

## **Tactile Auditory Sensory Substitution - Progress Report 9**

3/24/07 – 3/30/07

**Project Title:** Sensory Substitution Device for Hearing Impairment

### **Team Members:**

Jack Page – Co-Team Leader  
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Ryan Thome – Communicator  
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### **Client:**

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### **Advisor:**

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### **Problem Statement:**

The goal is to design and develop an auditory substitution device that through the use of vibro- or electro-tactile stimulation can substitute for regional frequency hearing loss. We will continue the work from last semester, mainly focusing on integrating vibro-transducers into the system in order to prepare the system for laboratory trials.

### **Statement of team goals:**

1. Create problem statement
2. Create first draft of PDS
3. Begin to research and develop design ideas

4. Continue the design project
  - a) Research all possible background information.
  - b) Research existing and design alternatives
  - c) Brainstorm for all possible solutions
  - d) Meet with experts to gain ideas about possible solutions
  - e) Develop possible design solutions
5. Choose final three design solutions
6. Develop final three solutions
7. Create Power point presentation
8. Finish mid semester report, PDS
9. Discuss possible final design alternative
10. Finalize Design
11. Build and test prototype
12. Present final design & poster

### **Project Schedule**

1/26 – 2/2	Choose project, assign roles, meet with client
2/3 – 2/9	Draft first version of PDS, preliminary design ideas to improve prototype
2/10 – 2/16	Continue research and write PDS
2/17 – 2/23	Decide on design alternatives, brainstorm ideas
3/23 – 3/2	Work on design
3/3 – 3/9	Work on presentation and report, mid-semester oral presentations
3/10 – 3/16	Write and hand in written report, PDS, and notebooks
3/17 – 3/31	Work on design
4/1 – 4/8	Spring Break and continue to work on design
4/9 – 4/25	Work on Design, plan tests for the prototype
4/26 – 5/4	Work on final poster, presentation and report. Test the prototype and present to client. Give final poster presentation

### **Last week's goals**

1. If the new vibrating motors are received in the mail, they will be tested with different frequencies and vibrations.
2. After testing, the vibrators will be tested with the circuit.
3. Put Dr. Raymond Kent's advice to work.
4. Possible meeting with Dr. Rick Jenison

### **Summary of Team Accomplishments:**

1. After meeting with Dr. Kent, we focused in on working with the existing 4 channels, incorporating his advice
2. Research into altering circuit to drive new transducers.
3. Brainstorm ways to attach the new disk motors.
4. Experiment with transducers

### **Statement of Team Goals for Upcoming Week:**

1. Gather materials for project (ie. possible adhesives, circuit components) over Spring break
2. Research and design circuit schematic for new transducers.

3. Get into the lab before the end of the week to test the frequency and amplitude response of the new transducers.
4. Start editing the mid semester report
5. Update Product Design Specification

**Team Difficulties:**

**Activities and Individual Accomplishments:**

Team In-class/lab meeting (.5 hour)

Jimmy 1.0 hr Researched circuitry needed to drive transducers

Matt 1.0 hr Incorporated Dr. Kent's advice about frequency analysis into more research

Ryan 1.0 hr Received disk motors and experimented with them

Jack 1.0 hr Researched the characteristics of disk transducers

Becky 1.0 hr Researched frequencies of phonemes that we need to incorporate into our system (eg. S= high frequency, should activate transducer 4)

**Total hours for this week: 5.5 hrs**

**Cumulative hours to date: 123.0 hrs**

ID	Task Name	Start	Finish	Duration	Gantt Chart																	
					Feb 2007	Mar 2007			Apr 2007			May 2007										
					2/18	2/25	3/4	3/11	3/18	3/25	4/1	4/8	4/15	4/22	4/29	5/6	5/13	5/20				
1	Research alternative Transducers	2/16/2007	2/23/2007	1.2w	[Gantt bar from 2/16 to 2/23]																	
2	Research correlation between frequency and phonemes	2/16/2007	3/2/2007	2.2w	[Gantt bar from 2/16 to 3/2]																	
3	Research technical implementation of transducers	3/16/2007	3/30/2007	2.2w	[Gantt bar from 3/16 to 3/30]																	
4	Research input and output of audio waveform	3/2/2007	3/9/2007	1.2w	[Gantt bar from 3/2 to 3/9]																	
5	Brainstorm configurations for system	2/16/2007	3/16/2007	4.2w	[Gantt bar from 2/16 to 3/16]																	
6	Prepare mid semester presentation	3/2/2007	3/9/2007	1.2w	[Gantt bar from 3/2 to 3/9]																	
7	Compile mid-semester report	3/2/2007	3/16/2007	2.2w	[Gantt bar from 3/2 to 3/16]																	
8	Spring Break	3/30/2007	4/6/2007	1.2w	[Gantt bar from 3/30 to 4/6]																	
9	Obtain transducers	3/16/2007	3/23/2007	1.2w	[Gantt bar from 3/16 to 3/23]																	
10	Implement transducers	3/23/2007	3/30/2007	1.2w	[Gantt bar from 3/23 to 3/30]																	
11	Implement transducers (cont'd)	4/6/2007	4/13/2007	1.2w	[Gantt bar from 4/6 to 4/13]																	
12	Filter signal for frequencies of interest	4/6/2007	4/20/2007	2.2w	[Gantt bar from 4/6 to 4/20]																	
13	Test and perfect frequency to vibration correlation	4/20/2007	5/9/2007	2.8w	[Gantt bar from 4/20 to 5/9]																	
14	Prepare for final presentation	4/27/2007	5/9/2007	1.8w	[Gantt bar from 4/27 to 5/9]																	
15	Compile final report	4/27/2007	5/11/2007	2.2w	[Gantt bar from 4/27 to 5/11]																	
16	Progress Reports	2/16/2007	5/11/2007	12.2w	[Gantt bar from 2/16 to 5/11]																	
17	Update Website	2/16/2007	5/11/2007	12.2w	[Gantt bar from 2/16 to 5/11]																	

*\*\*Gantt chart for semester*