**System Test Plan**

**For**

***UAV Swarm Simulation***

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# Introduction

## Purpose

This document is a test plan for the UAV Swarm System Testing, produced by the System Testing team. It describes the testing strategy and approach to testing the team will use to verify that the application meets the established requirements of the customer prior to release.

## Objectives

* Test all acceptance criteria specified in the project’s SRS document..
* Test integration of all system modules.
* Satisfies the criteria outlined in the project vision statement.

# Functional Scope

The Modules in the scope of testing for the UAV Swarm System Testing include:

* Image Processing Algorithm
* Force-Based Control Algorithm
* Simulation Configuration and Control

# Overall Strategy and Approach

## Testing Strategy

UAV Swarm System Testing will include testing of all functionalities that are in scope (Refer to Functional Scope Section) identified. System testing activities will include the testing of new functionalities, modified functionalities, screen level validations, work flows, functionality access, and testing of internal & external interfaces.

## System Testing Entrance Criteria

In order to start system testing, certain requirements must be met for testing readiness. The readiness can be classified into:

* Module compliance with specified system design criteria as outlined in the project’s System Design Document
* Module evaluation as complete from all developers involved in work
* Code review and approval from all members of the team

## Testing Types

### Usability Testing

User interface attributes, cosmetic presentation and content will be tested for accuracy and general usability. The goal of Usability Testing is to ensure that the User Interface is functional and provides the user with consistent and appropriate access and navigation through the functions of the application (e.g., Python manipulation of settings files, Unreal Engine Editor, etc.)

### Functional Testing

The objective of this test is to ensure that each element of the component meets the functional requirements of the customer as outlined in the following sections of the project’s SRS :

* [Functional Requirements](https://docs.google.com/document/d/1OrtbVfPCt8Wtusz_93U02ICh25k6fr7iR1zvU9yq8hY/edit#heading=h.hiwtdbcsidte)
* [Interface Requirements](https://docs.google.com/document/d/1OrtbVfPCt8Wtusz_93U02ICh25k6fr7iR1zvU9yq8hY/edit#heading=h.ojtbmqdezaba)
* [User and Human Factors Requirements](https://docs.google.com/document/d/1OrtbVfPCt8Wtusz_93U02ICh25k6fr7iR1zvU9yq8hY/edit#heading=h.24xogj971hg5)
* [Documentation Requirements](https://docs.google.com/document/d/1OrtbVfPCt8Wtusz_93U02ICh25k6fr7iR1zvU9yq8hY/edit#heading=h.csea7zcp85ly)
* [Data Requirements](https://docs.google.com/document/d/1OrtbVfPCt8Wtusz_93U02ICh25k6fr7iR1zvU9yq8hY/edit#heading=h.jtffgwn70b74)
* [Resource Requirements](https://docs.google.com/document/d/1OrtbVfPCt8Wtusz_93U02ICh25k6fr7iR1zvU9yq8hY/edit#heading=h.j7ewxmrm8p8o)
* [Security Requirements](https://docs.google.com/document/d/1OrtbVfPCt8Wtusz_93U02ICh25k6fr7iR1zvU9yq8hY/edit#heading=h.dk6z05iosq00)
* [Quality Assurance Requirements](https://docs.google.com/document/d/1OrtbVfPCt8Wtusz_93U02ICh25k6fr7iR1zvU9yq8hY/edit#heading=h.1kdk3s9yl3mk)

## Suspension Criteria and Resumption Requirements

This section will specify the criteria that will be used to suspend all or a portion of the testing activities on the items associated with this test plan.

### Suspension Criteria

Testing will be suspended if the incidents found will not allow further testing of the system/application under-test. If testing is halted, and changes are made to the software, it is up to the Testing Manager to determine whether the test plan will be re-executed or part of the plan will be re-executed.

### Resumption Requirements

Resumption of testing will be possible when the functionality that caused the suspension of testing has been retested successfully.

# Execution Plan

## Execution Plan

The execution plan will detail the test cases to be executed. The Execution plan will be put together to ensure that all the requirements are covered. The execution plan will be designed to accommodate some changes if necessary, if testing is incomplete on any day. All the test cases of the projects under test in this release are arranged in a logical order depending upon their inter dependency.

# Traceability Matrix & Defect Tracking

## Traceability Matrix

This list of requirements and corresponding test cases are enumerated in greater detail in the project’s SRS document. Inclusion of this list as part of the test plan is for

* F1
  + FTC1
* F2
  + FTC2
* F3
  + FTC3
* F4
  + FTC4
* I1
  + ITC1
* I2
  + ITC2
  + ITC3
* HF1
  + HFTC1
  + HFTC2
* HF2
  + HFTC3
  + HFTC4
* HF3
  + HFTC5
* HF4
  + HFTC6
* HF5
  + HFTC7
* HF6
  + HFTC8
* HF7
  + HFTC9
  + HFTC10
* HF8
  + HFTC11
  + HFTC12
  + HFTC13
* HF9
  + HFTC14
  + HFTC15
  + HFTC16
  + HFTC17
* HF10
  + HFTC18
  + HFTC19
  + HFTC20
  + HFTC21
* HF11
  + HFTC22
  + HFTC23
* D1
  + DTC1
* D2
  + DTC2
* D3
  + DTC3

## Defect Severity Definitions

|  |  |
| --- | --- |
| **Critical** | The defect causes a catastrophic or severe error that results in major problems and the functionality rendered is unavailable to the user. A manual procedure cannot be either implemented or a high effort is required to remedy the defect. Examples of a critical defect are as follows:   * System abends * Data cannot flow through a system module * Data is corrupted or cannot be properly interpreted |
| **Medium** | A defect that does not seriously impair system function can be categorized as a medium Defect. A manual procedure requiring medium effort can be implemented to remedy the defect. Examples of a medium defect are as follows:   * Form navigation is incorrect * Field labels are not consistent with global terminology |
| **Low** | The defect is cosmetic or has little to no impact on system functionality. A manual procedure requiring low effort can be implemented to remedy the defect. Examples of a low defect are as follows:   * Repositioning of fields on screens * Text font on reports is incorrect |

# Environment

## Environment

* The System Testing Environment shall be used for System Testing
* The System Testing Environment shall meet all minimum system/resource requirements.
* The System Testing Environment shall be observable by all System Testing Team Members
* All development team members shall be a member of the System Testing Team for requirements they have participated in.

# Assumptions

* The testing of the System assumes that all system requirements are satisfied
* The testing of the System assumes that the Unreal Engine and AirSim environments are correctly configured

# Risks and Contingencies

There are no risks of physical damage to the System or System Testing Environment equipment. There is a risk of system modules failing to meet testing criteria. The contingency for this is to redirect development resources to the most prioritized action items as defined by the Testing Manager.

# Appendices

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