

Senior Design Project Data Sheet

Project #	Project Name	Project Track	Project Family
P13038	Hearing Aid Redesign	Biomedical Systems and Technologies Track	Assistive Devices
Start Term	Team Guide	Project Sponsor	Doc. Revision
Winter 2012	Sarah Brownell		A

Project Description

Project Background:

This project stems from a concept created by three Industrial Design students trying to defy the social stigma of hearing aids. The long term goal of the project is to create a fully functioning universal audio device that is used by both hearing and hard-of-hearing consumers. The 10 year plan is to create a device that blends the line between hearing aids and other technologies such as Bluetooth communication, music streaming, easy charging options, and the ability to record class notes, which are all commonly provided by other audio devices, used by non-hearing impaired users. The first phase of this project is to create an initial prototype in the new desirable form factor with rechargeable power, but with limited functionality.

Problem Statement:

The primary objective of this project is to create a functioning prototype that appeals to both hearing and hard-of-hearing populations by designing a reprogrammable, ergonomic and rechargeable audio accessory.

Objectives/Scope:

1. Enable the device to amplify sound.
2. Design the device to allow for rechargeable power.
3. Incorporate data transfer capabilities.
4. Improve the enclosure design for ergonomics and user experience.
5. Optimize the number and location of microphones.

Deliverables:

- Functioning earpiece prototype
- 3D model
- Bill of Materials
- Design Drawings for manufacturing or modifying all parts
- Manufacturing and Assembly Plan
- Test Plan
- Clearly documented Test Results
- Technical Paper
- Poster

Expected Project Benefits:

- De-stigmatize hearing aid use in the hard-of-hearing and hearing communities.
- Provide the hard-of-hearing market with an alternative hearing aid device that offers similar features contained within a new physical form.
- Project is to serve as an initial proof of concept for future MSD projects to focus on improvements in device adjustability and functionality.

Core Team Members:

- Alissa Anderson (ME)
- Kelly Murosky (ME)
- Conor Murphy (EE)
- Eric Lew (EE)
- Ron Dries (CE)
- Marbella Vidals (IE)
- Paula Garcia (ID)
- Nanxi Yu (ID)

Strategy & Approach

Assumptions & Constraints:

1. Product is to be low cost.
2. Product is to be light weight.
3. Product is to be competitive with existing models.
4. Product is to be reversible, able to be used on either the left or right side of the head.
5. All electronics must fit within the device.
6. Constraint: \$5,000 budget

Issues & Risks:

- Hearing aid technology is proprietary
- User acceptance of the new design
- Meeting Noah Standards and Certifications
- Limited prototype materials will affect user comfort
- Scaling down electronics to fit the enclosure