Brigham Young University

AUVSI Capstone Team (Team 45)

Airframe Subsystem Requirements Matrix

ID	Rev.	Date	Description	Author	Checked By
RM-002	0.1	10-23-18	Initial Draft	Tyler Critchfield & Ryan Anderson	Derek Knowles

Product: UAS
Subsystem: Airframe

	Performance Measures		Flight Time	Battery Life	Lift-to-Drag Ratio	Lift Coefficient	Stall Speed	Average Flight Speed	Total Motor/Prop Efficiency	Turning Radius	Airframe Weight	Spiral Stability Eigenvalue	Static Margin	Cn,beta (Yaw)	Cl,beta (Roll)	Maximum Flight-Path Deviation	% of Payload Protruding from Airframe	Focus Group Coolness Rating	Number of components lost	Number of Damaged Components on crash landing	Number of Damaged Components on landing	Time to assemble from scratch	Focus Group Ease of repair	Number of AMA Safety Code Violations	Storage Volume
	Units		Minutes	Minutes	Unitless	Unitless	Meters/second	Meters/second	Unitless	Meters	Kilograms	Unitless	Unitless	Unitless	Unitless	Meters	Unitless	1-10 Scale	Unitless	Unitless	Unitless	Minutes	1-10 Scale	Unitless	Cubic centimeters
	Market Requirements	**Importance**	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19	19	20	21
1	Capable of flight for extended period of time	9	●	●	●				●		●														
2	Capable of traveling an extended distance	9	●	●	●			●	●		●														
3	Minimize flight path deviation	9					●			●		●	●	●	●	●									
4	Components are protected	9															●		●	●	●				
5	Capable of surviving a crash	9															●			●					
6	Complies with AMA safety code	9																						●	
7	Capable of carrying UGV and water bottle	3			●	●	●	●	●		●						●								●
8	Fast and cheap assembly/rebuild	3																		●	●	●	●		
9	Looks decent	1																●							
	Lower Acceptable		10	40	5	0.4	N/A	10	0.2	0	0	-0.1	0	0.05	-0.15	N/A	0	5	0	0	0	0	5	0	8000
	Ideal		30	75	20	0.5	10	15	1	5	4	-0.05	0.1	0.1	-0.1	1	0	10	0	0	0	0	10	0	10000
	Upper Acceptable		60	120	N/A	1	20	30	1	15	50	-0.01	0.2	0.15	0	5	100	10	0	1	0	60	10	0	12000

Figure 1: Airframe subsystem requirements matrix.