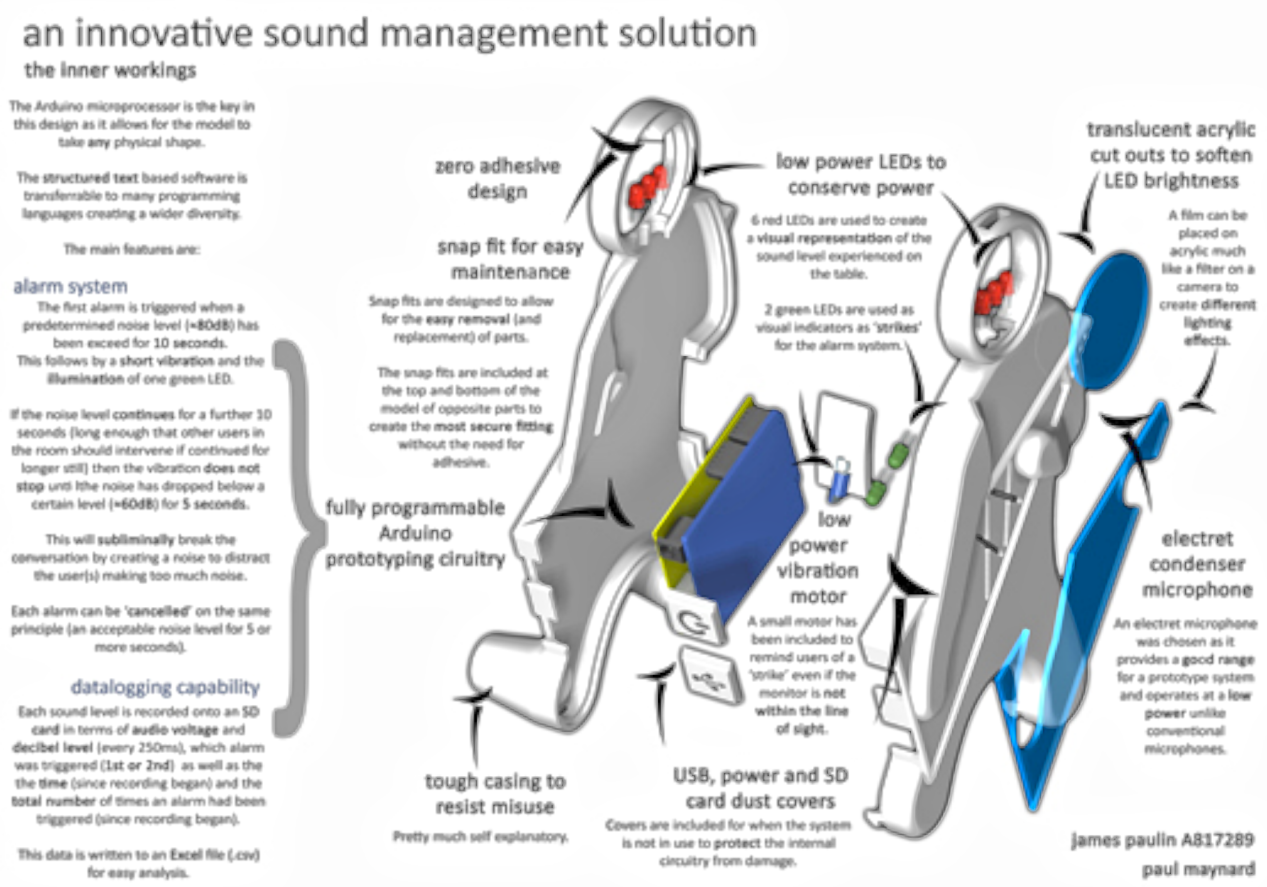
an innovative sound management solution
the inner workings
The Arduino microprocessor is the key in this design as it allows for the model to take any physical shape.
The structured text based software is transferrable to many programming languages creating a wider diversity.
The main features are:
alarm system
The first alarm is triggered when a predetermined noise level (≈80dB) has been exceed for 10 seconds. This follows by a short vibration and the illumination of one green LED.
If the noise level continues for a further 10 seconds (long enough that other users in the room should intervene if continued for longer still) then the vibration does not stop unti lthe noise has dropped below a certain level (≈60dB) for 5 seconds.
This will subliminally break the conversation by creating a noise to distract the user(s) making too much noise.
Each alarm can be 'cancelled' on the same principle (an acceptable noise level for 5 or more seconds).
datalogging capability
Each sound level is recorded onto an SD card in terms of audio voltage and decibel level (every 250ms), which alarm was triggered (1st or 2nd) as well as the the time (since recording began) and the total number of times an alarm had been triggered (since recording began).
This data is written to an Excel file (.csv) for easy analysis.
zero adhesive design
snap fit for easy maintenance
Snap fits are designed to allow for the easy removal (and replacement) of parts.
The snap fits are included at the top and bottom of the model of opposite parts to create the most secure fitting without the need for adhesive.
fully programmable Arduino prototyping ciruitry
low power LEDs to conserve power
6 red LEDs are used to create a visual representation of the sound level experienced on the table.
2 green LEDs are used as visual indicators as 'strikes' for the alarm system.
translucent acrylic cut outs to soften LED brightness
A film can be placed on acrylic much like a filter on a camera to create different lighting effects.
low power vibration motor
A small motor has been included to remind users of a 'strike' even if the monitor is not within the line of sight.
electret condenser microphone
An electret microphone was chosen as it provides a good range for a prototype system and operates at a low power unlike conventional microphones.
tough casing to resist misuse
Pretty much self explanatory.
USB, power and SD card dust covers
Covers are included for when the system is not in use to protect the internal circuitry from damage.
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