***The Governor’s STEM Competition***

***Bishop Shanahan High School***

***Business Meeting - 10/22/15***

***Communications Test Design Inc.***

**“Code Blue”**

Stephen Anderson, Angela Herb, Matthew Horger, Andrew Johnson, Conor Waldt

**Proposal**:

Through the use of real-time GPS coordinates, Google Maps API, and temperature sensors, we hope to create a prototype device that can be implemented into carts which assists authorities and social services in quickly finding the homeless and providing shelter for them during freezing conditions, while maintaining the utmost privacy of the user.

**Identification of a Community Need:**

1. The population of homeless in Pennsylvania, who struggle in finding warm shelter during cold, winter nights.
2. Convenience of authorities and social services in providing a more effective way of bringing in the homeless during Code Blue and Grey conditions.
3. Increased number of sheltered homeless across the nation and a decrease in the number of the unsheltered homeless.

***Budget Documentation:***

|  |  |  |  |
| --- | --- | --- | --- |
| Item Name | Usage | Quantity | Cost |
| Arduino Uno Microcontroller | Main component in prototype - controller of program | 1 | $29.95 |
| Seeed GPRS Shield V2 | TCP/IP Connection with Arduino | 1 | $47.67 |
| Adafruit Ultimate GPS Breakout | GPS coordinate logger | 1 | $39.95 |
| Dht11 Temperature Sensor | Real Time Temperature Readings | 1 | $1.98 |
| Python Server / MySQL Database | Registers coordinates, connects to Google Maps API | 1 | Free of charge! (Not free of headaches) |
| SIM CARD | Used to send info between device / server | 1 | $45 per month service with $40 auto-refill |
| 9V Battery | Power source | 2 | $2.99 |
| Adafruit Powerbooster Shield | Rechargeable power module | 1 | $29.99 |
| 12v DC Fan | Cooling the prototype | 1 | $19.99 |
| Casing / Enclosure |  |  |  |
| Cart | Storing the prototype device for the homeless - utility cart | 1-2 | $26.69 |
|  |  |  |  |
| Total Parts | Prototype Device | 10 | $244.21 |

**Costs of Improvement:**

To improve the project, our main development would be a better encasement for our device. The process of making the device more compact and potentially something that could be worn would be explored. The materials for which the device could be attached to would range from $40-$50 dollars per square yard of wearable and breathable material. The price of making the prototype device smaller, possibly by making a PCB (printed circuit board), or using a smaller Arduino unit would be something we would explore as well. We also would like to explore the potential of better charging methods for our device, whether it’d be wireless charging or an auto-charging module system, ranging from $100-$200. Finally, to make sure the homeless remain in possession of the device, we would explore legal biometrics checks with the end user experience.

**Notes:**

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