BackTrack: Vehicle Tracking Device

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Customer: Asanga Bandara

http://goo.gl/forms/qQSSNTCOrl

Introduction

Our customer, Asanga, approached us to create a low cost vehicle tracking device which provided real time feedback in regard to position, speed, and route. Our product was also required to keep a month-long record of the locations where the device has been.

In addition to these primary goals, the product was to be portable and concealable, shock and weather resistant, and compatible with all major mobile and home operating systems.

Backtrack is unique from other similar products because it can be used by people with no technological experience, and without the need for professional installation

Materials and Methods

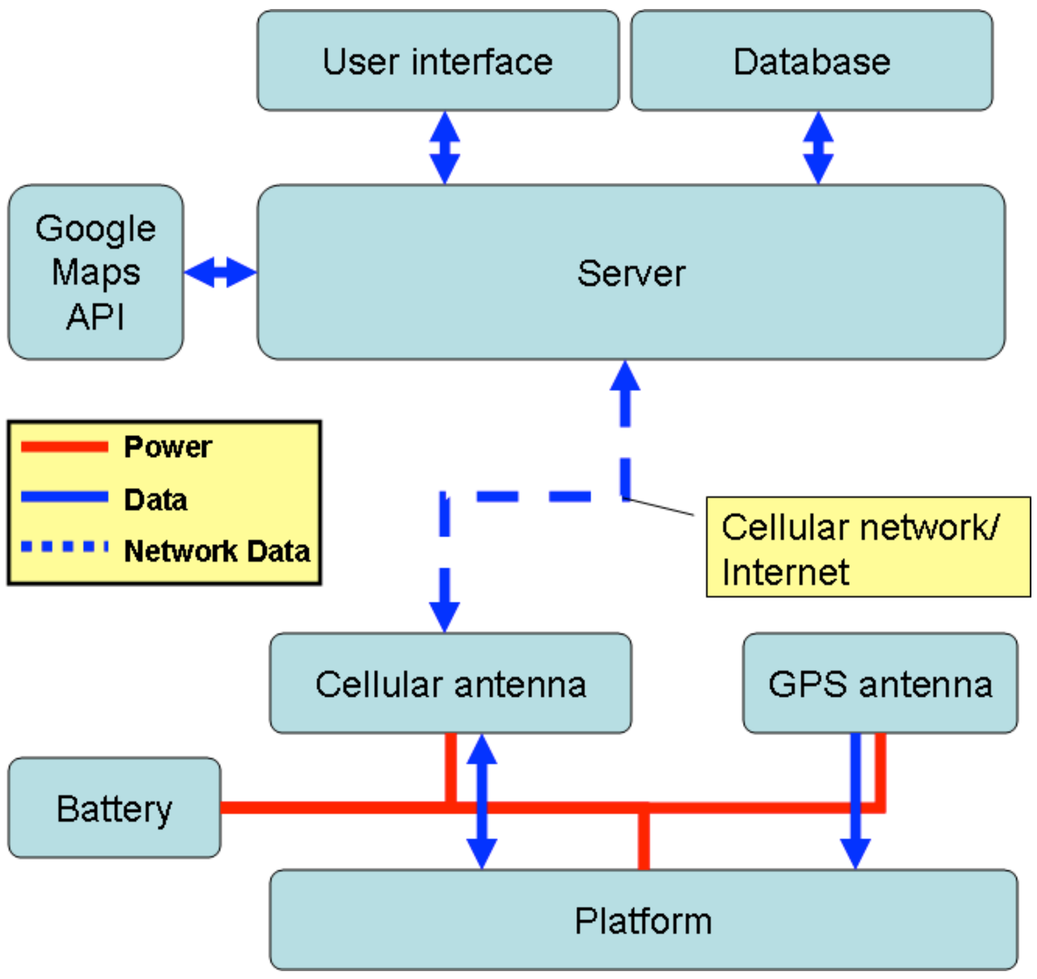
- GPS receiver
- Cellular transceiver
- Database server
- Position/route user interface
- Fiberglass casing for shock resistance
- Red/Blue LED lights for indicating battery level
- Lithium-Ion thin battery (pad)

The tracking device will be a black box to the user. It will determine its position using a GPS receiver and upload position and time data to a server over a cellular network. The data will then be recorded in a database associated with the device's key. The database will have a 1 to 1 trackers to accounts connection and 1 to many accounts to trackers connection to protect user security and privacy. Users will be able to log in and view their device's history and latest position.

Results

We created a design for a functional, cost-effective and simplistic vehicle tracking device that anyone would be able to use. Our design fulfills the requirements established with our customer while maintaining emphasis on user security and privacy. The potential end users for this product can be anything from parents with young drivers to small businesses developing a fleet tracking system.

We made a few amendments to our design during the process. For one, we moved from "real-time" being a continuous influx of information to having the GPS transmit location data every 3 seconds. This helps maintain the longevity of the battery while providing accurate measurements to our customer. We also decided to store the data remotely in a database, rather than locally on the device. This was an attempt to keep the travel information of our users secure.



Our team decided to use a fiberglass casing as a cost-effective way to make our device shock-proof. This will protect the device, particularly the lithium ion battery pad used to power it which can be dangerous if punctured.

Conclusions

Although we ran into a few obstacles in our design phase, we ultimately came through with a design that successfully meets our customer's specifications. While we eventually amended the original design choices, we were able to implement a design that is not only cost-effective, but both digitally and physically secure. Even though we are not able to conduct physical testing of our product, we firmly believe that it would perform optimally in a real-world environment.

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