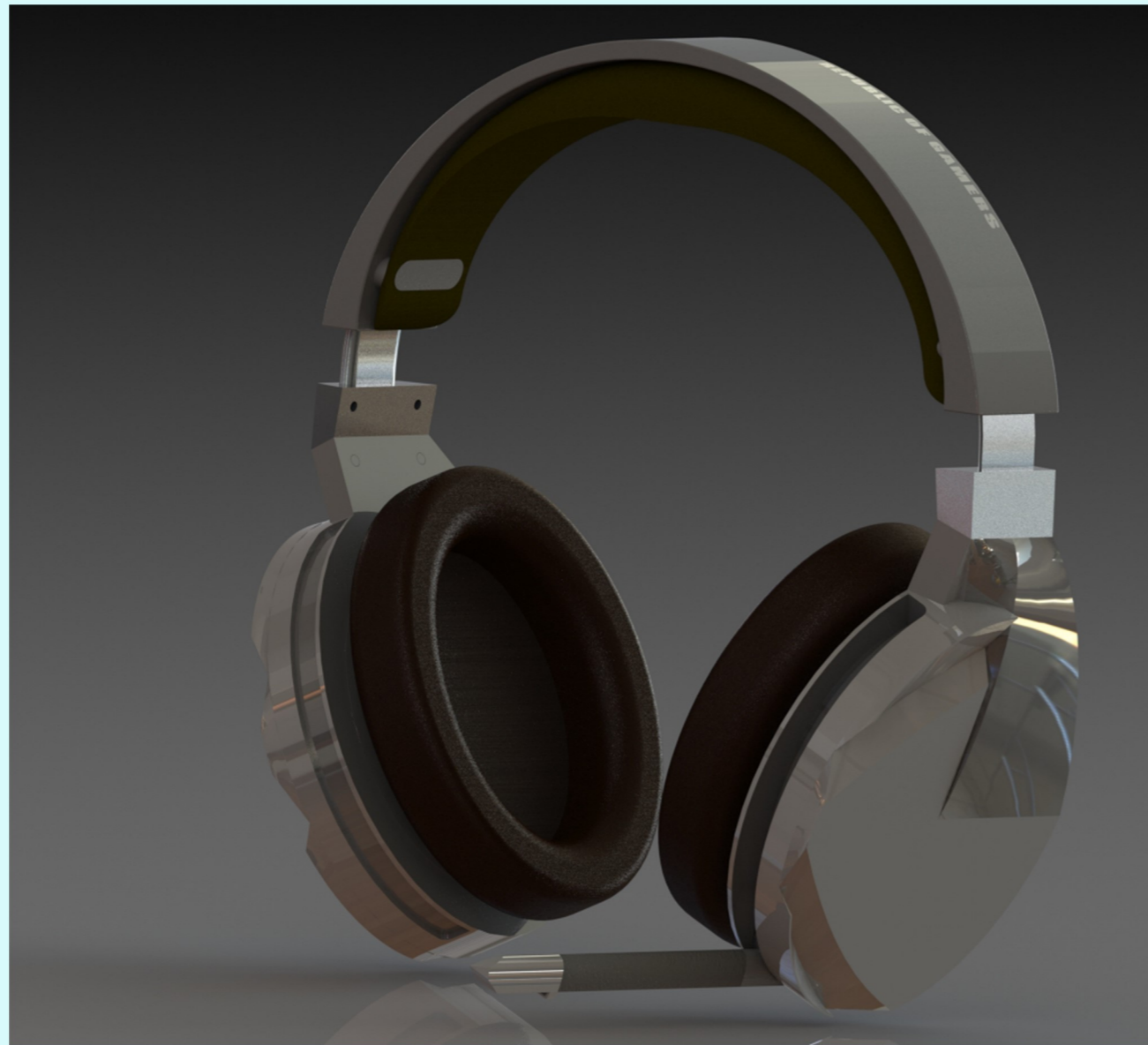


DCCG STUDENT ASSIGNMENT

2020



OUTPUT 0

Exam Number: 106542

GAMING HEADSETS

BRIEF

As gaming headsets are worn for extended periods of time, they are designed to be durable, lightweight and comfortable. Design features often include an adjustable headband, moulded/padded ear cups and a retractable/removable microphone. Other features frequently include foldability, adjustable volume control, multi-connectivity options, power supply, illumination, etc.

(A) Carry out a design investigation of gaming headsets in graphic format. Your investigation should include an analysis of physical form and shape, ergonomics, materials, safety features, power source, etc.

PHYSICAL FORM/SHAPE

Geometric Head
Smooth Angular
Cups Microphone
Oval Rounded Ear

FOLDABILITY

Horizontal Hinges
Travelability Retractable Compact
Vertical Unfoldable

ADJUSTABLE HEADBAND

Foldable Moveable
Unadjustable Ergonomics
Fits Sizes

LIGHTWEIGHT



COMFORTABLE



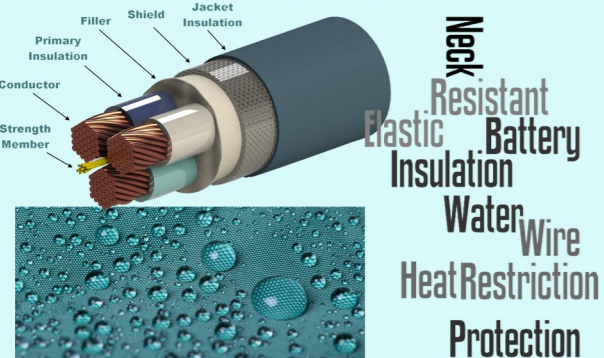
DURABLE



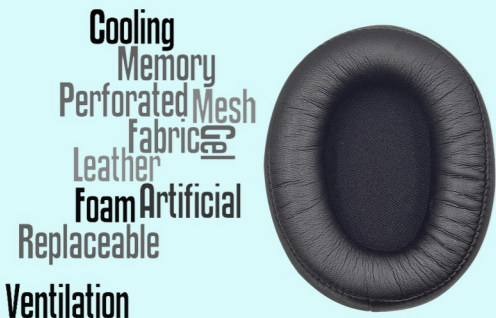
MATERIALS



SAFETY FEATURES



MOULDED/PADDED EAR CUPS



RETRACTABLE/REMOVABLE MICROPHONE



PHYSICAL FORM/SHAPE



FOLDABILITY



ADJUSTABLE HEADBAND



ILLUMINATION



POWER SUPPLY



MULTI-CONNECTIVITY OPTIONS



ERGONOMICS



ADJUSTABLE VOLUME



OUTPUT 11

Exam Number: 106542

WORN FOR EXTENDED PERIODS OF TIME

Gaming Headsets are used for prolonged time frames. This means they need to be comfortable, while being structurally sound. They also need to not be that heavy. No one wants to have an long, enjoyable gaming marathon interrupted due to your head hurting from the weight. All of these factors boil down to the materials used and the form/shape of the headset.



PHYSICAL FORM/SHAPE

Gaming Headsets are generally all circumaural. This means that the ear cups fit over the ear. They mainly come in the same horse-shoe like shape. They consist of a headband that sits on the top of your head, at least one, but mainly two, ear cups and a microphone. The vast majority of headsets have the microphone located on the left ear cup. This is because the manufacturer assumes that the user is right handed, and it allows the user to adjust the microphone with the non-dominant hand. Depending on the connection type, the headset may have a cable attached.



RETRACTABLE/REMOVABLE MICROPHONE

Nowadays all Gaming Headsets have a microphone in some way, shape or form. As I discussed earlier the microphone is on the left hand side of the headset, to allow undisturbed use of the right hand while gaming. The microphones are either removable altogether or they can retract to a discrete location when not in use.



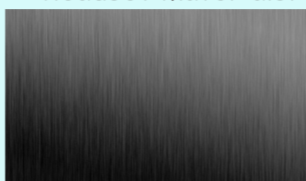
MOULDED/PADDED EAR CUPS

As previously mentioned, Gaming Headsets tend to be Circumaural, meaning the ear mold covers the entire ear. These moulds need to be sweat resistant and perforated. Breathability is a key thinking point when designing ear moulds, to prevent sweat build-up over long gaming sessions. Some companies use a cooling gel to counter this, while others use a fabric mesh material to allow the heat to escape.



MATERIALS

The choice of materials is extremely important when creating headsets. You need to find a balance of quality and affordability, as well as appeal and practicality. For example making a headband or ear cups out of plastic rather than a soft material wouldn't be the smartest idea as it would be painful. At the same time choosing a fabric such as Vicuna, the softest material in the world, also wouldn't be a great idea since it is extremely expensive. A soft cushiony leather



FOLDABILITY

About half of the Gaming Headsets that I found have the option to fold down into smaller sizes. They fold in many different ways. Such as the connection from the headband to the ear cup folding inwards or the ear cups folding onto themselves.



ILLUMINATION

The major 'Illumination' craze among gamers began back in 2014 when Corsair released one first mainstream RGB Keyboard. Since then lighting has appeared on every single peripheral and the majority of products. Most products with lighting have a way of turning it off. So if you are or are not a fan of it, you can still purchase the headphone design. Illumination is also used in clever and ingenuitive ways including ways to indicate if the headset is turned on or if the microphone is muted. Sometimes it's even used in the stand.



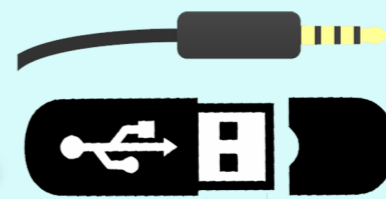
POWER SUPPLY

Since most Gaming Headsets are connected by a wire, an internal power supply isn't all that necessary. The headset is able to be constantly powered by the device. However wireless headsets, need to have some form of internal rechargeable battery. In some instances I have seen headsets with replacable batteries than can be recharged. Multiple come with the headset on initial purchase allowing one to be charging at all times. Some headsets, however have a charging stand or even case.



MULTI-CONNECTIVITY OPTIONS

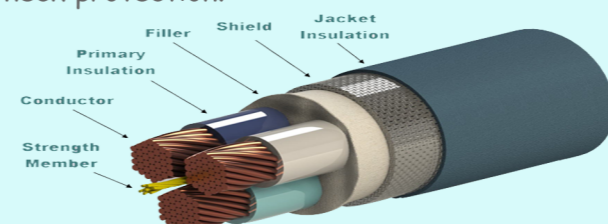
Gaming Headsets are able to connect to various devices with a cable or wirelessly. The most common cable type used is a 3.5mm AUX Cable, although there are exceptions to this. For example the Asus ROG Centurion connects to a bridge by a HDMI Cable, which then connects into the device through a dual USB Cable. If the headset is connected wirelessly, the most common was is through a USB Receiver which is plugged into a USB Port on the



device. However as more and more devices are gaining Bluetooth functionalities, connection through Bluetooth is becoming more and more popular.

SAFETY FEATURES

Gaming Headsets include many safety features. These are in place to protect the user from injury. The main safety features that I have found are; Battery Heat Dissipation, Water Resistance, Sound Level Limits, Wire Insulation, Elasticity Restriction, and from time to time, head and neck protection.



ADJUSTABLE VOLUME

Many modern Gaming Headsets have started to include volume controls on the headsets themselves. These come in a vareity of different forms For example the Turtle Beach Stealth 400 uses a scroll wheel to control the sound settings, while the Asus ROG Fusion Wireless uses touch controls on the right ear cup. However some volume controls are managed on a bridge between the Headset and device. This is the case for the Kingston Hyper X Cloud Gaming Headset.



OTHER FEATURES

Gaming Headsets have many other useful features. These include; Adjustable Volume Controls, Foldability, Retractable/Removable Microphone, Power Supply, Multi-Connectivity Options, Illumination.

ERGONOMICS

What are ergonomics? They are the process of designing or arranging a product in order to best suit the people who use them. The hardware ergonomics are that the headsets can fit all sizes and completely cover the ear. However the main aspects are more on the software side. External Noise Cancelling (ENC) and Surround Sound are nice luxuries to have in a gaming headset, but they are a necessity for those who compete in competitive E-Sports, in order to hear opponents and drown out the audience.



OUTPUT 12

Exam Number: 106542



ROG STRIX FUSION WIRELESS

VS



PS4 AFTERGLOW HEADSET

Shape, Size and Form

Ultimately the Headset is made up of 2 cylinders attached by a band. It's 195mm tall and 185mm wide. It weighs approximately 400g, considerably more than the Afterglow, although from my experience it hasn't affected comfort while playing. It's shape allows easy and comfortable wearing for extended periods of time.

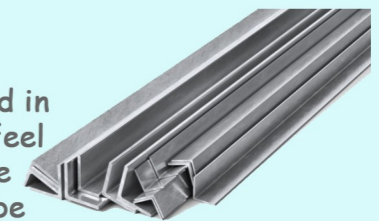
Shape, Size and Form

Although there are some similarities, the PS4 Afterglow Headset is completely different to the Fusion Headset. It is 170mm tall, 125mm wide and weighs 70g, significantly smaller than the Fusion. Instead of having 2 ear cups, it only has one. This is more common among console specific headsets and provides a completely different gaming experience, and to be quite frankly honest with you it isn't a pleasant one.



Materials

Both headsets utilize a mix of metal and hard plastic as the majority of the product, with materials like rubber being used in the microphones or leather cushions being used for the ear cups. However, the materials on the Afterglow headset just feel cheaper. I'm able to bend the headband in ways that I shouldn't and although both headsets use rubber as a part of the microphone it's a lot harder to mould the Afterglow microphone. Now you might be thinking, maybe it's not supposed to be moulded or adjusted, but that just begs the question "Why use rubber?"



Ear Cups

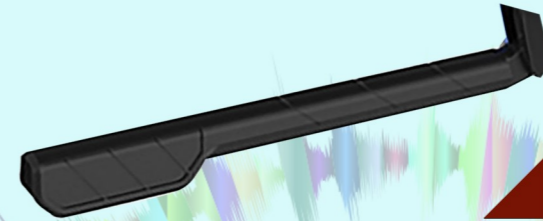
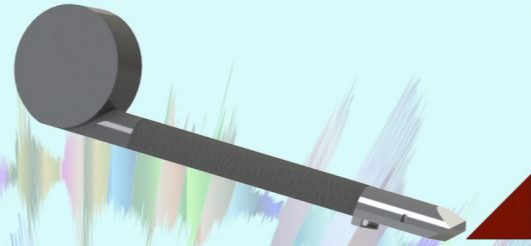
The Fusion Headset has 2 ear cups. These are made of soft, cushioned leather pads. They are breathable, and don't get uncomfortable overtime. They have created one of the most comfortable gaming experiences that I have had. There is also the option to change out the leather for a soft fabric mesh should you prefer. The ear cup has 135 degree rotation.

Ear Cups

As previously stated the Afterglow headset only has one ear cup. I was quite disappointed with it as a headset. The ear cup became uncomfortable very rapidly. It didn't cover the ear, it sat on the ear. And that leather padding was nearly rock solid. It didn't provide for a comfortable experience compared to the Fusion Headset. Also the option to change material wasn't there. Finally the ear cups only rotated a measly (when compared to the Fusion Headset) 30 degrees.

Adjustability

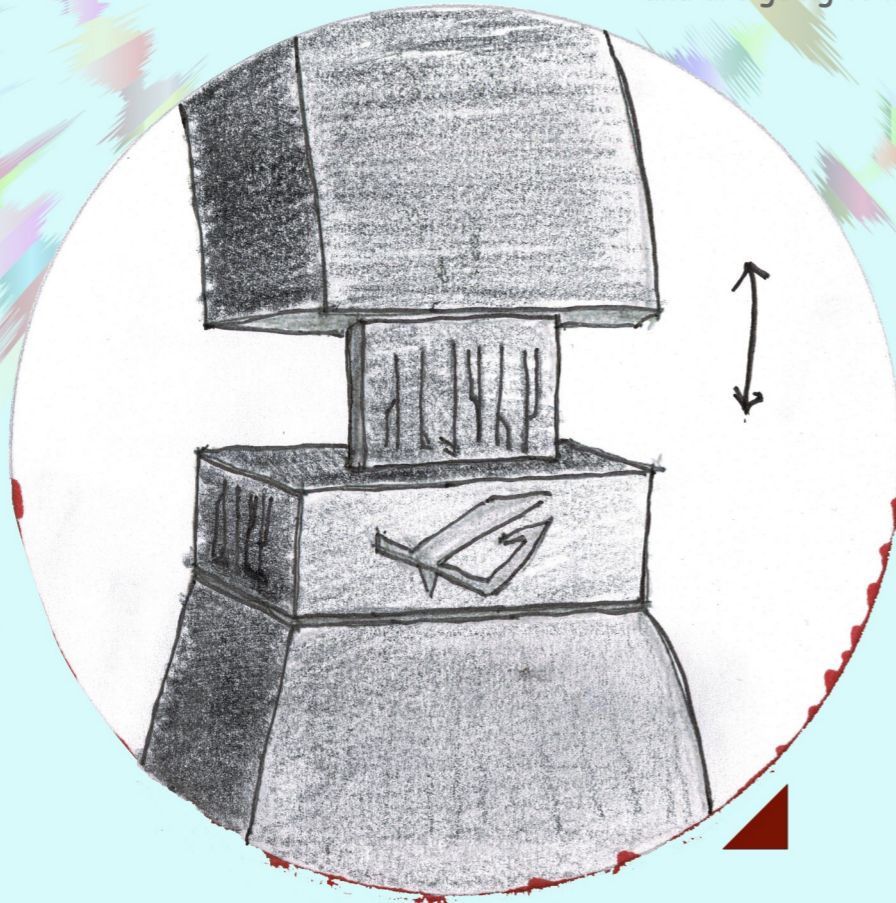
Both headsets have many adjustable features such as a retractable microphone, volume controls and an adjustable headband, but both headsets execute these features in different ways. The microphone on the Fusion headset is fully mouldable. It can bend in every single direction thanks to its high quality rubber, and it retracts neatly into a notch in the left ear cup so that it is flush. The Afterglow headset also has an adjustable microphone, but not as controlled. It retracts to a vertical but is very clunky and obvious and as a result it isn't aesthetically pleasing. And although it is also made of rubber it is nowhere near as personal. After 5 seconds of being in a moulded location it always moves back to its initial out of the box position. This means that it is often far from your mouth and team mates can struggle to hear you.



Both headsets have volume controls, but again they are done differently. The Afterglow does the more common approach to volume controls on a headset which is a scroll wheel or buttons on a bridge between the headset and the console. This can sometimes work poorly based on the position of the bridge and length of the cable, despite this I think that they have done a good job with this aspect of the headset. The Fusion headset on the other hand does something which to me was completely unique. They have a touch panel located on the ear cup, and swiping up or down raises or lowers the volume. Both headsets have succeeded in implementing volume controls, however the Fusion Headset does a better job.

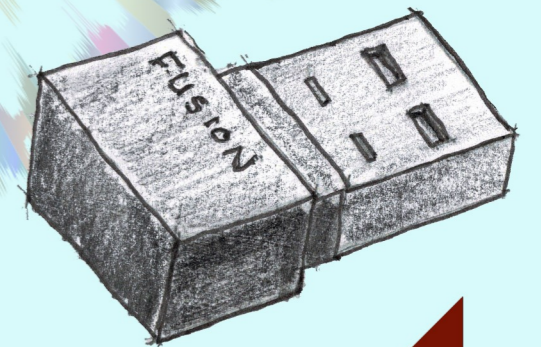


The final aspect of adjustability is the headband. Both headsets have the ability to adjust the headband to user preference. Both ears cups of the Fusion Headset are individually adjustable meaning it is entirely up to the user how they want the headset to fit. This is not the case for the Afterglow headset, which has a whopping 2 settings. You can choose from either brain-crushingly small or gigantic. I guess if you have an average size head you are out of luck and are going to need to find a different headset. Sorry.



Other Features

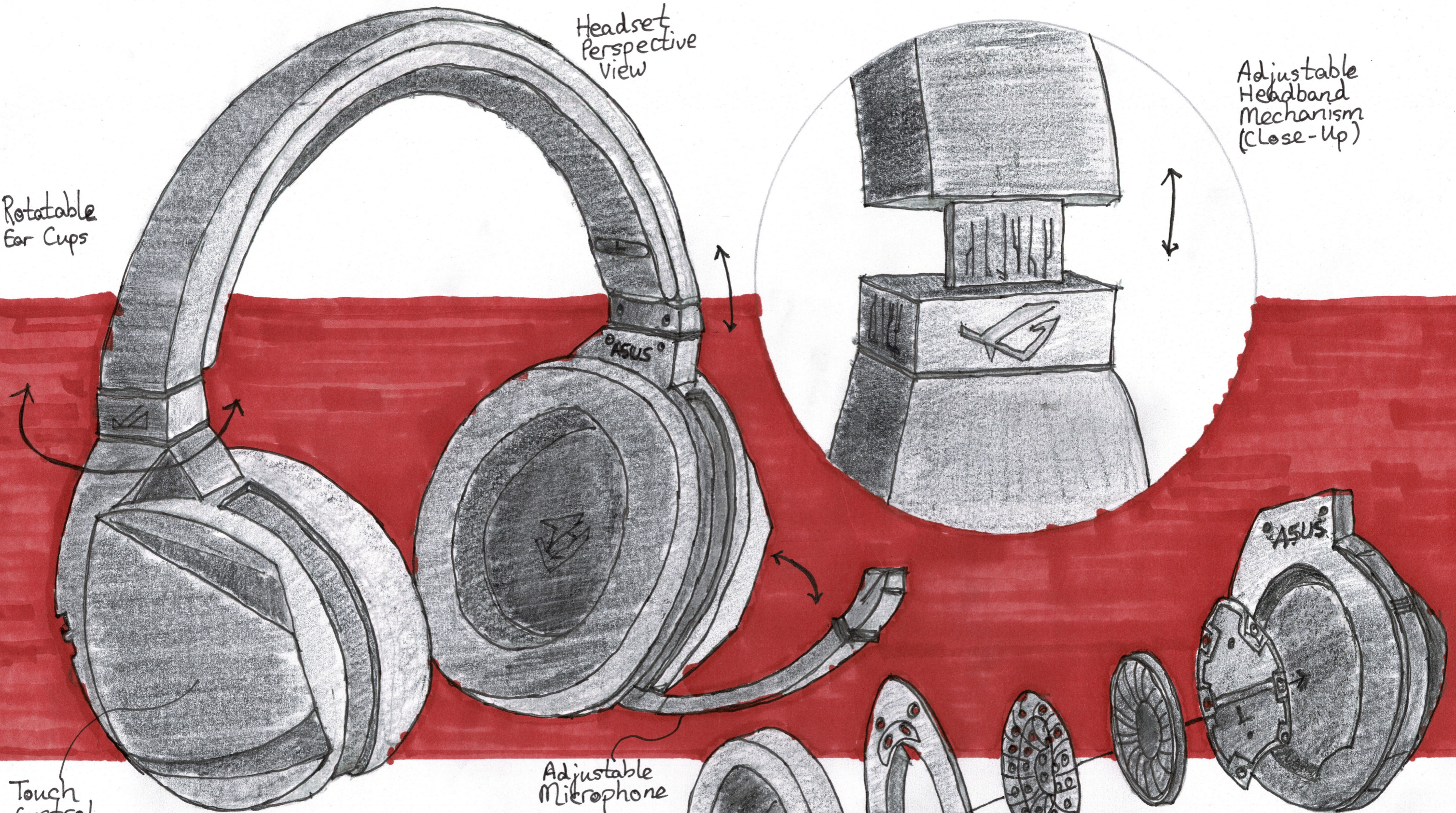
Other features include illumination, power supply and multi-connectivity options. Each headset has a different approach to these features. The Afterglow headset beats out the Fusion headset when it comes to illumination. As the name suggests the Afterglow headset lights up while in use. Sadly the Fusion headset does not light up like other models in its series. The Fusion headset connects to the console via Bluetooth and a USB Receiver, whereas the Afterglow connects via the, more traditional, AUX Cable. As a result of the wireless connectivity, the Fusion Headset requires an internal power supply, which is probably the reason it doesn't illuminate. It would use up too much battery. However, as the Afterglow connects via cable it does not need a power supply as the power is drawn from the console.



Rotatable Ear Cups

Headset Perspective View

Adjustable Headband Mechanism (Close-Up)

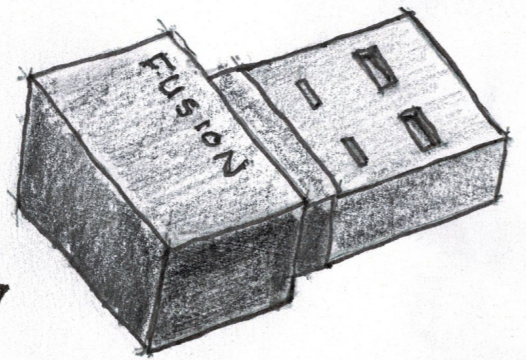


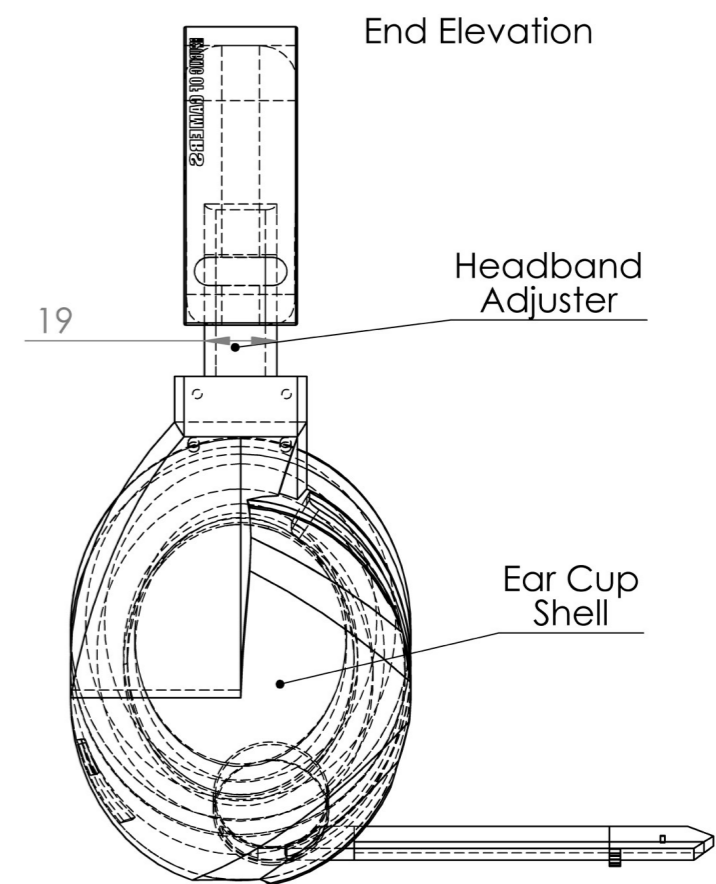
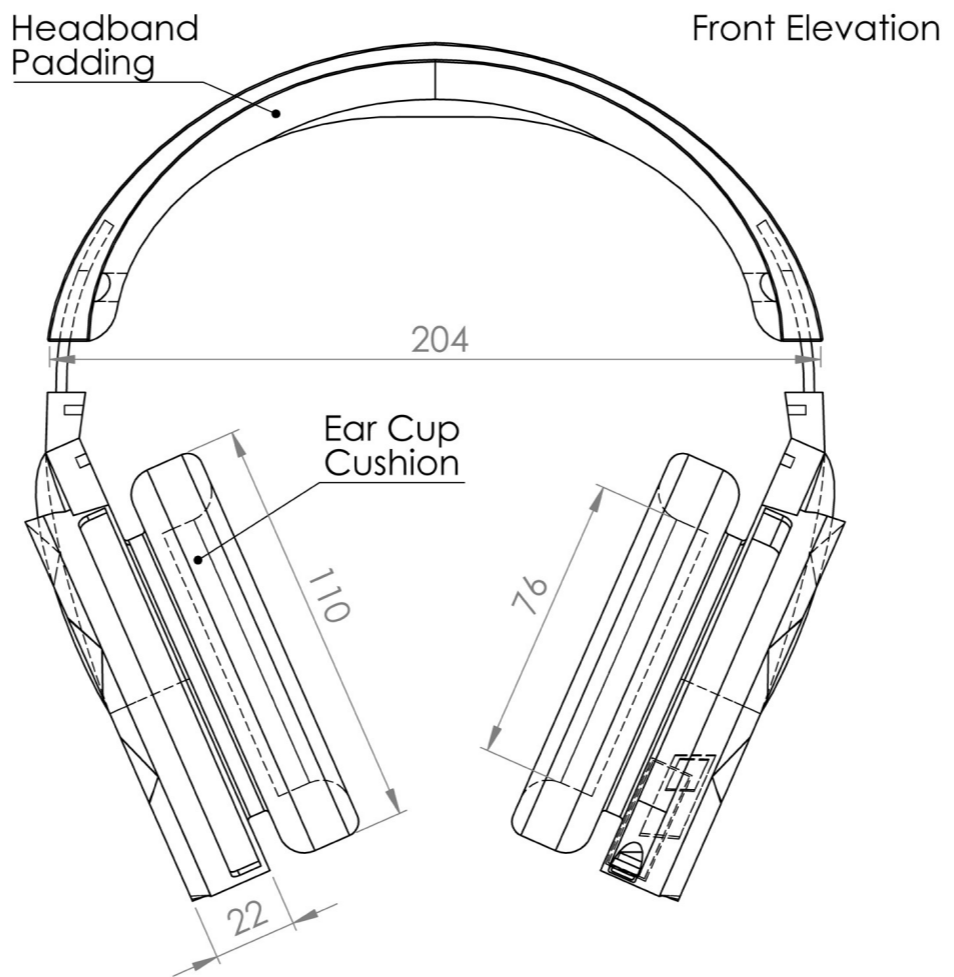
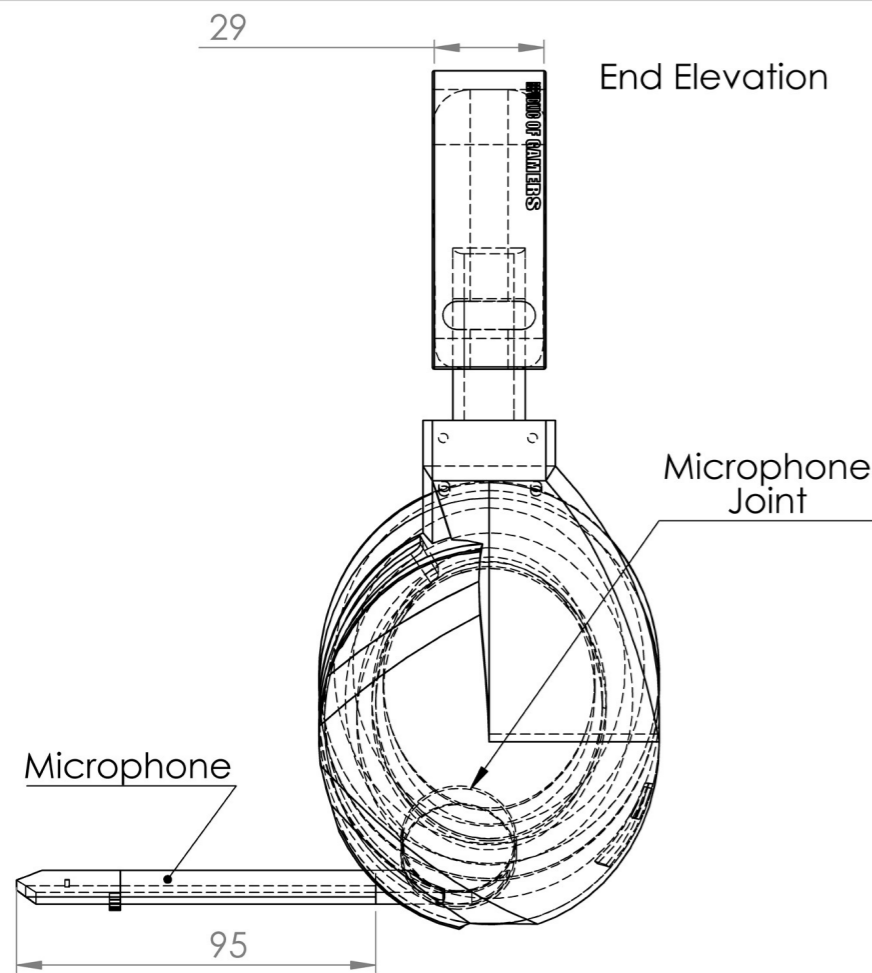
Touch Control Panel

Adjustable Microphone

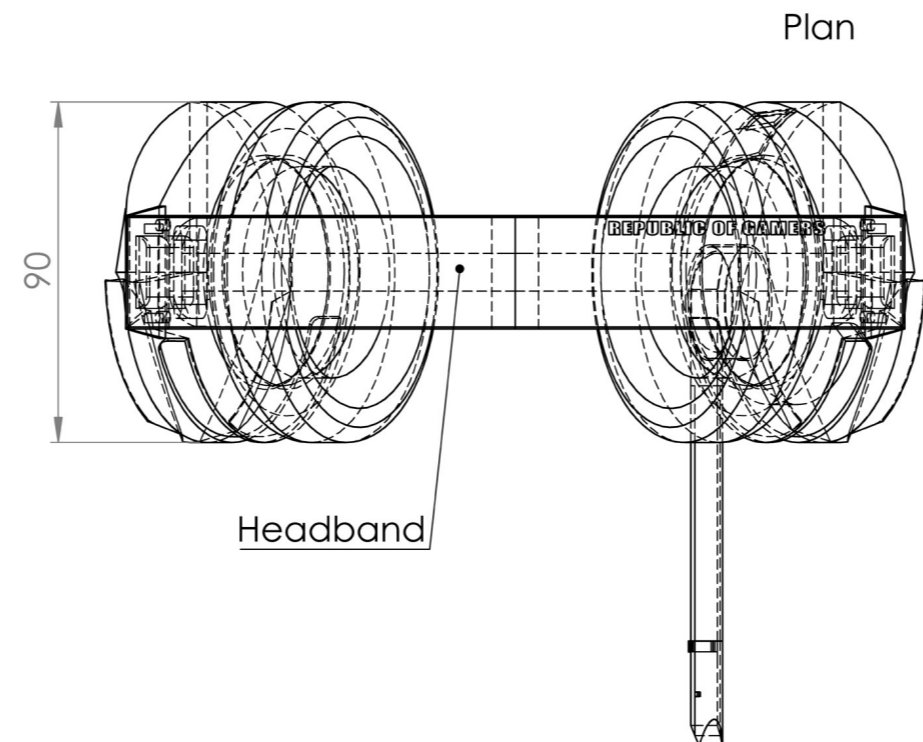
Ear Cup (Exploded View)

USB Receiver Plugs Into PC




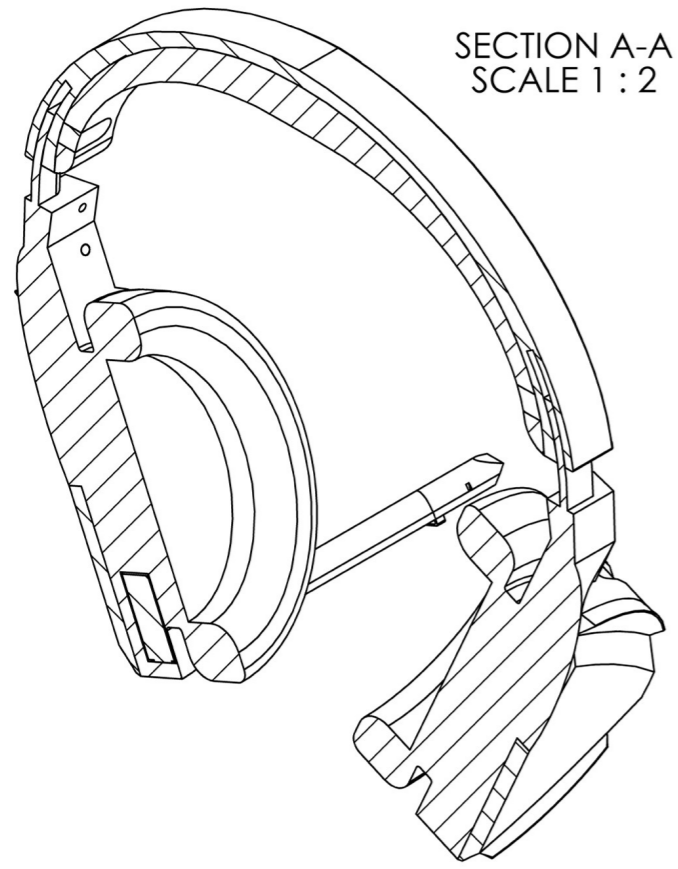


ITEM NO.	PART NUMBER	QTY.
1	Microphone B	1
2	Right Ear Cup Shell B	1
3	Microphone D	1
4	Microphone A	1
5	Left Ear Cup	1
6	Left Ear Cup Shell C	1
7	Headband	1
8	Headband Padding	1
9	Headband Padding Joint Left	1
10	Right Ear Cup	1
11	Right Ear Cup Shell C	1
12	Left Ear Cup Shell B	1
13	Left Ear Cup Shell A	1
14	Right Ear Cup Shell A	1
15	Headband Padding Joint Right	1
16	Microphone Joint	1
17	Microphone C	1

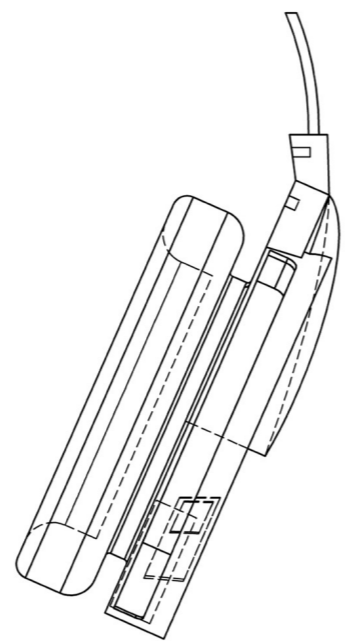


3D View

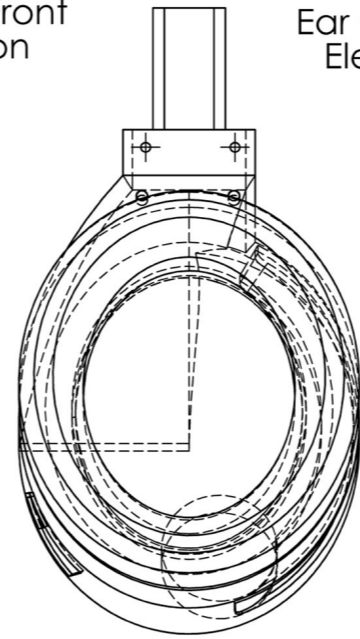
	DCG Student Assignment 2020	
	Title Output 5.1 - Orthographic Views	
Scale 1:2	Exam Number 106542	Date 10/01/2020



SECTION A-A
SCALE 1 : 2



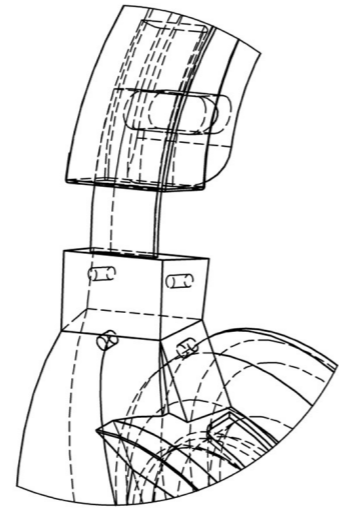
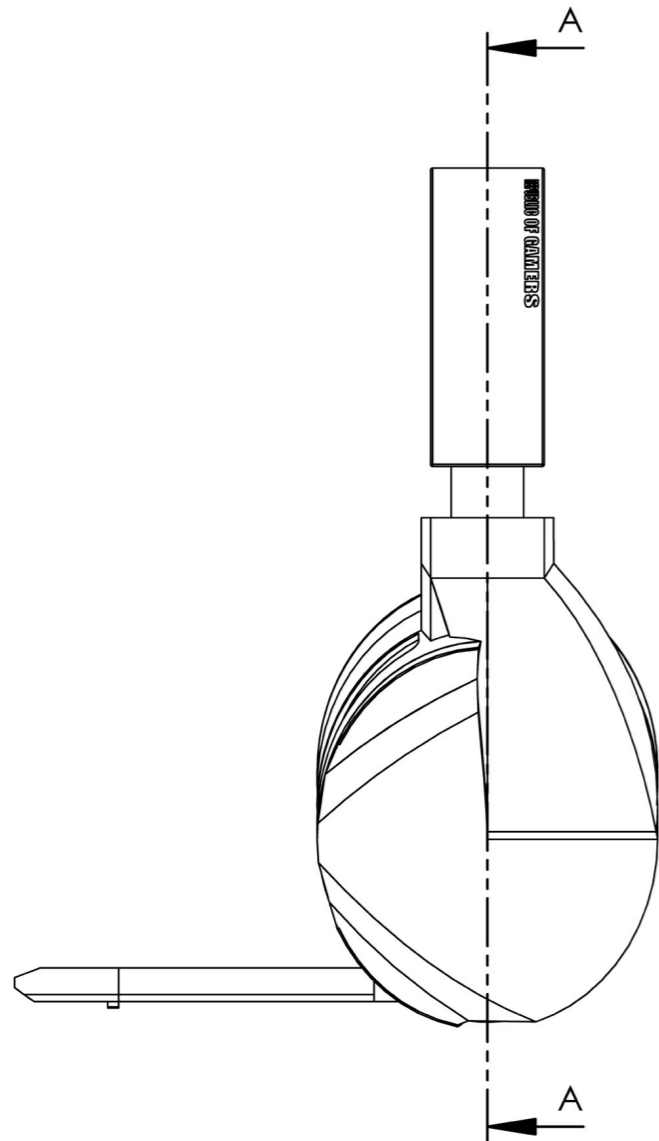
Ear Cup Front
Elevation



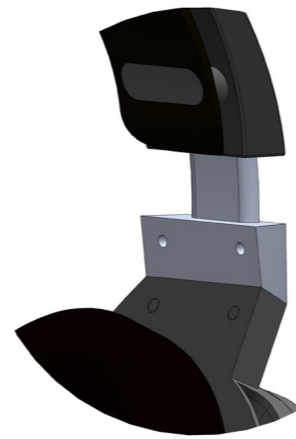
Ear Cup End
Elevation



Eploded
View



DETAIL B
SCALE 1 : 1.5



DETAIL C
SCALE 1 : 1.5



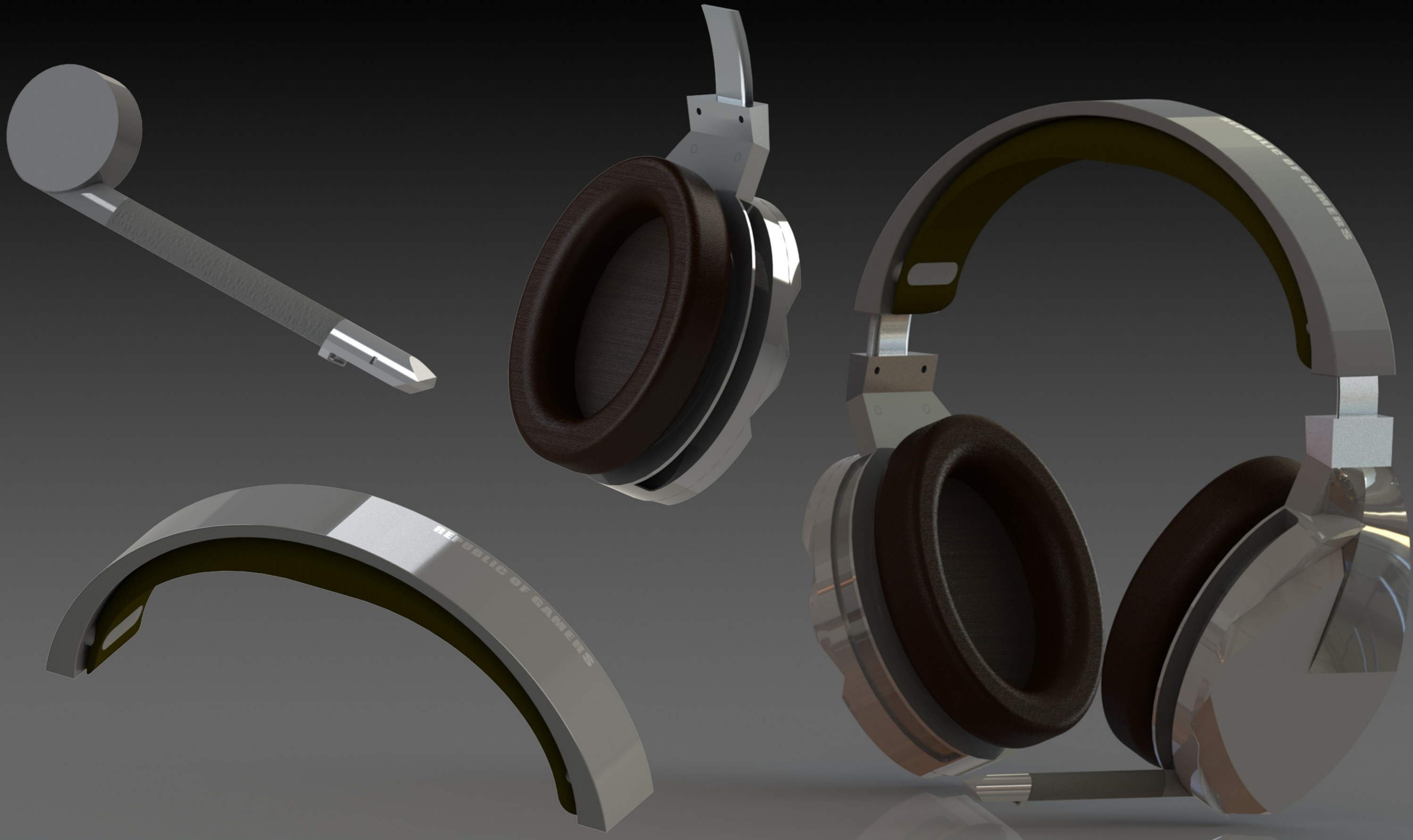
DCG Student Assignment 2020

Title
Output 5.2 - Exploded & Section Views

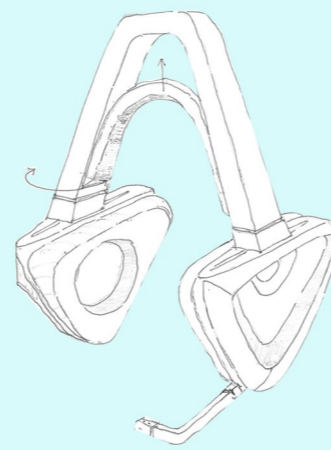
Scale 1:2

Exam Number
106542

Date
10/01/2020

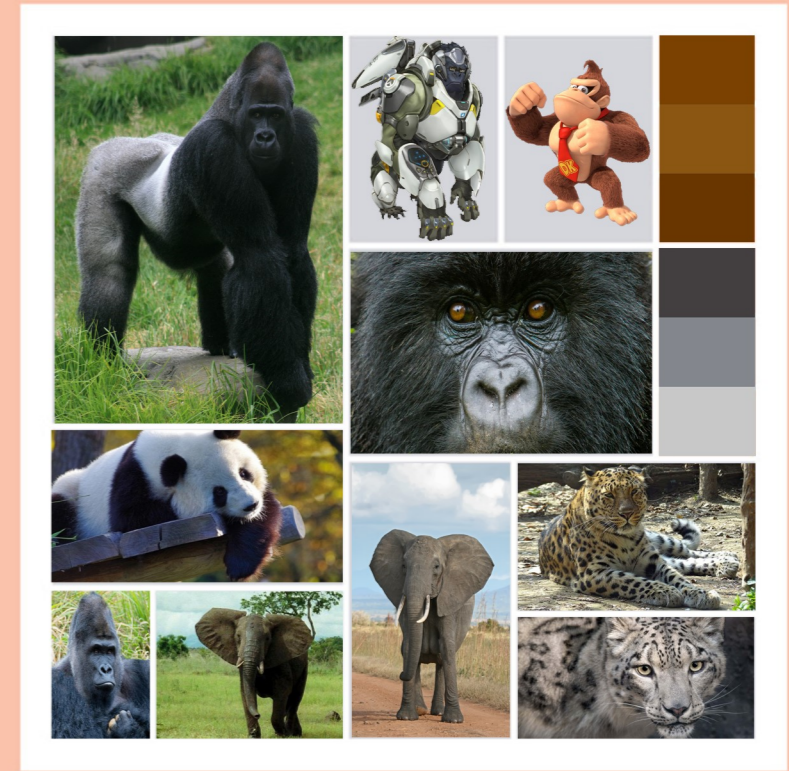


ANIMAL INSPIRED GAMING HEADSET



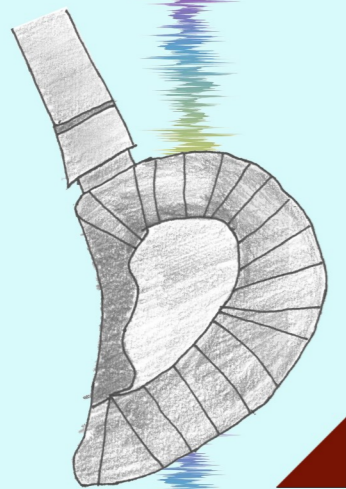
THEME
A Gaming Headset promoting the importance of animal conservation and safety. Especially the endangered species.

TARGET MARKET
The target market that this Gaming Headset would be aimed at is teenage gamers who support animal conservation. It is also aimed at gamers who have an affinity towards the Gorilla, or gamers who would associate the headset with characters from video games such as Winston from 'Overwatch' or Donkey Kong from 'Mario'.



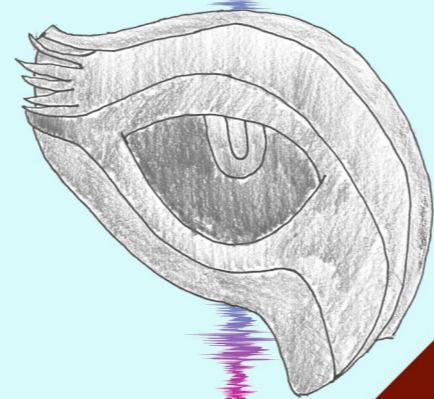
INITIAL DESIGN IDEAS

Idea 1: My initial design idea based off of animal conservation was inspired by the awful Australia bush fires and the estimated half billion animals which are speculated to be dead. So I began brainstorming on how I could incorporate animal features into my design.



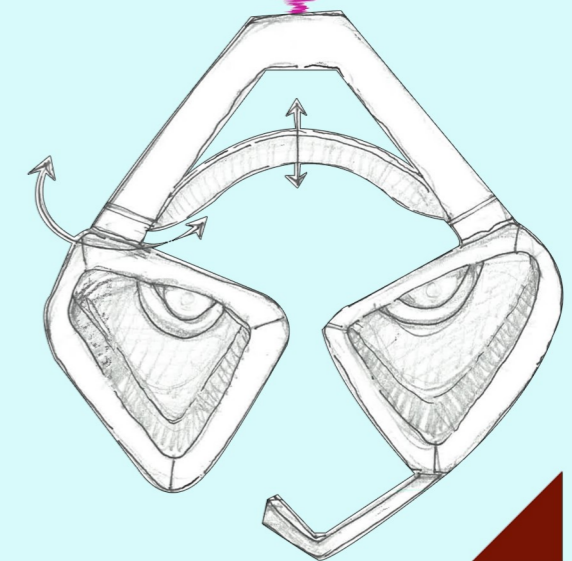
The obvious choice was making the ear cup the ear of an animal, in this case the endangered African Bush Elephant, however I wasn't entirely satisfied with how design turned out. I didn't think it was particularly pleasing to the eye. I want the headset to promote animal conservation and I don't feel it will achieve this if it isn't aesthetically pleasing.

Idea 2: My second idea was to use a different body part as a part of the gaming headset. This time I opted to use the eye. (The Endangered Snow Leopard)



This design, much like my first, did not strike me as a very good exhibit of what I wanted to convey. I felt I was much closer with this concept than my first though. I want a design that will grab someone's attention but unfortunately this design can't achieve that. However, it did get me thinking what if instead of just using one feature, why not use the entire face.

Idea 3: To carry out the final design I chose my favourite animal, the Silverback Gorilla. Unbeknownst to most people, Silverback Gorillas have been placed on the "Red List", by the International Union for Conservation of Nature and Natural Resources, as endangered because their populations have reached a critical level. There are also many popular video game characters based on gorillas, such as the ones named above, which will attract the headset to gamers. I decided that I wanted the face of a gorilla to appear when the ear cups are folded down, and I feel that I achieved that with this design.



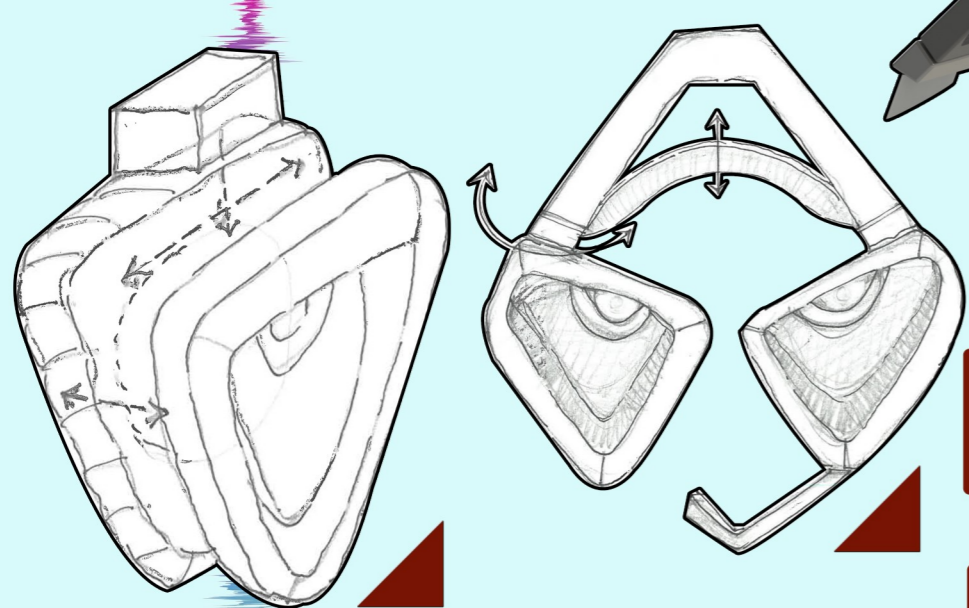
OUTPUT 7.1

Exam Number: 106542

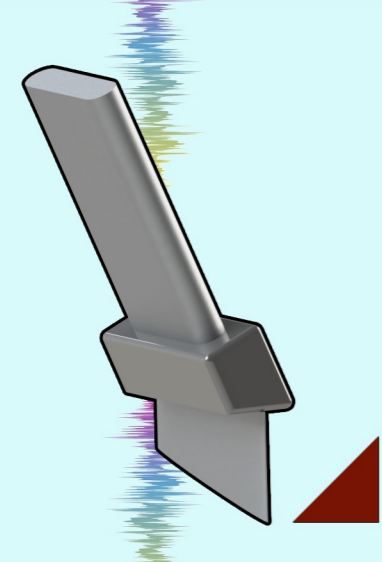
DEVELOPMENT OF IDEAS

To really get the feel of the silverback gorilla in my design, I felt it essential to capture its elongated head. I exaggerated its shape while also making it more geometric as an homage to retro video game characters such as the aforementioned Donkey Kong.

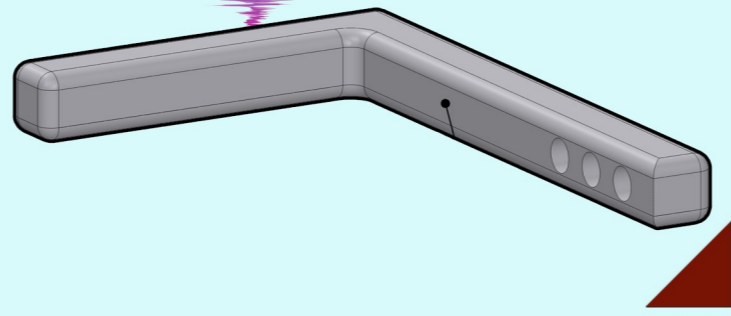
Since I wanted my original plan to display the face of a gorilla it required a lot of moving parts, with full rotation of the ear cups.



I also wanted the Headset to fold down to a convenient travel-friendly size. This meant that the headband would have to fold down onto itself. As a result, it required a special headband adjuster. This adjuster would have two purposes; allowing the headband to fold, while also allowing 180 degree rotation of the ear cups.



The truncated elliptical prism will rotate, while the cylindrical prism acts as a hinge which allows the headband to fold.



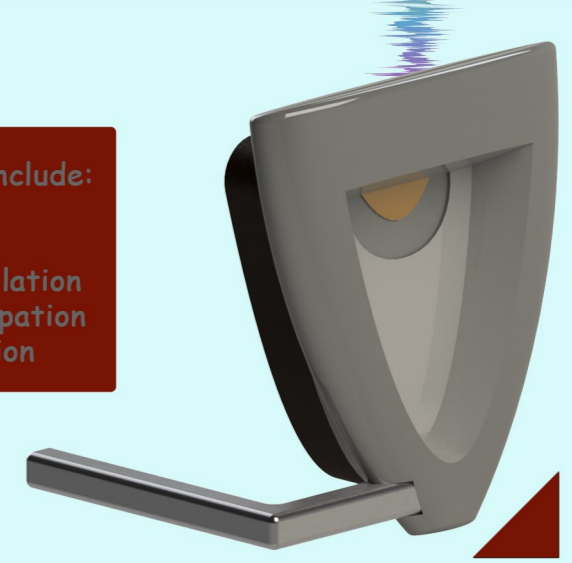
In order to allow the headset to be compact, I have removed the headset wire and made the product wireless. It will connect through bluetooth, and have a range of a 20 feet radius, providing plenty of room to move about.

As a result of the headset being wireless it would require an internal power supply i.e a rechargeable battery. I chose a prismatic Nickel-Metal Hydride battery, often used in phones and tablets, for its high capacity and its slim design which allows it to not interfere with the geometry of the headset. However this does mean that I'll have to turn down the use of illumination to reduce power usage.

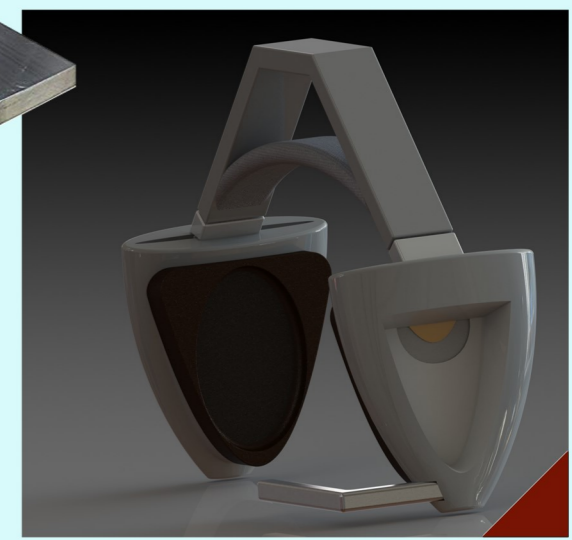
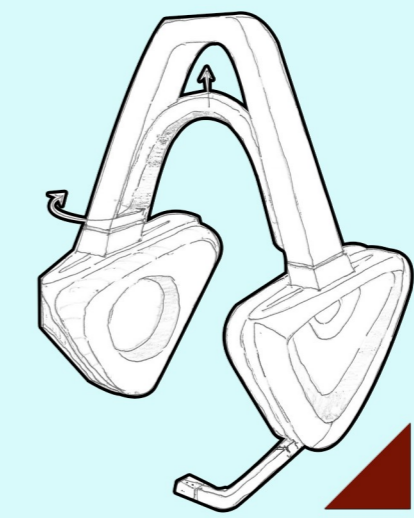
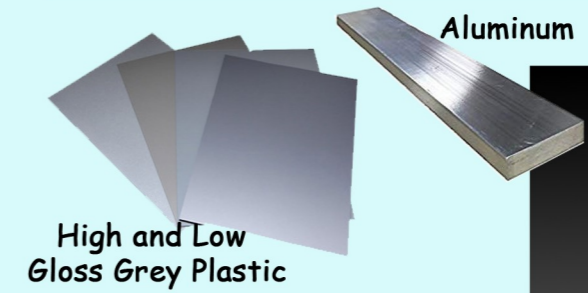
Since I wanted the Headset to fold down neatly, the microphone could pose a problem. It meant that it either had to be adjustable or fully removable. I opted for removable as it gave the headset more of a sleek look. However, I now had to come up with a way of connecting the microphone. Similarly to the headset, I have decided to make the microphone connect to the computer via bluetooth (rather than plugged into the headset via AUX). Despite this I have decided to make a magnetic connection between the headset and microphone to keep it in place. Now normally magnets and microphones don't like each other, but if you use a paramagnetic material, such as platinum, there won't be an issue.

The power button is the eye of the right ear cup. The microphone is located at the left ear cup. I have made the assumption that the user will be right handed. This allows the user to remove the microphone with the non-dominant hand while not disturbing the play of the dominant hand.

Safety Features Include:
 Water Resistance
 Shatter Proof
 Internal Wire Insulation
 Battery Heat Dissipation
 Elasticity Restriction



Regarding materials, I mainly stuck with some glossy and matte plastics for the ear cup shell and headband. These are relatively inexpensive materials to produce, while also being sturdy and long-lasting. For the headband adjuster I chose a more durable aluminum as those are the most likely parts to get damaged. I chose a soft grey elastic cotton to act as padding for the headband. This also means that it will fit to the user's head. I made the decision to use a breathable padded leather for the ear cup cushions rather than a fabric mesh as I found the mesh can get itchy after long periods of wear. Finally, as I mentioned previously, I am using a durable paramagnetic platinum so that the microphone can still attach to the headset magnetically without interfering with the sound quality of the microphone.



OUTPUT 7.2

Exam Number: 106542

Rotatable Ear Cups)

Elastic Padding

Headset Elevation (Ear Cups Folded)

Foldable Headband

Button

Sliding Headband

Headset Perspective View

Adjustable Microphone

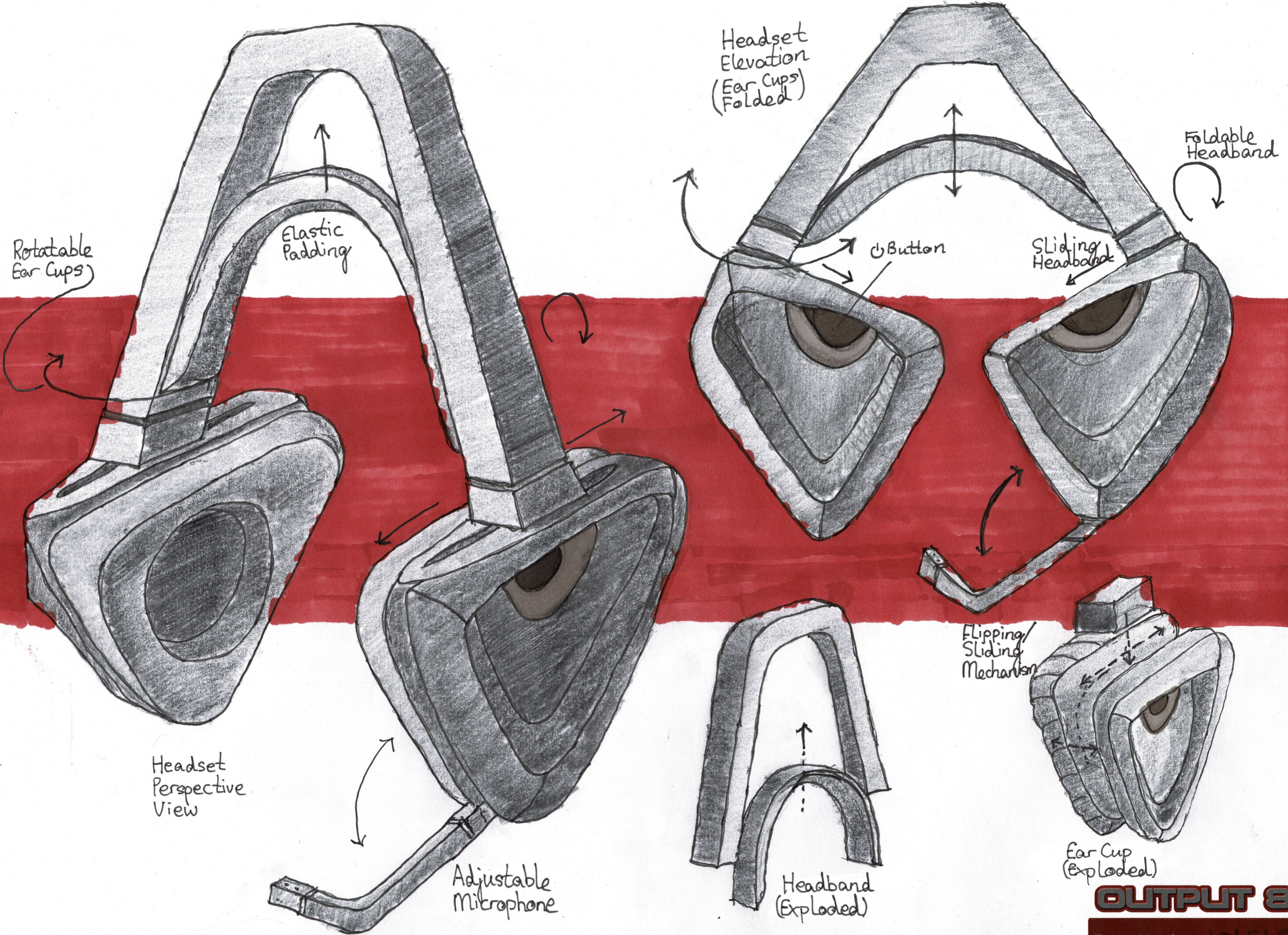
Flipping/Sliding Mechanism

Headband (Exploded)

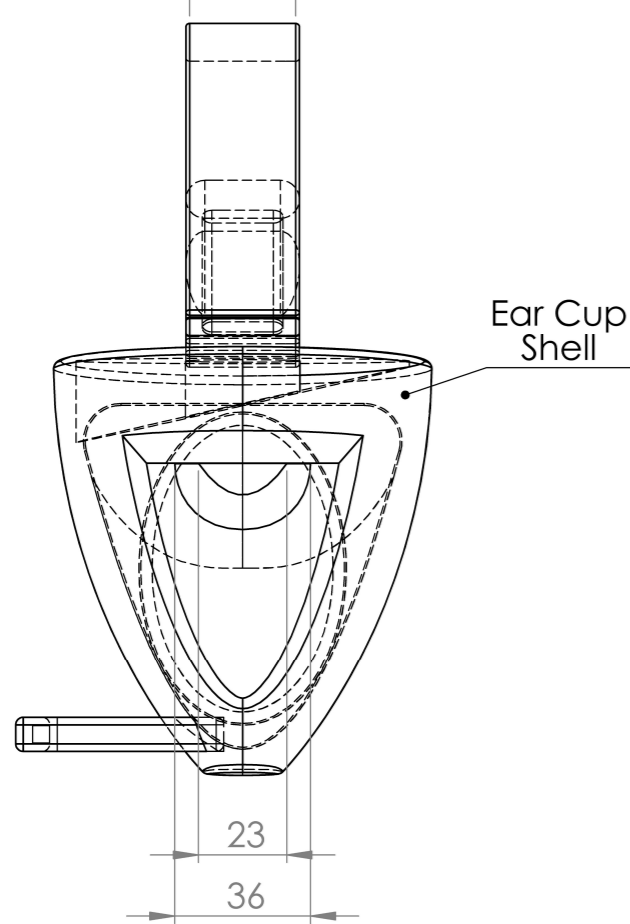
Ear Cup (Exploded)

OUTPUT 8

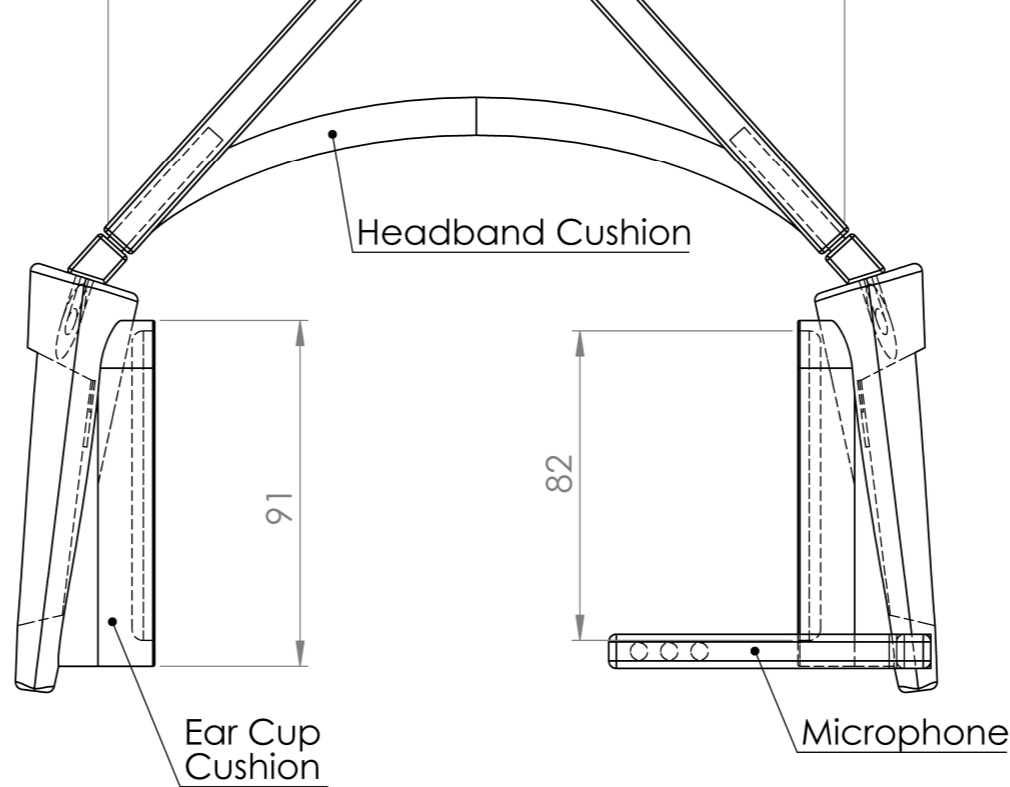
Exam Number: 106542



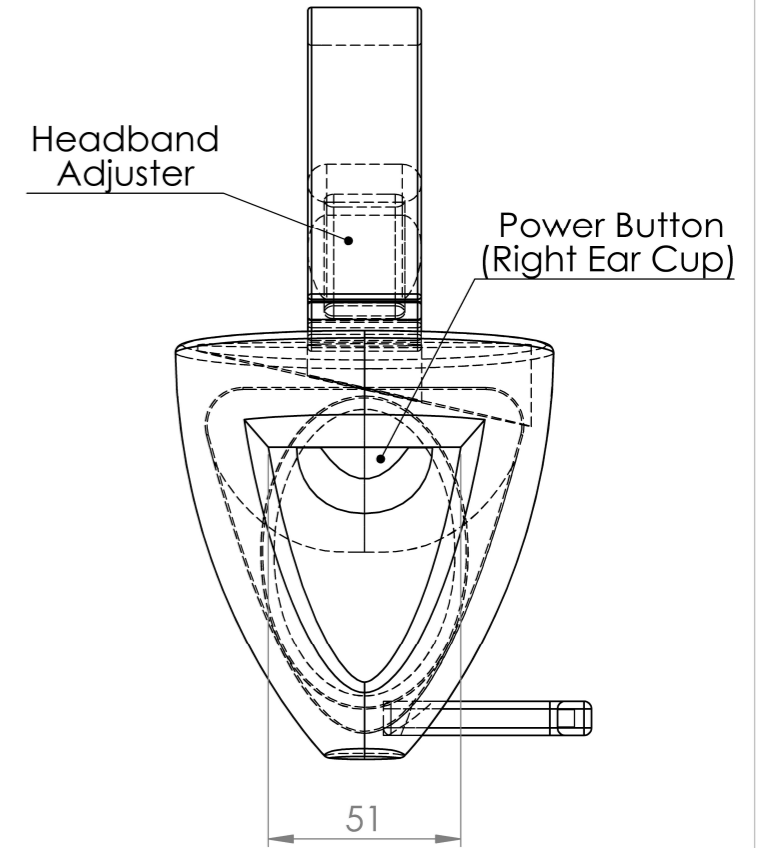
28 End Elevation



195 Front Elevation



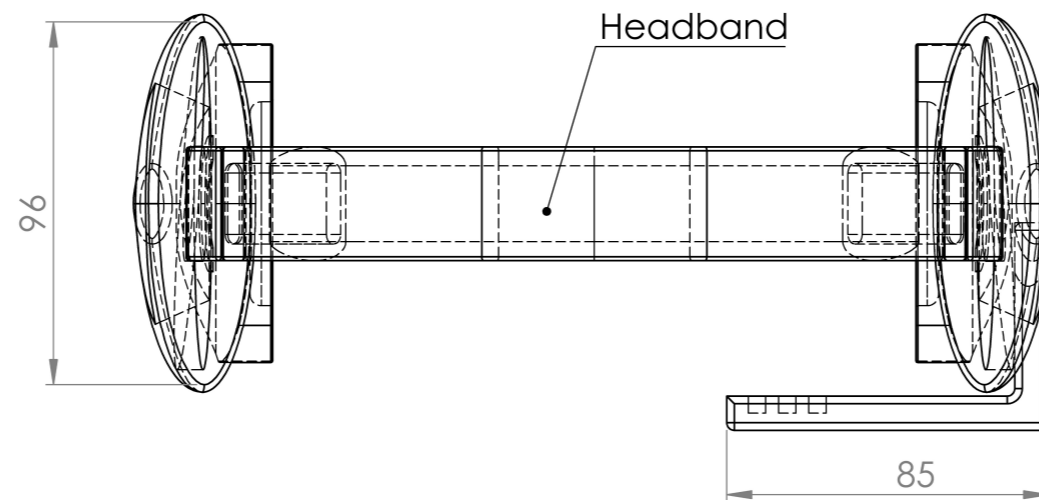
End Elevation



3D View



Plan



ITEM NO.	PART NUMBER	QTY.
1	Microphone	1
2	Right Headband Adjuster	1
3	Headband	1
4	Right Ear Cup Shell	1
5	Headband Cushion	1
6	Left Headband Adjuster	1
7	Right Ear Cup Cushion	1
8	Left Ear Cup Shell	1
9	Left Ear Cup Cushion	1



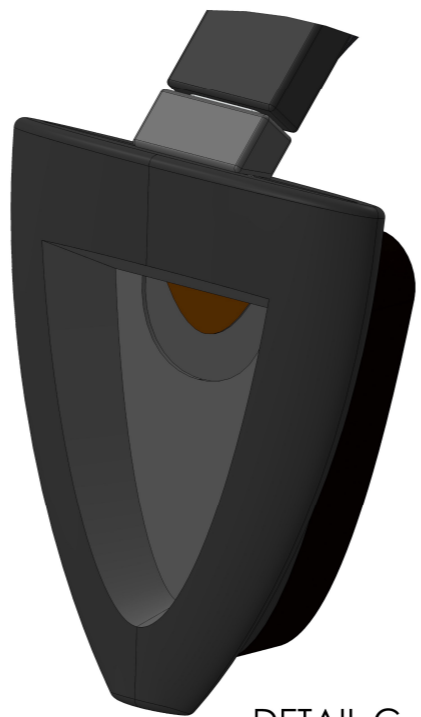
DCG Student Assignment 2020

Title
Output 9.1 - Orthographic

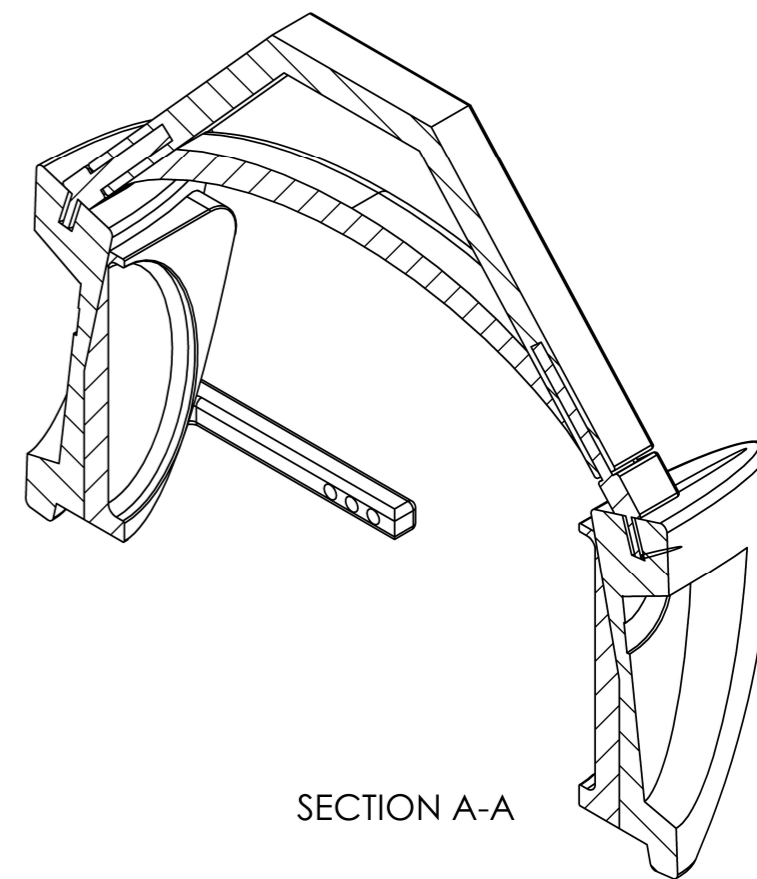
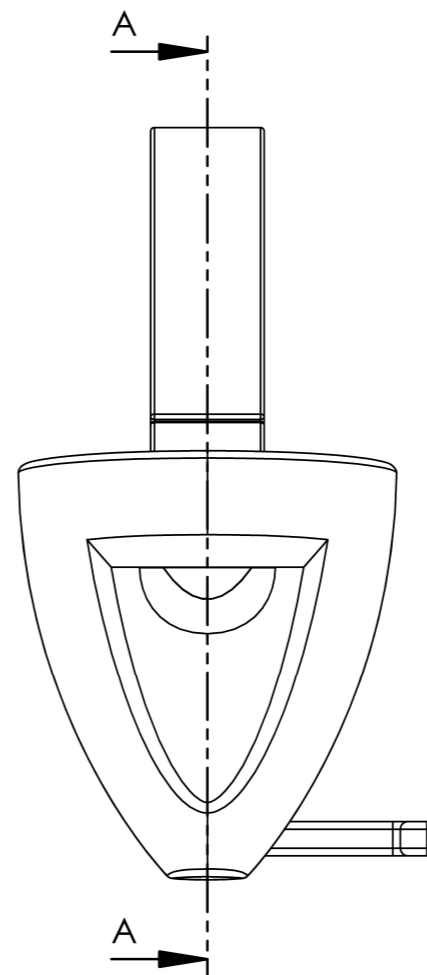
Scale 1:2

Exam Number	Date
106542	14/01/2020

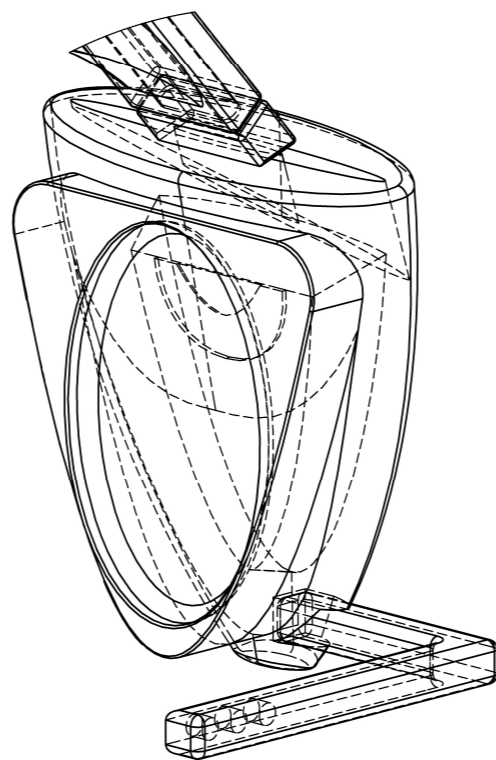
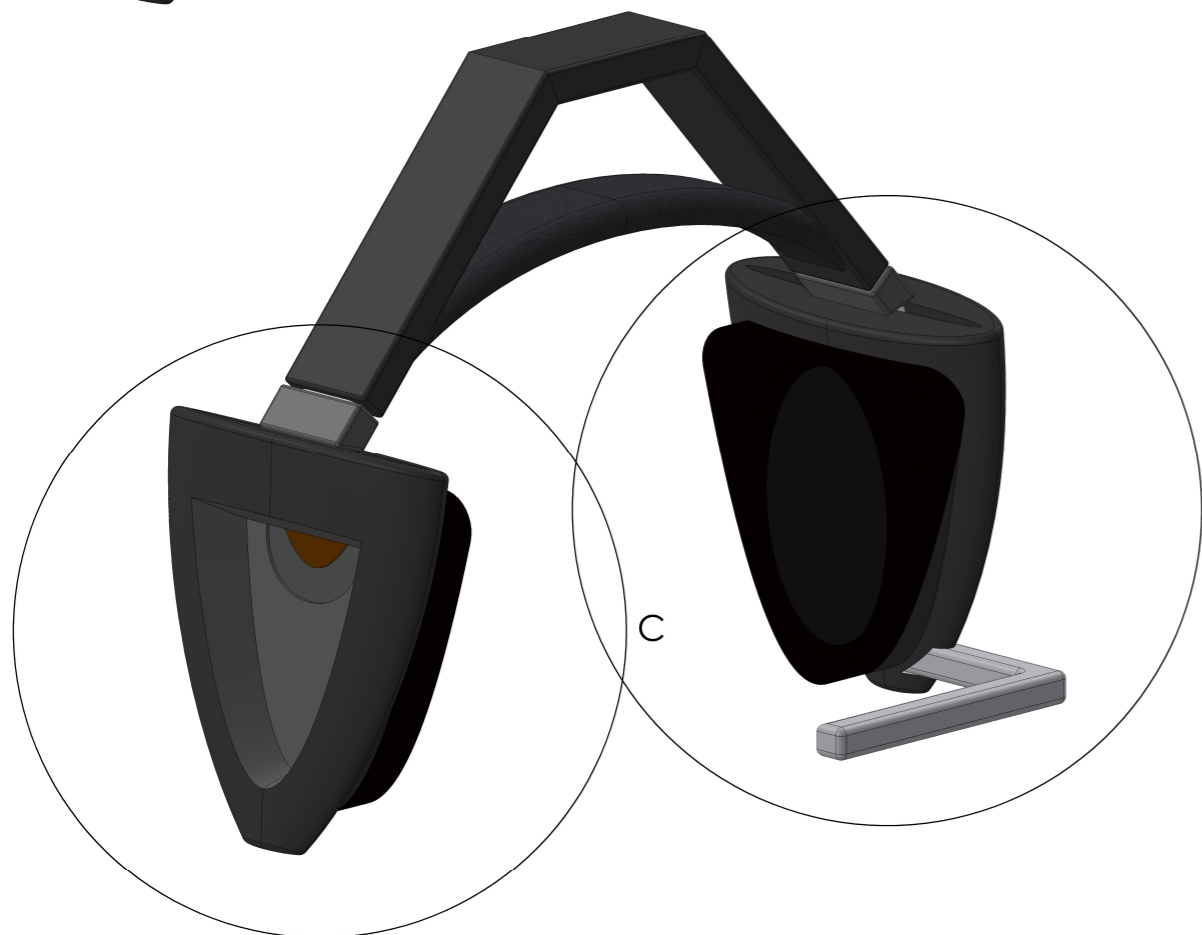
Exploded View



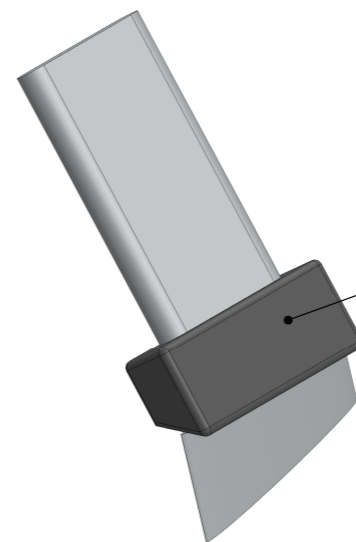
DETAIL C
SCALE 1 : 1.5



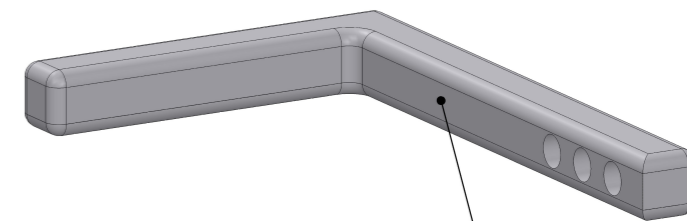
SECTION A-A



DETAIL B
SCALE 1 : 1.5



Headband
Adjuster



Microphone



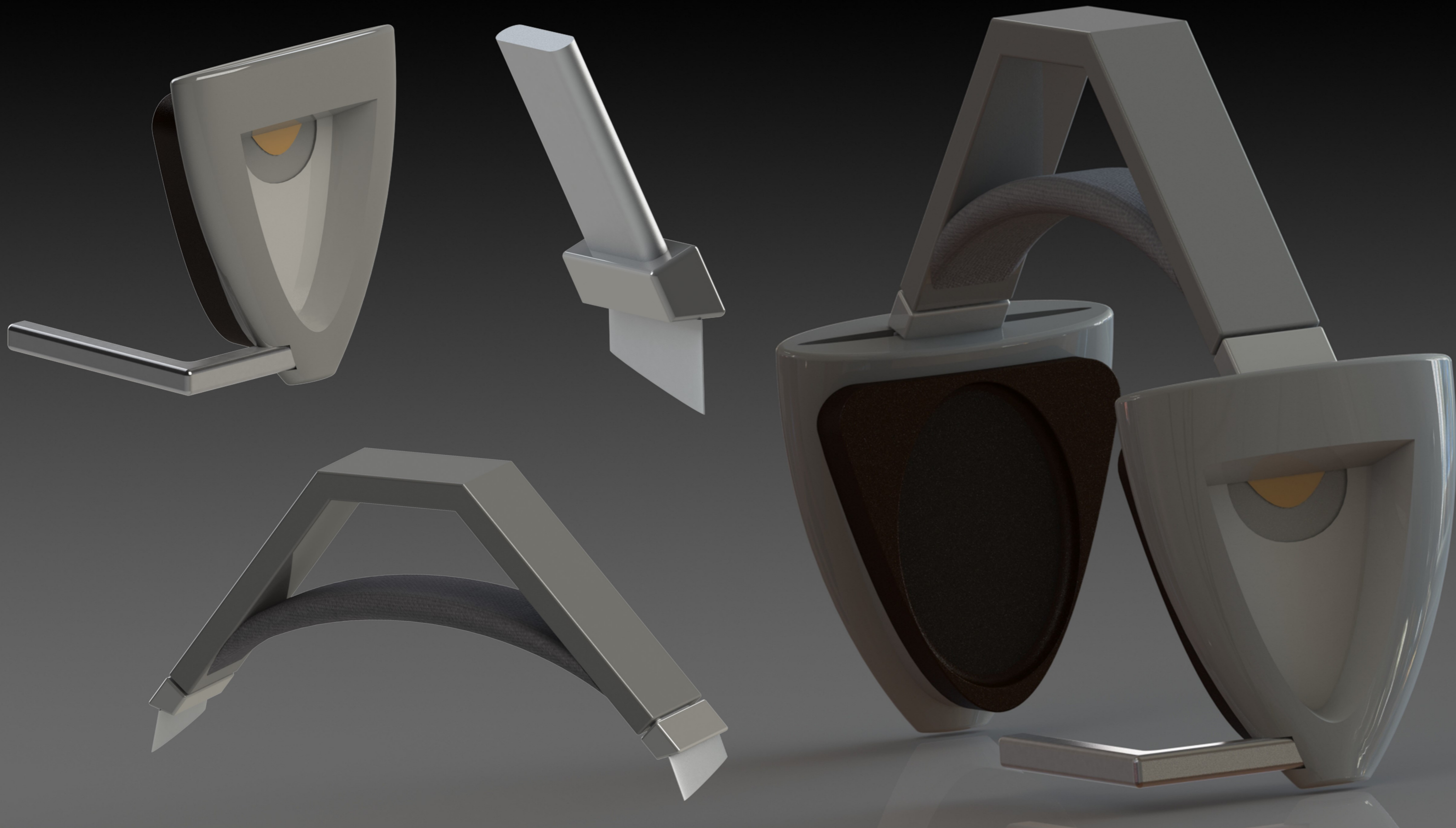
DCG Student Assignment 2020

Title
Output 9.2 - Exploded/Section

Scale 1:2

Exam Number
106542

Date
14/01/2020



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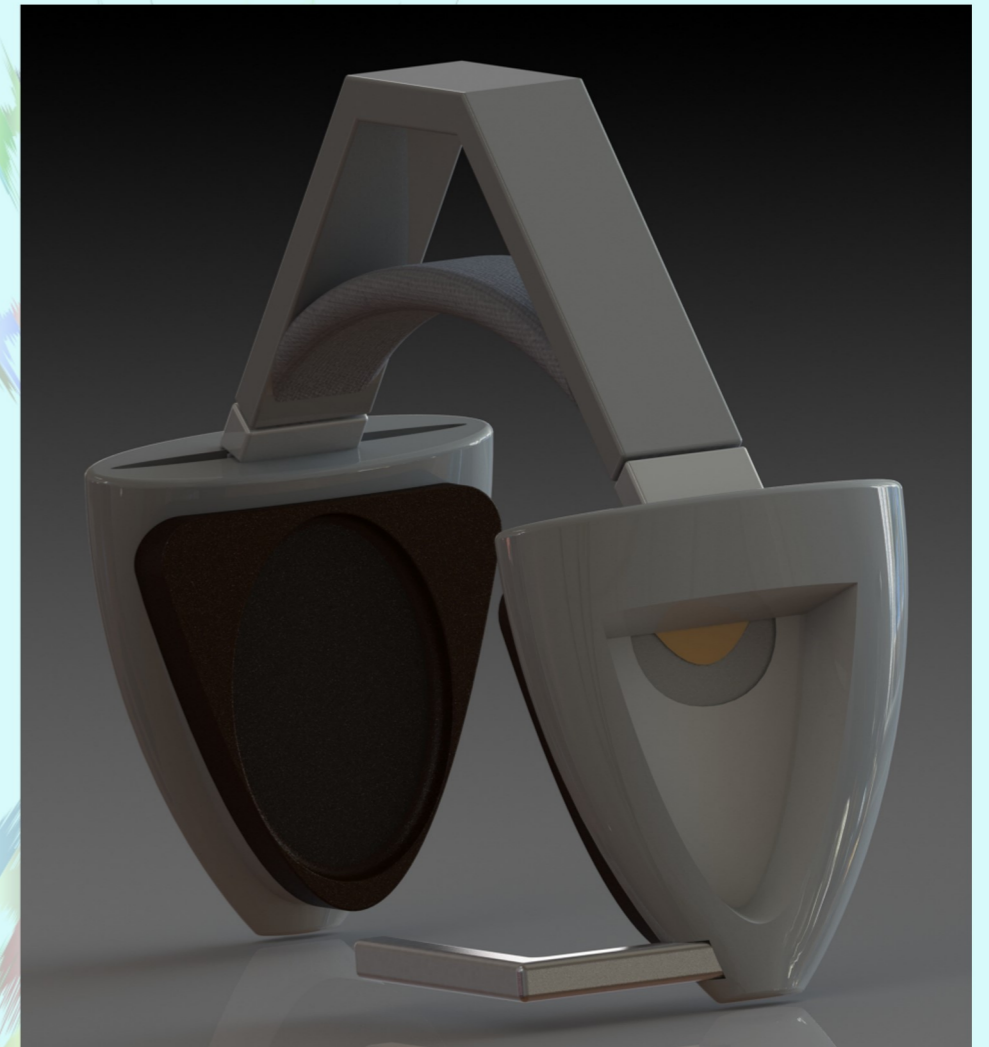
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