# Airline Luggage Tracking

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Problem Statement

Losing things is a very prevalent problem in the world and specifically in airports, management tends to lose many patrons' luggage. This problem affects both airline companies and customers. With an effective way to keep track of luggage, companies and customers can save money, less waste will be created and everyone can save time. The problem has existed since the beginning of commercial flying (1914) and is growing, due to the increased flights in and out of airports and increased customers altogether.

Justification

Have you ever lost something at an airport?
(ie: suitcase, wallet, phone, purse)
45 responses

● Yes
● No
57.8%
42.2%
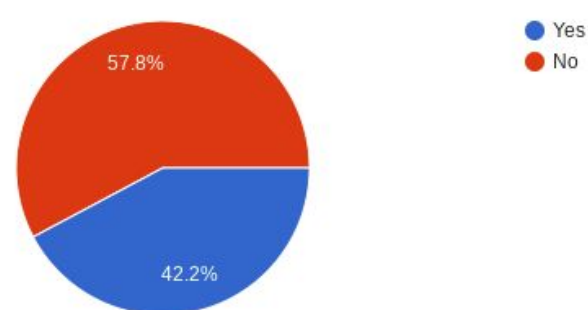
Out of 45 people in our school about 38% of them have lost something through airport security, and 42% of them have lost something at the airport. 19 people specified how long it took them to get their bags back, or if they ever did and most of the time it was after days, or in some cases they never got their items returned.

Has airport management/security ever lost something you own?
45 responses

● Yes
● No
62.2%
37.8%
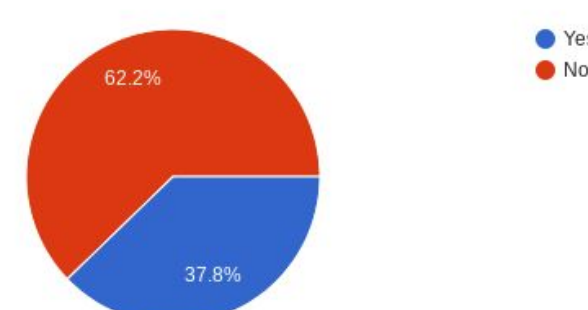
Design Criteria

For our product to be viable as an alternative to our competitors we needed to make sure that we were close to, or cheaper than them pricewise. We also wanted to make it possible to track our device on a plane without interfering with signals like other trackers do, and we wanted to build it in a way where our main audience is the airline companies instead of selling directly to passengers.
Our total budget was $150, and without including the price of tools, our device comes in at $18.70, however if we had access to bulk purchasing we could lower the cost per unit all the way down to $9.50.

Final Product
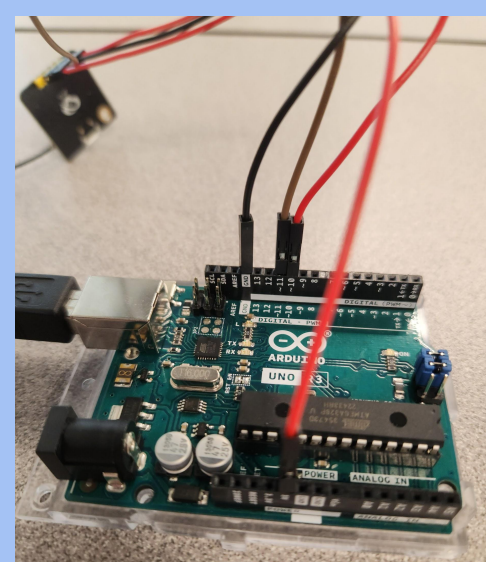
Fully connected arduino and GPS in the background.

All the parts put together to form our final prototype.
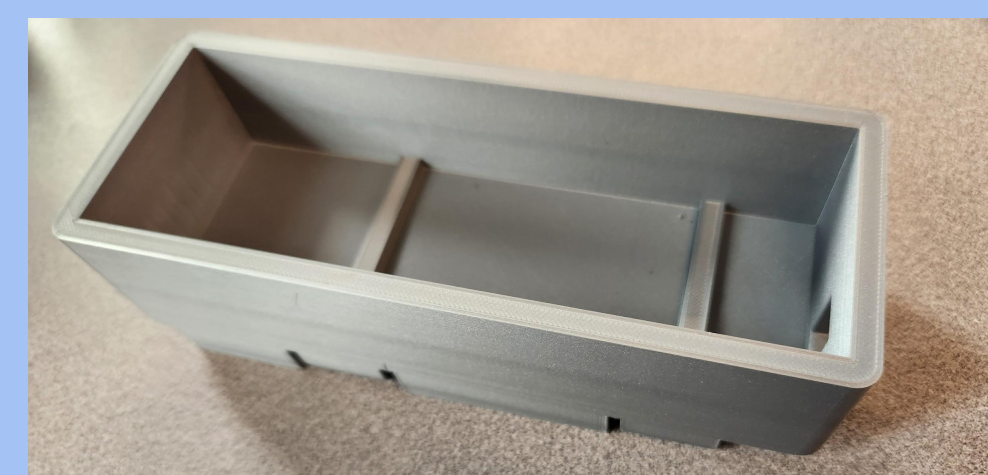

This is the cover for the case and is a friction fit as of now, but changes could be made in the future.

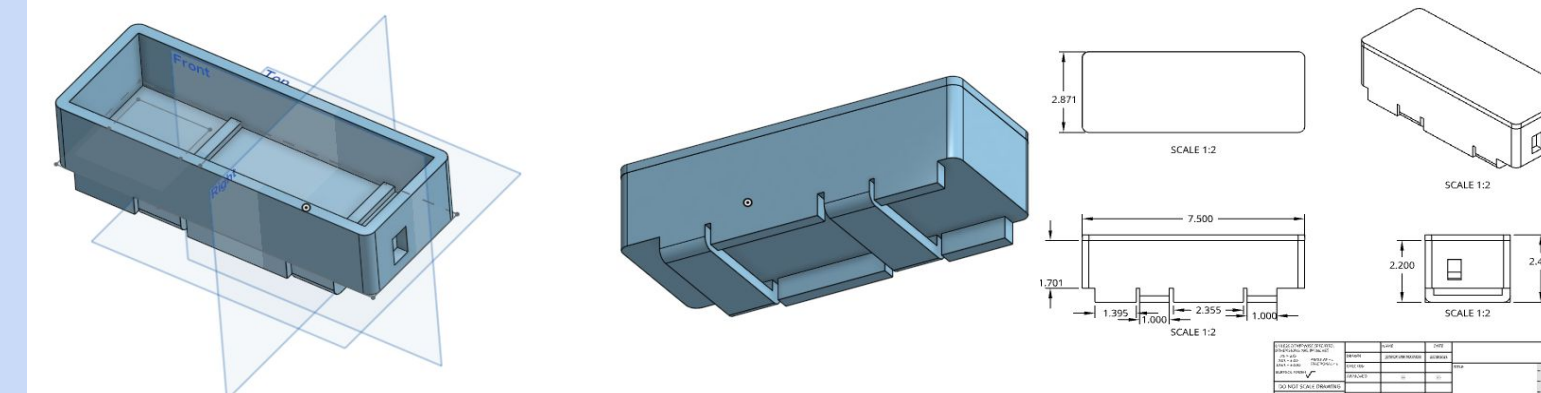Our two batteries and a charger for them. Also the battery cable for the arduino is connected.

The belt that we are used to attach the arduino to any size suitcase.

The case for our device. This should provide ample protection from external forces or other bags.

Current Solutions

Three of our main competitors include the apple airtag, lugloc tracker, and regular airline tags. The difference between our device and the two trackers is that it would theoretically connect directly to the wifi on the plane which won't interfere with the navigation signals like how cellular data does. Also flight tags are worse because they only tell you where the bag is supposed to be but doesn't help if it gets lost in the process. Another benefit of our product over others is that we are making it

Design Process

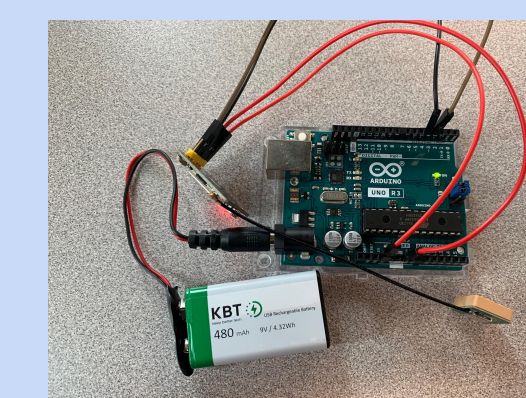
Initial Designs

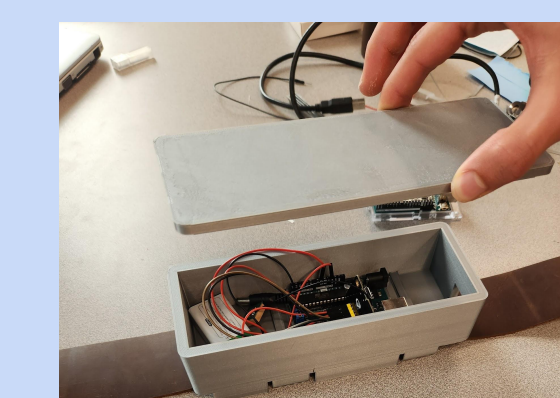Figure 14: Product Design

Modeling

Our 3D model had to be large because of the location of the battery port on our arduino, and the fact that we need a hole to hook it up to a computer. This was our third and final attempt.

Assembly

Assembly of our device is simple, we just need to load code onto the arduino, plug in wires and a battery and then set it into the case.

Testing

We tested our battery life, code, gps, and (will) test the durability of the case. As of now everything works, but the GPS has a bit of trouble connecting to satellites.

Conclusion

As a group we have had a lot of trouble throughout this project, whether it was lack of motivation, broken components, or complicated code. But in the end we got something out of it. If we were given a bit more time we feel like we could have made a better final product, but as it is now we could probably still mass produce it. We would need to find a company that could produce it for us, and maybe an alternative to 3D printing the case.