AIAA Design/Build/Fly

Faculty Adviser: Professor Robert H. Liebeck
Advisers: Colin Sledge, Nathan Yeung, Marlon Sevilla, Paul Parcell

Cessna Aircraft Company
Raytheon Missile Systems
AIAA Foundation

UCI Samueli School of Engineering

2012 2nd Place | 2013 1st Place | 2014 2nd Place | 2015 2nd Place | 2016 3rd Place | 2018 7th Place | 2019 10th Place

What is Design/Build/Fly?

AIAA Design/Build/Fly is an annual international remote-controlled aircraft competition that allows teams to apply their analytical skills and showcase their cooperative efforts in building real-world aircrafts. Students must design, manufacture, and demonstrate the flight capabilities of an aircraft that can perform in a series of different flight scenarios.

Goals and Objectives

- Design an aircraft based on the given rules and constraints
- Develop and apply innovative, practical, and affordable fabrication techniques
- Document and compile design, manufacturing, and testing process into industry-standard written report

Requirements and Constraints

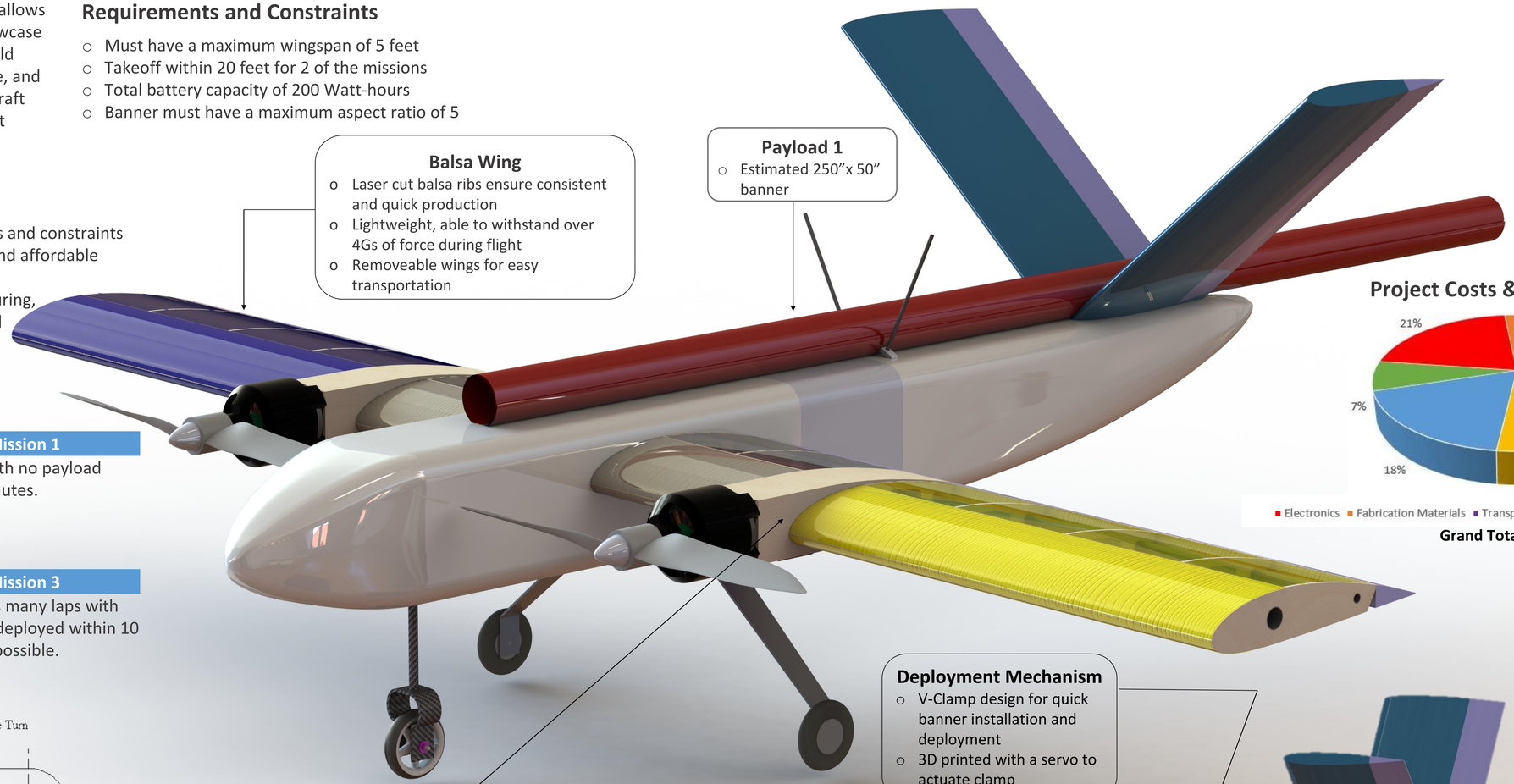
- Must have a maximum wingspan of 5 feet
- Takeoff within 20 feet for 2 of the missions
- Total battery capacity of 200 Watt-hours
- Banner must have a maximum aspect ratio of 5

Timeline

October 31, 2019
Submit Proposal

February 21, 2020
Submit Design Report

April 16-19, 2020
Contest Fly-Off

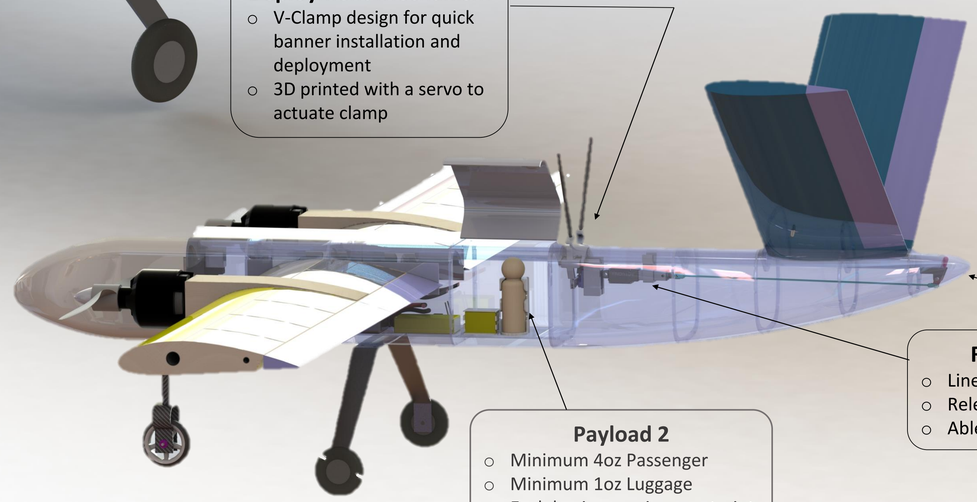


Balsa Wing
- Laser cut balsa ribs ensure consistent and quick production
- Lightweight, able to withstand over 4Gs of force during flight
- Removeable wings for easy transportation

Payload 1
- Estimated 250”x 50” banner

Nacelle
- Built with 3D printed pieces and lightweight carbon fiber tubes
- Able to withstand vibrations and forces from propulsion

Deployment Mechanism
- V-Clamp design for quick banner installation and deployment
- 3D printed with a servo to actuate clamp



Payload 2
- Minimum 4oz Passenger
- Minimum 1oz Luggage
- Each having a unique restraint

Release Mechanism
- Linear actuator for compatibility
- Releases banner mid-flight
- Able to hold 10lbs of banner drag

Project Costs & Expenditures

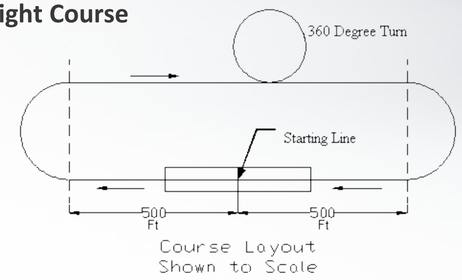
Grand Total: $7100

Competition Mission Objectives

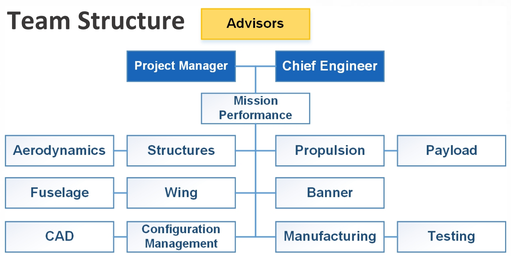
Ground Mission	Mission 1
Load passengers, luggage, and banner into the plane as fast as possible.	Fly 3 laps with no payload within 5 minutes.

Mission 2	Mission 3
Fly 3 laps as fast as possible while carrying passengers and their luggage within 5 minutes.	Complete as many laps with the banner deployed within 10 minutes as possible.

Flight Course



Team Structure



Team Members

Andrew Reuter	Melonti Emmanouilidi	Suleyman Varlibas	Heath Mukat
James Bechler	Maxfield Floyd	William Mrdjenovich	
Grant Tsuji	Ethan Kropp	Kelsey Cruz	
Kendrick Barefield	Robert Laviguer	Chad Tuley	

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