Requirements Background

Must have

- Interface must be a wearable scarf
- Scarf must enable voice communication
- Scarf must pair with smartphones with standard BT capabilities
- Scarf must have a simple interface for pairing and basic phone controls

Should have

- Scarf should have binaural sound capabilities
- Scarf should also pair with computers and mobile phones

Would have

- Scarf would have rechargeable battery

Could have

- Scarf could use bone conduction technology to transmit sound to the user

This set of requirements was mainly focused on SmartScarf being a hardware product using an Arduino microcontroller to do the sound processing. During the course of the project this has proven to be an unfeasible approach due to the amount of electronics work required for which our team didn't have sufficient expertise. New version of SmartScarf includes part of our old prototype, most importantly the bluetooth chip and the bone conduction headphones but does all the communication and sound processing in an app running on a phone or a computer.

Therefore we changed our requirements to the following:

-Must have

- Interface must be a wearable scarf and a computer/mobile app
- The system must enable binaural voice communication between 3 people connected to the Internet
- Scarf must work with standard BlueTooth enabled devices as a headset and it must have a simple interface for pairing

-Should have

- The app should let the user move other people participating in a conversation in a virtual 3D space

-Would have

- Enable more than 3 people to take part in a conversation
- Scarf would have rechargeable battery

-Could have

- The app could let user sign into an account, access and edit their contact list and create conversations with those contacts

Evaluation of our Solution

As a team we have managed to create a good and an efficient solution. We were able to create a wearable scarf with a bluetooth connection that pairs to the phones and computers. We were able to implement an application that can be easily ported to all major mobile platforms(IOS,Android and Windows OS) and all major computer platforms(OSX, Windows, and Linux).(Tested and works on IOS,Macos Windows Os and Android Os) The app puts each use in 3D space that creates the binaural effect The application is accessible via the scarf or you can just use any other compatible headset if you wish. The above meets our must have and should have requirements. Also you will be able to recharge the battery of the scarf by connecting a usb cable. However, our application is limited to 3 people only at the moment however it will be really easy to implement more than 3 people feature.

The app also allows the user to sign into account and allows them to enter a chat room.

In conclusion we have meet more that 75% of our iterated requirements. If we were to look back to our initial requirements we have only not met “Scarf should have binaural sound capabilities” However you can connect the scarf via bluetooth to the application and it will give you the effect of being in the same room with other people. As a team we believe that we came up with a good solution to the problem and fairly fits to for its purpose.