Heart Strings

AT&T Project

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Introduction:

For the final group project, team engineering 2.0 and I felt that we wanted to go into a direction that emphasized practicality, and made life easier for the common person. After a thorough discussion of potential ideas, we decided on improving on a type of technology that already exists. We felt that by taking this approach to the project, we would be more able to find marketing possibilities on our idea and have a more successful final plan. There are so many ideas out there already being implemented into everyday life, however many of them do not do everything that they could to make life as easy as possible for the average person.

Once we had decided to take a technology already being implemented and improve on it, we decided that we wanted to do this in an area that not only makes life easier for people, but helps to protect the safety of people as well. We felt that improving on this area of technology would me much more rewarding, knowing that not only did we improve many lives, but we may also be saving them. After all these decisions were made, we decided to make a necklace similar to that of life alert or a medic alert bracelet, but make it much more compact and fashionable, while also constantly monitoring the user’s vital heart rhythm signs.

By working on designing a product such as this, we knew there would come many challenges to perfect the idea. However, by taking different ideas from different products in similar fields, implementing our own, and working to expand the product as a whole, we knew we could be successful in the design process.
Our Product vs Others:

We chose our particular product for a variety of reasons. First off, we felt that it was a viable possibility, and could be easily implemented into everyday life. Based on existing technologies and existing products, our design was a feasible possibility and could be made easier than most other ideas we thought of. Other potential concepts included a type of watch or wristband that could be used as a supplement to a phone/computer, however this technology is already being used in everyday life, and it would be difficult to make it different from the technologies already coming out.

Other ideas we discussed included a car that was synchronized with your phone to let you know performance ratings, and a home system that allowed every part of your home to be controlled from your cell phone, however after discussion, we decided that Heart Strings would be the most economically viable, and overall the most successful idea we had the ability to submit.

When comparing our product to others in a similar field, it is apparent that Heart Strings goes above and beyond anything else on the current market. Similar products such as life alert are able to notify medical services if the user is able to hit the button after an emergency happens. With Heart Strings, the user is being constantly monitored for vital signs such as heart rhythm. If something irregular happens, then the device notifies the user and waits for a response. If the user is able to respond that they are okay then a doctor is notified of this irregularity, and further analysis may be done. If this irregularity happened to be more serious and the user is unable to respond, the device uses the user’s phone location services to send
medical assistance to the current location. By having this automatic feature, there will never be a scenario where the user is alone, unable to respond, and medical personnel will not be notified. This feature also helps to constantly monitor vital signs, so that any irregularities that may usually go unnoticed will be known and analyzed by a medical professional.

**Systems Diagram:**

- By following these precise steps, Heart Strings is able to both ensure the user’s safety by alerting medical personnel if necessary, and keep the user’s physician updated on vital activity that may need to be discussed during the next visit.
Concept of Operations:

In order for this product to work, we will need to develop a heart monitoring device that can be fit into a small space such as a pendant on a necklace. Once this is developed, the device would use the constant monitoring feature and keep track of all these events in a memory chip. When necessary, the info will be sent accordingly to a mobile device through AT&T. By using Bluetooth technology and AT&T cellular service, the device is able to communicate with a mobile device, and any medical professional office that supports this technology.

With this technology newly available throughout the country, we believe that it would be easily integrated into our product. We would need to partner with AT&T to be able to support these devices nationwide. If cellular data is available in the user’s geographical area, then they will be able to use this product with ease.

Integration Feasibility:

The system should be a reasonable one to integrate into every day society. All the required technology is already being used daily, and the system will work directly into the cellular data already being used. Additional data may need to be purchased in order to support the device; however this may be used as part of the user’s normal data plan. Because of the user friendly nature of cellular data plans, Heart Strings would be able to have a smooth transition into the common uses in the plan.

Potential target consumers mainly include those with known heart problems. These people may have certain abnormalities that require constant surveillance of their typical vital
signs. If they are constantly at risk of having serious medical issues, then owning and using our product may help them to live a less worrisome life, knowing that if something was to happen Heart Strings would be able to call for medical assistance. Heart Strings may also be consumed by those people that wish for their doctor to have medical records at all times. Having this information on hand, the Doctor may not need to see the patient as often, and when a meeting is necessary, all relatable information is already on hand.

Potential security issues coincide with the security of the AT&T cellular service. There have been information leaks with cellular data that can prove to be hazardous for leakage of the user’s personal data. This can be countered by coding the data being recorded by the device in such a way that only the doctor’s office and the user’s specific app can read and decipher what the data means. Other issues could include a lost phone. The way to counter that is that the app will have a passcode required to use the app. This ensures that whoever finds the lost phone will not be able to access the data inside the app. By adding these additional security measures, the user can feel secure using our product and prevent any possible leakages of data and limiting possibilities of their medical records being seen by other people.
Table 1 showing problems/solutions to Heart Strings:

<table>
<thead>
<tr>
<th>Initial Problem</th>
<th>Why it’s an Issue?</th>
<th>Proposed Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>Medical info is being transmitted electronically; possibility of leakage.</td>
<td>All information is kept completely private, except to those who have authorization from the wearer.</td>
</tr>
<tr>
<td>Mobility</td>
<td>Cellular data is being used, areas with low cell coverage could mean the app does not work fast enough or is unable to transmit the data.</td>
<td>User will receive a text message that will warn them that they are in an area of poor coverage and the device may not be working perfectly.</td>
</tr>
<tr>
<td>Battery Life</td>
<td>Jewelry needs a battery life of at least 15-20 hours and would need to be recharged each night.</td>
<td>Kinetic energy gained through movement throughout the day will be stored and used through the night.</td>
</tr>
<tr>
<td>Lost or Stolen Device</td>
<td>If lost or stolen, the owner’s medical history is now public.</td>
<td>Only authorized people have access to the medical information. Users can report a missing device and have it deactivated.</td>
</tr>
</tbody>
</table>

Potential Product Visuals:
Potential Data Cost Structures:

Data: 4GB 6GB 10GB 15GB 20GB 30GB 40GB 50GB

Monthly cost: $30 $40 $60 $90 $110 $185 $260 $335

Economic Viability:

One of the most customer friendly aspects of Heart Strings is the overall price of the system, and its ability to integrate into the lives of many Americans. There is a one-time cost of the pendant itself, along with a yearly prescription to the Heart Strings cellular service through AT&T. The cost of the pendent system depends on the specifications of the individual, usually ranging from $50-$200. The yearly subscription will be $50 for the service, in addition to AT&T cellular service. By keeping total cost relatively low, Heart Strings has the ability to spread throughout the country with a great pace, and will be affordable to most Americans.

The expense of the app will also be very little, making this product very affordable to AT&T. The product runs itself and the app is all automated. Because of this, companies such as AT&T will easily be able to include this type of program into their normal cellular plan.

Users will be required to sign a liability waiver that acknowledges that this device is meant to aid in a quick response to heart issues, but CANNOT ensure survival. Heart Strings is not legally responsible for the death of any users.
**Conclusion:**

In summary, Heart Strings is a device meant to monitor heart rhythm and vital signs, and call for medical aid if necessary. By constantly keeping record of vital activity, the medical professional associated with the consumer will always have a file of how the patient is doing, making trips to the doctor less frequent and smoother. This device is always connected to the user’s cellular device for easy access and mobile updates. Because of the nature of Heart String, it could be easily integrated into the AT&T cellular service system. The price and integration capabilities make Heart Strings an economically viable product to be used with AT&T, while being both discreet and visually appealing. Because of this, it could be an extremely viable method of monitoring activity, and ultimately saving lives.