



BRIGHAM YOUNG UNIVERSITY  
AUVSI CAPSTONE TEAM (TEAM 45)

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## UAS Requirements Matrix

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ID	Rev.	Date	Description	Author	Checked By
RM-001	0.1	09-07-2018	Fall camp draft	Brady Moon	Jacob Willis
RM-001	0.2	09-14-2018	Revisions after design review	Derek Knowles	Kameron Eves
RM-001	1.0	10-08-2018	Expansion for stage approval	Kameron Eves	Brandon McBride
RM-001	1.1	10-08-2018	Reordered requirements to match priority	Jacob Willis	Brady Moon
RM-001	1.2	10-17-2018	Fixed inconsistency in autonomous flight requirement	Andrew Torgesen	Kameron Eves
RM-001	1.3	11-08-2018	Added Target Values	Kameron Eves	[Checker]

<p>Product: UAS Subsystem: N/A</p> <p><b>Notes:</b> UAS = Unmanned Aerial System UGV = Unmanned Ground Vehicle</p>							
<p><b>Market Requirements</b></p> <p>1 The UAS shall be capable of autonomous flight.</p> <p>2 The UAS shall be capable of avoiding static obstacles.</p> <p>3 The UAS shall be capable of visual object classification.</p> <p>4 The UAS shall be capable of delivering a payload.</p> <p>5 The UAS shall be capable of safe operation.</p> <p>6 The UAS shall be capable of a timely completion of the mission.</p>							
						<b>Performance Measures</b>	<b>Units</b>
<b>Target Values</b>	<b>Upper Acceptable</b>	<b>Ideal</b>	<b>Lower Acceptable</b>	<b>Importance</b>	<b>Importance</b>		
20	40	20	3	6%	10%	1 Flight Time	Minutes
0	10	0	0	2%	10%	2 Post Processing Time	Minutes
20	40	20	3	8%	10%	3 Autonomus Flight Time	Minutes
100	100	100	0	2%	10%	4 Percent of Waypoints Hit	Percent
5	100	0	0	10%	10%	5 Average Minimum Distance to Waypoint	Feet
0	100	0	0	20%	10%	6 Percent of Obstacles Hit	Percent
80	100	100	0	4%	10%	7 Percent of Correct Characteristics Identified	Percent
100	100	100	0	6%	10%	8 Percent of Images Correctly Geolocated	Percent
100	100	100	0	6%	10%	9 Percent of Objects Submitted in Flight	Percent
100	100	100	0	4%	10%	10 Percent of Objects Autonomously Submitted	Percent
5	75	5	0	10%	10%	11 Payload Drop Distance to Target Location	Feet
5	10	0	0	10%	10%	12 UGV Stop Distance to Target Location	Feet
Y	Y	Y	Y	10%	10%	13 Complies with AMA Safety Code	Yes/No
0	15	0	0	2%	10%	14 Penalties	Count
						Market Response	
						Very Good	
						Very Good	
						Very Good	
						Very Good	
						Good	
						Good	

Figure 1: Top-level requirements matrix for the unmanned aerial system.