Deliverable B: Need Identification and Problem Statement

Introduction

The Covid-19 global pandemic has changed many aspects of life and businesses. One of these major changes was the concept of deliveries. Customers have become accustomed to contactless deliveries and minimal interaction with the businesses they receive goods from. A recent concept that has emerged in today's society is drone delivery. Despite drone delivery seeming like a great idea, many challenges have arisen that make it difficult for companies to properly implement this proposal. Nonetheless, companies such as Amazon, Manna, and Alphabet Wing, have developed new and creative ways to overcome hurdles in order to make a safe and efficient delivery service. That being said, all of these companies face their own limitations. The next upcoming fast and safe delivery for food is called JAMZ Drone Delivery, a company created by Logan Rodie, Mohammad Abu-Shaaban, Piers Hancock and many more. The JAMZ Drone Delivery team is looking to create the best possible ways to make deliveries reliable, effective, and above all, safe.

In response to this newly-discovered issue, students from the Faculty of Engineering at the University of Ottawa have been asked to tackle restrictions that come with trying to change the delivery system for every restaurant. JAMZ would like to develop precautions to avoid theft and damaged goods, while ensuring public safety. They also want a reliable, responsive tracking system and an effective recovery system.

Client Needs/Problems

- Consistent exchange of data to the operator
- Lightweight drone
- Efficient delivery times
- Low sound pollution
- Sensors: temperature is maintained, tracks stability, Proximity
- Anti-theft siren

List	Priority rating	Client Need	Description	Benchmark (Flirtey)
1.	5	Safety	Should be safe for both the users and any civilians that it could come into contact with.	5
2.	2	Compactness	Should be as compact as possible without sacrificing performance.	2
3.	4	Weight	Should not contribute significantly to the drone’s weight in order to improve efficiency.	4

4.	3	Easily attachable	The module should be able to be easily attached to several different locations on the drone	3
5.	5	Consistency	The attachment should be extremely good at recognizing when a drone is not working as it should.	4
6.	1	Efficiency	The drone should work efficiently for customer satisfaction.	5
7.	2	Stability	The packages must be delivered without damage to the product.	4
8.	5	Legal	Should abide by all the applicable air traffic laws.	5
9.	4	Accuracy	Should be able to function accurately under extreme conditions.	1

**Priority rating: 5 is most important and 1 is least important.*
**Benchmark(Flirtey): We measured the quality of the features from the rating scale of 1-5; as 5 being the best implemented, and 1 being the worst implemented for a comparison to how they appear on the Flirtey drone.*

The benchmark company, Flirtey is a well established company in the US having similar interests to JAMZ. Their most recent accomplishment was delivering Covid-19 home testing kits in the US, helping people get tested without going outside.

Problem Statement

JAMZ requires an external module to be developed that can track the drone and inform the piloter, with great accuracy, in the event that the drone is off course from its planned route. Additionally, the module should be able to alert citizens or potential thieves to stay clear of the downed drone in order to ensure human safety.

Conclusion

Our group of students from the Faculty of Engineering will develop a safe, and consistent way to inform the piloter when the drone has potentially been stolen by indicating when the drone has strayed from its designated path. Furthermore, it will aim to inform passersby to stay away from the downed drone through light and sound queues. This technology will aim to improve the safety and reliability of drone delivery as we know it.

References

- https://www.flirtey.com/