# BRIGHAM YOUNG UNIVERSITY
# AUVSI CAPSTONE TEAM (TEAM 45)

# Competition Checklist

| ID | Rev. | Date | Description | Author | Checked By |
|---|---|---|---|---|---|
| PF-002 | 0.1 | 5-30-2019 | Initial creation | Ryan Anderson | [Checked by] |

# 1 Purpose

The purpose of this artifact is to keep an up-to-date, standard protocol for safe, efficient, professional competition performance. It is important that all test flights are run systematically, and according to the procedures and timelines outlined in this document.

# 2 Assignments

The following roles should be assigned before the competition:

- ☐ **Saftey Pilot:** required by the competition rules

- ☐ **Groundstation Operator:** gets missions from the Interoperability Server and approves paths

- ☐ **Interoperability Server Operator:** sets up and manages the Interoperability Server

- ☐ **Judges Server:** sets up and manages the Judges Server and receives submissions, which are reported to the Scoring Manager

- ☐ **Image Classification Server Operator:** sets up and manages the Image Classification Server and submits image objects

- ☐ **Manual Image Classification Specialists:** manually classify images

- ☐ **Scorers:**

    1. ***Scoring Manager:*** *collects subscores and calculates the final competition score*

    2. ***Waypoint/Obstacle Proximity Scorer:*** *post-processes rosbag data to determine the proximity to each waypoint and number of obstacles hit and submits to the Scoring Manager*

    3. ***UGV Proximity Scorer:*** *records the latitude and longitude of the UGV landing and final locations and reports to the Scoring Manager*

    4. ***Timeline Scorer:*** *clocks and records the time and outcome (e.g., forgot the Pre-mission Brief, payload did not deploy, 10 minutes timeout was used, etc.) of each segment of the competition. This includes 20 minutes of preparation and briefing, up to 30 minutes of flight, up to 10 minutes of grounded post-processing, and 10 minutes of clean up. The Timeline Scorer reports a high-level mission summary and timeline to the Scoring Manager.*

5. ***Image Classification Scorer:*** *compares the submitted image objects received from the Judges Server Operator to actual image characteristics and reports to the Scoring Manager*

☐ **Team Lead:** reviews and follows the Competition and Field Flight Checklists, and gives the Pre-Mission Brief to the judges.

☐ **Plane Takeoff Specialist:** tosses the plane during takeoff

☐ **UAS Setup Crew:** sets up the BYU-AUVSI network and troubleshoots problems

☐ **Airframe Crew:** assembles and prepares the airframe for flight and troubleshoots problems

# 3 Checklist

**Day Before**

☐ Follow the 'Day Before' items on the Field Flight Checklist

☐ Obtain the generator

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**Pre-preparation Time:** *20 minutes*

☐ Place targets at gps locations and orientations specified according to a Target Planning document (specific to flight location)

☐ Train Manual Image Classification Specialists

☐ Account for magnetic deviation at location

☐ Set up inter-op server

☐ Set up judges server

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**Official Preparation Time:** *15 minutes*

☐ Follow Field Flight Checklist

☐ Set up Groundstation

☐ Set up Support Groundstation (to run rosservice calls as needed)

☐ Set up Imaging Groundstations (including Manual Image Classification Specialists)

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**Pre-Mission Brief:** *5 minutes*

- ☐ Provide a summary of planned tasks

- ☐ Provide a summary of assigned roles

- ☐ Provide other relevant information to the judges

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**Execute Mission:** *<40 minutes*
*NOTE: full points are obtained by completing the mission entirely in the air in 20 minutes. Any time after that results in penalties.*
FLIGHT: *<30 minutes*

- ☐ Takeoff

- ☐ Fly Waypoints

- ☐ Drop UGV

- ☐ Fly Lawnmower Path

- ☐ Capture, Stream, Classify, and Submit Images

- ☐ Land

GROUND: *<10 minutes*

- ☐ Stream, Classify, and Submit Images

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**Post-Mission Clean Up:** *10 minutes*

- ☐ Shutdown Groundstations

- ☐ Gather targets

- ☐ Follow the post-flight items of the Preflight Checklist

- ☐ Clean up UAS equipment

**Post-Competition Procedure**

- ☐ Scorers report subscores to Scoring Manager

- ☐ Scoring Manager extrapolates full-mission score and reports to the team