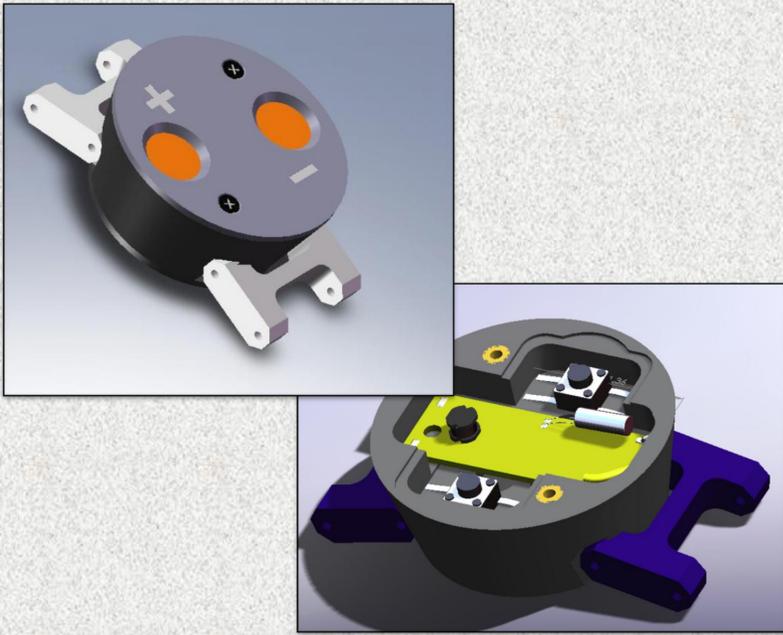# P11032 – NTID Wireless Presentation Control

Mission Statement

For a presenter who is communicating with an audience using American Sign Language (ASL), the act of pausing to advance or go back in a presentation interrupts the flow of information to the audience. The presenter must stop signing to use his or her hands to manually adjust the presentation. An alternative to this would be a wireless device which allowed the presenter to advance to the next slide or previous slide without interfering with signing. Our goal is to provide the deaf community with a "proof-of-concept" solutions which meets all customer requirements.

High-Level Customer Needs

▪Moves PowerPoint slides back and forth.
▪Hands remain free for signing.
▪Quick and Intuitive to operate.

Concept Selection

▪Multiple Concepts were brainstormed. Concepts were eliminated using Pugh charts, House of Quality, and a Risk Analysis
▪Input from several deaf students and faculty, as well as our customer was collected and analyzed
▪Wrist based, push-button solution was selected
▪Specific actuation method was determined by using prototype boxes and performing a survey at the NTID commons.

Feedback Gathering

▪Concept Reviews during MSD I
▪Prototype Questionnaire at Commons during MSD I
▪Completed device sent out to Garry Behm and others for extensive testing and feedback during MSD II
▪Design feedback has been obtained weekly from Dr.DeBartolo

Future Work

▪The Team hopes that one day these devices may be mass produced for student and employee use.
▪The provided table outlines a generalized estimate for a building 1,000 units from scratch.
▪A ballpark number has been determined, but neglects the cost of PCB which would add an additional $5-$8 per unit.
▪The outlined value also neglects the labor costs of assembly, packaging, marketing, etc.

Test Results

Tests	Results
1. Device is under 0.5 pounds.	0.126 lb
2. Device allows full range of natural motion, including hand motion and roaming around the presentation area.	Passed
3. Maximum volume is less then 24 cubic inches.	1.51 cubic inches
4. Device can sustain 10 drops from waist height onto carpeted surface. (~3ft)	Passed
5. Device will allow ASL to be utilized without major interference.	Passed
6. Device will not progress to the next or previous slide without user's intent.	Passed
7. Device will work within 30ft of the computer.	32ft
8. Device will be implemented for minimum cost in the allowed $750 budget.	$225
9. Battery life will be at least 4 hours.	Passed
10. Button latency will be less then 0.75 sec.	0.26 s
11. Device successfully advances to the next and previous slides.	Passed
12. The device will be safe to use for as wide of the population as possible.	Passed

Estimated Production Costs

Item	Unit Cost	Qty Needed	Cost Calculation
Mold With Rapid Prototype Insert	$1,500.00	1	$1,500.00
Plastic Pellets (per part)	$0.05	1000	$50.00
Aluminum Housing Cover Laser Cut	$0.12	1000	$120.00
2-56 Flush Mount Screws	$0.05	1000	$46.67
Electrical Components (per part)	$10.14	1000	$10,140.00
Wristband (per part)	$3.00	1000	$3,000.00
Total Cost for 1,000 Units			$14,856.67
Cost Per Unit			$14.86

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For more information please see :
http://edge.rit.edu/content/P11032/public/Home

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