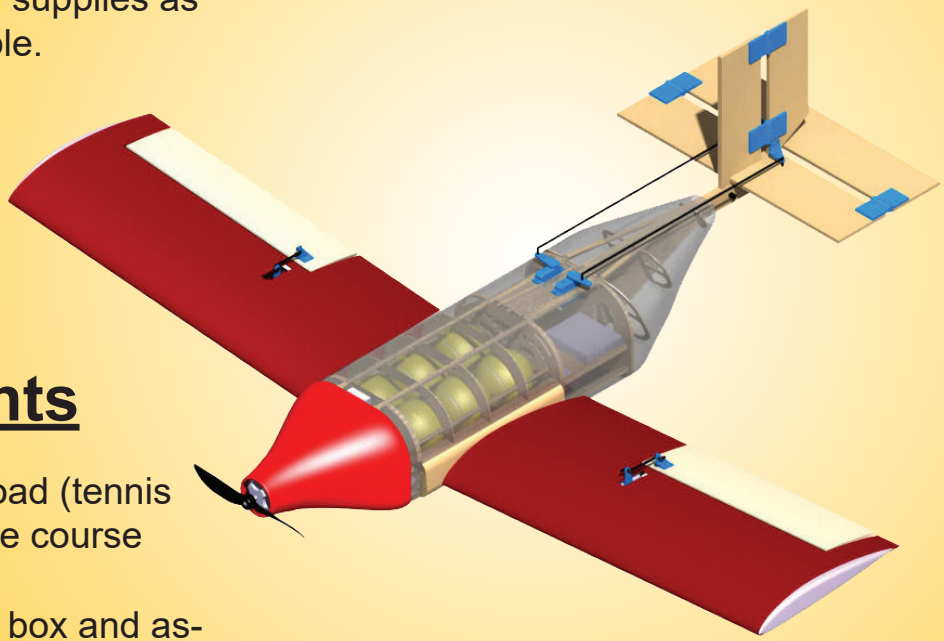
Project F.E.A.R

Fast Emergency Aircraft Response

A Wheat Works Development for the 2020
Bronze Propellor Competition

Our Mission

Design an aircraft that can deliver a large amount of emergency supplies as quick and reliably as possible.



Requirements

- Autonomously deliver payload (tennis balls) after second lap of the course
- Aircraft must be stored in a box and assembled quickly
- Aircraft must be hand launched
- Complete the mission (5 laps + delivery) as quick as possible

Team Philosophy

"Be Creative, Be Courageous, Be Confident"

Wheat Workz engineers strive to provide engineering solutions that are simple, effective, and quality.

Team Information

Ryan Lynch - Structures Lead
rjlynch1@shockers.wichita.edu

Darin Parker - S&C Lead
dxparker@shockers.wichita.edu

Ruben Reyes - Propulsion Lead
rxreyes3@shockers.wichita.edu

Alex Zadorozhnyy - Aero Lead
oozadorozhnyy@shockers.wichita.edu

Special thanks to **Dr. Miller**
scott.miller@wichita.edu

The Art of Design

The Concept

Process:

Iterative design techniques from Daniel P. Raymer. Screening and scoring processes from Dr. Miller

Key Design Elements:

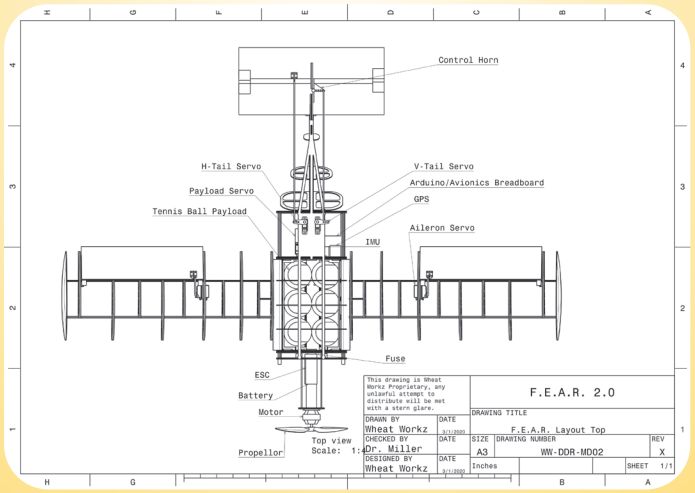
- A low-wing sleek body configuration for maximum speed
- High accuracy flight computer for payload delivery
- Easily assembled and disassembled

Development

Drag Reduction

Weight Savings

Structural Improvements



Analysis Methods:

VSPAERO for drag predictions

Roskam methods for S&C

The Results

Weight: 3 lbs

Turn Radius: 27 ft

Thrust to Weight: 0.72

Max Speed: 55 mph

Max G pull: 13.75

Kalman filter positioning system

Estimated Lap Time: 12 seconds

Estimated Mission Score: 97 points