



Progress Report for Air Surveillance Drones

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Introduction

The ASD, Air Surveillance Drones, are solar powered planes with GPS capability and autopilot system being developed for any situation that needs air surveillance. ASD provides an inexpensive and environmentally friendly alternative to other air surveillance solutions while making it possible for longer flights without interruption.

ASD drone's chosen airframe is an airplane as it allows longer range flights compared to other airframes such as helicopters or quad-copters. The drone features an autopilot system comprised of a modified Arduino board and a GPS module. Control surface movement is achieved with the use of Futaba servomotors. Commands are transmitted and received with the use of an FM Futaba radio system. Real-time video is transmitted and received with the use of Boscam equipment due to its quality and low-cost.

Schedule

Figure 1 shows the Gantt chart of our original schedule for completion of our project. As it stands right now we are ahead of schedule and ready for demo on April 1st. We finished assembling modules and integration on the first week of March.

We are waiting for a new GPS unit which is scheduled to arrive on March/24/2014 after we broke our original GPS during a crash last week. After we receive the GPS we have one final testing of our autopilot and then we will be done our testing and ready for our demo.

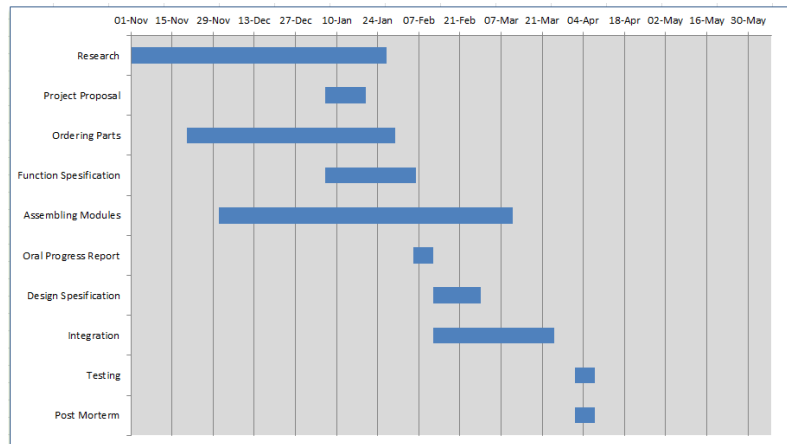


Figure 1- Gantt Chart of tentative schedule

Financial

Table 1 shows our original projected cost to build the Air Surveillance Drones (ADS). We ended up spending \$1100 to finish the project. Since we only got approved for \$350 in funding, we had to compromise in some parts of our project to meet the budget requirements. For example, we had to scrap the thermal imaging camera for night vision and we had to use a LCD screen instead of goggles just to name a few adjustments. Each member of our team ended up spending \$250 of their own money for us to be able to finish this project.



Equipment List	Estimated Cost
Model Plane Building Materials	\$250
1 x Boscam Video Receiver (RC 305 5.8 GHZ)	\$50
1 x Boscam Video Transmitter (TS 353 5.8 GHZ 400mW)	\$60
1 x Fat Shark FPV goggles	\$200
1 x HD night vision FPV camera	\$75
1 x 9CH FM Radio/Receiver	\$275
2 x Batteries	\$100
1 x Solar Cells	\$130
1 x Engine (Turnigy G46 brushless outrunner 550kv)	\$50
1 x Autopilot (F-TEK 31AP)	\$140
1 x UBEK	\$30
5 x Servos	\$100
1 x Antennas	\$40
1 x Cam mount (RC 5.8 GHZ FPV anti-vibration PTZ)	\$50
Total Cost	\$1650

Table 1- List of Parts and Cost

Progress

Air Surveillance Drones has already purchased all of the electrical components and equipment needed for building the first prototype. Since the oral progress report, we have received the autopilot and successfully integrated it into the prototype. Also, due to unforeseen circumstances, we were forced to buy a new test plane after having two crashes while testing and debugging the autopilot system. The new test plane has been used to successfully test our autopilot system.

Our first prototype, as well as our demo prototype, will be built using the same electrical components as our current integrated system, except that they will be integrated on the actual plane built by a member of our team. We already finished integrating all the components on the new plane and we are just waiting for the GPS chip to arrive on Monday March 24th. We will do a final test flight before our demo on April 1st.

Conclusion

We fully expect to be able to meet our final deadline for the completion of the device and plan on being able to perform a full demonstration of the device by April 1st. We also expect to have a filmed demo of the product being used by this date. All current issues with implementation are being actively resolved with alternative solutions in mind and no alterations to the schedule are expected.