**User Stories**

This is used to document the various user stories associated with various projects within the Autonomous Flight Systems Laboratory.

Note that older user stories are described in other documents (for example user\_stories\_0001\_to\_1000.docx)

Note: Only add user stories if you are experienced with the system. Please see Christopher Lum if you have questions.

Table 1: Table showing user story sizing and estimated hours for each

|  |  |  |  |
| --- | --- | --- | --- |
| **Size** | **Points** | **Estimated Hours** | **Comment** |
| XS | 1 | 5 | a few hours |
| S | 2 | 10 | a few days |
| M | 3 | 15 | over a week |
| L | 5 | 25 | a few weeks |
| XL | 8 | 40 | takes entire sprint (4 weeks) |

**1501 – Archiving UAS Articles**

**Content**

As lab member, I would like to archive UAS articles from online.

**Definition of Done**

[ ] Do as Dr. Lum instructed

**Notes**

* See Chris Lum for details

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|  |

## 1502 – GCS and Aircraft Software/Firmware Upgrades Part 2

**Content**

As a lab member, I would like to investigate upgrading our Mission Planner and ArduCopter/Plane/Rover software across the fleet.

**Definition of Done**

[ ] Research what has changed between the software we are using and the newer versions by reading online release notes and documentation. These version upgrades are:

[ ] Mission Planner version 1.3.38 to 1.3.45

[ ] ArduPlane version 3.6.0 to 3.7.1

[ ] ArduCopter version 3.3.4 to 3.4.6

[ ] ArduRover version 2.5 to 3.1.2

[ ] Utilize the upgraded version of Mission Planner installed on AFSLCondor if useful (WARNING: do not write over or delete the old versions)

~~[ ] If valuable, you can upload the new ArduPlane firmware onto Anakin and compare how the parameters change between versions. You can use Perforce’s “Diff Against” feature to do this.~~

~~[ ] Determine if any of the parameters need adjusting to be functional~~

~~[ ] Check if Pixhawk Minis are supported with new Mission Planner and/or ArduPlane/Copter/Rover~~

~~[ ] Look it up~~

~~[ ] Try connecting Cera~~

**Notes**

* Talk to Hannah Rotta with questions
* For potentially helpful documentation see:
  + //VisualAnchoring/TechnicalDataPackage/MissionPlannerModification/MissionPlannerBuildNotes.docx
  + //VisualAnchoring/TechnicalDataPackage/ArduplaneModification/ArduplaneBuildNotes.docx

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## 1503 – Perforce Visual Client (copy)

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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**1504 – Setup GPS Repeater**

**Content**

As lab member, I would like to setup our GPS repeater so that the lab can connect to GPS inside

**Definition of Done**

[ ] Set up and verify functionality

**Notes**

* See Chris Lum for details

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## 1505 – SAM Rebuild (copy)

**Content**

Copy of user story 1226 – SAM Rebuild

**Definition of Done**

Copy definition of done from user story 1226 – SAM Rebuild

**Notes**

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**1506 – Test Location Viewing**

**Content**

As lab member, I would like to head to a potential flight location.

**Definition of Done**

[x] Talk to Dr.Lum before heading out to potential flight locations.

[x] Meet and greet at SRAC Field.

[x] Meet and greet at Carnation Farm.

[x] Relay information to Dr. Lum

**Notes**

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**1507 – Test Location Viewing (copy)**

**Content**

Copy of user story 1507 – Test Location Viewing

**Definition of Done**

Copy definition of done from user story 1507 – Test Location Viewing

**Notes**

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**1508 – Standardize Failsafes**

**Content**

As lab member, I would like to standardize the failsafe parameters across the fleet.

**Definition of Done**

[ ] Determine the best settings for the failsafe parameters. This includes, but is not limited to:

                [ ] Loss of GCS connection

                [ ] Loss of RC connection

[ ] Make sure these changes are reflected across the fleet

[ ]

**Notes**

* We have had enough sudden crashes of aircraft that it is extremely important that we determine the best settings for when certain failsafes will trigger, and what they do when they are triggered. It is also important for this to be consistent across our fleet so that we know what to expect if something does go wrong.

|  |
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**1509 – Headset Repair**

**Content**

As lab member, I would like to make something to cushon the head piece of the headset that is missing the piece.

**Definition of Done**

[ ] Either 3D print, or make something else that will make the headset confortable to wear

**Notes**

* TBD

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**1510 – Fix and Organize the Battery Box**

**Content**

As lab member, I would like to fix and organize the black battery storage box.

**Definition of Done**

[ ] Retape the compartment walls so that they stay up

[ ] Ensure all the batteries are in their proper sections

**Notes**

* See Hannah Rotta for details

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**1511 – Luke Rebuild (copy)**

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 1512 – Perforce Visual Client (copy)

**Content**

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**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 1513 – Perforce Visual Client (copy)

**Content**

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**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 1514 – Perforce Visual Client (copy)

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 1515 – Perforce Visual Client (copy)

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 1516 – Flight Training Program – Fixed Wing (Copy)

**Content**

Copy of user story 1272 – Flight Training Program

**Definition of Done**

Copy definition of done from user story 1272 – Flight Training Program

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## 1517 – Perforce Visual Client (copy)

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 1518 – Laptop Research & Setup

**Content**

As a lab member, I’d like to set up the new bought laptop

**Definition of Done**

[ ] figure out which laptop best suits our need and buy it

[ ] Install Windows 10 Enterprise

[ ] Install Ubuntu 16.04

[ ] Install MicroSoft office suit on it

[ ] Install all other softwares

**Notes**

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## 1519 – Laptop Research & Setup (copy)

**Content**

Copy of user story 1518 – Laptop Research & Setup

**Definition of Done**

Copy definition of done from user story 1518 – Laptop Research & Setup

**Notes**

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## 1520 – JCATI 1704 Flight Ops/ Taks

**Content**

As a member of the JCATI 2016 team I’d like to make progress on establishing a reliable flight testing program for the SDR.

**Definition of Done**

[x] Flight test the SDR

[x] Fix solo RTL issues

[x] Fix Argo

[x] Integrate rasp pi with pixhawk

**Notes**

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## 1521 – MAPSS Flight Test 17\_04\_06

**Content**

As a member of the MAPSS Team, I would like to prepare and participate for the MAPSS Flight Test on April 6th

**Definition of Done**

[ ] Ensure Flight Readiness & Preparation

[ ] Pack up

[ ] Assist in flight

[ ] Unload

**Notes**

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## 1522 – MAPSS Flight Test 17\_04\_06 (copy)

**Content**

Copy of user story 1521 – MAPSS Flight Test 17\_04\_06

**Definition of Done**

Copy definition of done from user story 1521 – MAPSS Flight Test 17\_04\_06

**Notes**

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## 1523 – MAPSS Flight Test 17\_04\_06 (copy)

**Content**

Copy of user story 1521 – MAPSS Flight Test 17\_04\_06

**Definition of Done**

Copy definition of done from user story 1521 – MAPSS Flight Test 17\_04\_06

**Notes**

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## 1524 – MAPSS Flight Test 17\_04\_06 (copy)

**Content**

Copy of user story 1521 – MAPSS Flight Test 17\_04\_06

**Definition of Done**

Copy definition of done from user story 1521 – MAPSS Flight Test 17\_04\_06

**Notes**

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## 1525 – MAPSS Flight Test 17\_04\_22

**Content**

As a member of the MAPSS Team, I would like to prepare and participate for the MAPSS Flight Test on April 22nd

**Definition of Done**

[ ] Ensure Flight Readiness & Preparation

[ ] Pack up

[ ] Assist in flight

[ ] Unload

**Notes**

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## 1526 – MAPSS Flight Test 17\_04\_22 (copy)

**Content**

Copy of user story 1525 – MAPSS Flight Test 17\_04\_22

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 1527 – MAPSS Flight Test 17\_04\_22 (copy)

**Content**

Copy of user story 1525 – MAPSS Flight Test 17\_04\_22

**Definition of Done**

Copy definition of done from user story 1525 – MAPSS Flight Test 17\_04\_22

**Notes**

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## 1528 – MAPSS Flight Test 17\_04\_22 (copy)

**Content**

Copy of user story 1525 – MAPSS Flight Test 17\_04\_22

**Definition of Done**

Copy definition of done from user story 1525 – MAPSS Flight Test 17\_04\_22

**Notes**

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## 1529 – MAPSS Flight Test Transportation

**Content**

As a member of the MAPSS Team, I would like to prepare transport and drive teammembers to flight test location.

**Definition of Done**

[ ] Ensure Flight Readiness & Preparation/Car rental

[ ] Transport members from UW to test location and back

**Notes**

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## 1530 – MAPSS Flight Test Transportation (copy)

**Content**

Copy of user story 1529 – MAPSS Flight Test Transportation

**Definition of Done**

Copy definition of done from user story 1529 – MAPSS Flight Test Transportation

**Notes**

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## 1531 – MAPSS MTF Poster Creation (Part 2) (copy)

**Content**

Copy of user story 1466 – MAPSS MTF Poster Creation (Part 2)

**Definition of Done**

Copy definition of done from user story 1466 – MAPSS MTF Poster Creation (Part 2)

**Notes**

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## 1532 – MAPSS Sci-Tech Paper Updates (part 1)

**Content**

As a member of the MAPSS Team, I would like to prepare information for the Sci-Tech Paper

**Definition of Done**

[ ] Gather knowledge of Sci-Tech paper requirements

[ ] Set up basic formal information

[ ] Upload to Perforce

**Notes**

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## 1533 – MAPSS Administration and Budget 1704

**Content**

As a member of the MAPSS Team, I would like to act as administrator and budget manager for the sprint of 1704

**Definition of Done**

[ ] Gather knowledge of upcoming AA presentations and events

[ ] Maintain and update project schedule and budget

[ ] Share administrator/budget knowledge with rest of teammates

**Notes**

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## 1534 – MAPSS Manufacturing and Assembly 1704

**Content**

As a member of the MAPSS Team, I would like to manufacture and assemble gimbals

**Definition of Done**

[ ] Gather materials needed for manufacturing

[ ] Choose appropriate manufacturing method

[ ] Set up/ verify manufacturing completion

[ ] Assemble part

**Notes**

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## 1535 – MAPSS Manufacturing and Assembly 1704 (copy)

**Content**

Copy of user story 1534 – MAPSS Manufacturing and Assembly 1704

**Definition of Done**

Copy definition of done from user story 1534 – MAPSS Manufacturing and Assembly 1704

**Notes**

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## 1536 – MAPSS Manufacturing and Assembly 1704 (copy)

**Content**

Copy of user story 1534 – MAPSS Manufacturing and Assembly 1704

**Definition of Done**

Copy definition of done from user story 1534 – MAPSS Manufacturing and Assembly 1704

**Notes**

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## 1537 – MAPSS Design 1704

**Content**

As a member of the MAPSS Team, I would like to design camera plate components

**Definition of Done**

[ ] Prepare design on Solidworks

[ ] Identify materials needed for manufacturing

[ ] Send off for manufacturing

**Notes**

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## 1538 – MAPSS Design 1704 (copy)

**Content**

Copy of user story 1537 – MAPSS Design 1704

**Definition of Done**

Copy definition of done from user story 1537 – MAPSS Design 1704

**Notes**

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## 1539 – MAPSS Design 1704 (copy)

**Content**

Copy of user story 1537 – MAPSS Design 1704

**Definition of Done**

Copy definition of done from user story 1537 – MAPSS Design 1704

**Notes**

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## 1540– MAPSS Design 1704 (copy)

**Content**

Copy of user story 1537 – MAPSS Design 1704

**Definition of Done**

Copy definition of done from user story 1537 – MAPSS Design 1704

**Notes**

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**1541 – Luke Rebuild (copy)**

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 1542 – Troubleshoot CERES (Part 3)

**Content**

As a lab member, I would like to get CERES airworthy

**Definition of Done**

[ ] Remove all extra weight from CERES

[ ] Prep for another hand launch

**Notes:**

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## 1543 – Troubleshoot CERES (Part 3) (copy)

**Content**

Copy of user story

**Definition of Done**

Copy definition of done from user story

**Notes**

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## 1544 – Telemetry Radio Investigation

**Content**

As a lab member, I would like to investigate the 915 MHz telemetry radios

**Definition of Done**

[ ] Watch this video: <https://www.youtube.com/watch?v=QSjUdOOlCxk>

[ ] Find the SiK radio utility setup program talked about in the video

[ ] Assign unique IDs to vehicle radios so we can operate mulitiple vehicles at the same time

[ ] Update \\FlightOperations\UAS\CommonDocuments\TelemetryRadios\TelemetryRadioNotes.docx  document to track radio IDs of various systems

[ ] Determine a concept of operations: how would we implement this in the lab reasonably?

[ ] Investigate 433 MHz radios

[ ] Look up US regulations about the use of this radio frequency

[ ] If we can use these radios, investigate their benefits

[ ] Investigate increasing power output of radios

[ ] Investigate the other antenna options and pros and cons of using them

**Notes:**

* **See user story for the experimental testing of this research**

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## 1545 – MFOC Weight and Balance

**Content**

As a lab member, I would like to update the weight and balance of the MFOC.

**Definition of Done**

[ ] Update MFOC weight and balance doc to reflect current equipment \FlightOperations\UAS\MFOC\Subsystems\Weights.xlsx

**Notes:**

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**1546 – Flight Ops Administration (1704)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other administrative stuff

**Notes**

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**1547 – Flight Ops Administration (1705)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other administrative stuff

**Notes**

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## 1548 – Cera Flight Manual

**Content**

As a lab member, I would like write and publish an aircraft manual for Cera

**Definition of Done**

[ ] Finish Cera flight manual by

* determining relevant sections
* filling in flight performance data

[ ] There should be no highlighted or unfinished sections

**Notes**

* The manual is in \FlightOperations\UAS\Cera\CeraAircraftFlightManual.docx

## 1549 – Cera To-Do Items

**Content**

As a lab member, I would like to address all of the to-do items following the 4/29 maiden flight

**Definition of Done**

[ ] Look at construction and mx log for to-do list: \FlightOperations\UAS\Cera\ConstructionAndMaintenenceLog.docx

**Notes:**

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## 1550 – Anakin To-Do Items

**Content**

As a lab member, I would like to address all of the to-do items following the 4/29 flight.

**Definition of Done**

[ ] Look at construction and mx log for to-do list: \FlightOperations\UAS\Anakin\ConstructionAndMaintenenceLog.docx

**Notes:**

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## 1551 – SAM To-Do Items

**Content**

As a lab member, I would like to address all of the to-do items following the 4/29 flight.

**Definition of Done**

[ ] Install a new telemetry radio

[ ] Research where the CG should be located

[ ] Investigate stability problem

[ ] Is this just a CG issue, or do the PID gains need tuning?

[ ] We probably need to run the AUTOTUNE test card

[ ] Upgrade the firmware to ArduPlane 3.6.0

[ ] Ensure SAM is ready for another flight test

[ ] Adjust trims on the transmitter so that it is less likely to roll hard left in manual mode

[ ] Write one or more test cards to include testing stabilize, manual, guided and auto modes

**Notes:**

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## 1552 – Argo Data Flash Logs

**Content**

As a lab member, I would like to fix it so that Argo records data flash logs.

**Definition of Done**

[ ] Investigate the possible reasons why the data flash logs might not be recording. This could be:

* Pixhawk problem
* Parameter problem
* Something else online forums might know about

[ ] Ensure that Argo can record data flash logs

**Notes:**

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## 1553 – MFOC Maintenance Items

**Content**

As a lab member, I would like to address the MFOC Maintenance Items

**Definition of Done**

[ ] Address all of the items under the In Progress list: \FlightOperations\UAS\MFOC\ConstructionAndMaintenenceLog.docx

**Notes:**

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## 1554 – Precision02 Hard Drive Cleanup

**Content**

As a lab member, I would like to delete unnecessary items from Precision02’s hard drive to clear up extra space.

**Definition of Done**

[ ] Delete all unnecessary files so that Precision02 actually has some extra storage space

**Notes:**

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## 1555 – Cera To-Do Items (copy)

**Content**

Copy of user story

**Definition of Done**

Copy definition of done from user story

**Notes**

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## 1556 – UW C++ SDK Development

**Content**

As a lab member, I would like to develop a UW C++ SDK.

**Definition of Done**

[ ] Establish infrastructure in which we can do C++ code development

[ ] See Dr. Lum for details

**Notes:**

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## 1557 – MFOC Maintenance Items (copy)

**Content**

Copy of user story

**Definition of Done**

Copy definition of done from user story

**Notes**

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## 1558 – Anakin To-Do Items (copy)

**Content**

Copy of user story

**Definition of Done**

Copy definition of done from user story

**Notes**

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## 1559 – SAM To-Do Items (copy)

**Content**

Copy of user story

**Definition of Done**

Copy definition of done from user story

**Notes**

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## 1560 – Literature Review for the 3D Rendering Mapping Project

**Content**

Conduct a literature review prior to composing the introduction section of the AIAA SciTech Paper.

**Definition of Done**

Review revelent literature in the field of UAV deep learning, mapping, aerial imagery and related subjects

Coordinate with Shida Xu about the result of the literature review.

**Notes**

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## 1561 – Target Environment Rendering with Unity Engine

**Content**

Render the target environment with Unity Engine.

**Definition of Done**

View the presentation of the target environment which is rendered from raw data by Pix4D

Make models of the objects present in the target environment.

Coordinate with Shida Xu regularly regarding the progress of rendering development.

Render the target environment under certain specifications (ie. different lighting conditions, etc.) to be determined by Dr. Christopher Lum and Shida Xu.

**Notes**

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## 1562 – Target Environment Rendering with Unity Engine(copy)

**Content**

Render the target environment with Unity Engine.

**Definition of Done**

View the presentation of the target environment which is rendered from raw data by Pix4D

Make models of the objects present in the target environment.

Coordinate with Shida Xu regularly regarding the progress of rendering development.

Render the target environment under certain specifications (ie. different lighting conditions, etc.) to be determined by Dr. Christopher Lum and Shida Xu.

**Notes**

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## 1563 – Build and Simulate ArduPlane 3.7.1

**Content**

As a member of the Visual Anchoring Team, I would like to learn how to build and simulate ArduPlane 3.7.1.

**Definition of Done**

[ ] Build ArduPlane 3.7.1

[ ] Simulate ArduPlane 3.7.1 in JSBSIM model

**Notes**

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## 1564 – Implement Orbit Controllers in ArduPlane 3.7.1

**Content**

As a member of the Visual Anchoring Team, I would like to implement the Visual Anchoring orbit controllers in ArduPlane 3.7.1

**Definition of Done**

[ ] Implement orbit controllers in 3.7.1

[ ] Simulate custom 3.7.1 ArduPlane version in JSBSIM

[ ] Validate UW Mode 2 in JSBSIM

**Notes**

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## 1565 – Perforce Visual Client (copy)

**Content**

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**Definition of Done**

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**Notes**

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## 1566 – Perforce Visual Client (copy)

**Content**

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**Definition of Done**

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**Notes**

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## 1567 – Perforce Visual Client (copy)

**Content**

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**Definition of Done**

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**Notes**

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## 1568 – Perforce Visual Client (copy)

**Content**

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**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 1569 – Troubleshoot CERES (Part 3)

**Content**

As a lab member, I would like to get CERES airworthy

**Definition of Done**

[ ] Remove all extra weight from CERES

[ ] Prep for another hand launch

**Notes:**

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## 1570 - CONDOR first flight prep and flight test

**Content**

As a member of the Visual Anchoring Team, I will make the final preparations to make CONDOR ready for first flight

**Definition of Done**

[X] Add all decals and necessary marking to aircraft

[X] Repair any and all wire bundle damage from ground test operations

[X] Clean up wire routing and ensure all components are secure

[X] Run aircraft through pre-flight checks and validate flight readiness

**Notes**

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| --- |
| The rebuilt CONDOR airframe is ready for a maiden voyage to validate airworthiness. |

## 1571 - Update CONDOR AFM and Maintenance Manual

**Content**

As a member of the Visual Anchoring Team, I will make significant updates to the AFM and Maintenance Manual to complete previous versions and include information about the re-built configuration.

**Definition of Done**

[X] Go through AFM and update all sections with current data and re-built configuration

[X] Update Maintenance Manual

**Notes**

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## 1572 – Perforce Visual Client (copy)

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 1573 – Telemetry Radio Testing

**Content**

As a lab member, I would like to test my investigations of the SiK telemetry radios. The following tests should be conducted with both the 915 MHz and 433 MHz SiK radios.

**Definition of Done**

[ ] Conduct tests to characterize range vs. power output

[ ] Test multi-vehicle simultaneous communication

[ ] Set up a low risk test, e.g. start with the ground vehicles (can be done on campus or during a flight test)

[ ] Move on to aerial testing using either fixed wing, multi-rotors or a combination, which could include a ground vehicle

[ ] Conduct as much testing as required to be confident there will be no radio interference during missions

[ ] Order and conduct testing with different antennae

[ ] Present findings and new procedures during a lab meeting

**Notes:**

* **See user story for the original research**
* **The multi-vehicle simultaneous communication could be relevant to the Swarm team, so you may be able to work with them on this**

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## 1574 – Perforce Visual Client (copy)

**Content**

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**Definition of Done**

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**Notes**

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## 1575 – Perforce Visual Client (copy)

**Content**

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**Definition of Done**

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**Notes**

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## 1576 – Perforce Visual Client (copy)

**Content**

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**Definition of Done**

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**Notes**

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## 1577 - Add Visual Anchoring video capability to Leia and test

**Content**

As a member of the Visual Anchoring Team, I will work to add video capability to Leia that will work for testing of the Visual Anchoring video system.

**Definition of Done**

[X] Add video receiver and make necessary wire bundles for 11V and 5V power to Visual Anchoring gimbal and camera.

[X] Add PPM encoder, second RC receiver and necessary wiring to allow for servo control of pitch and roll on the gimbal using a secondary radio transmitter.

[X] Flight test the Visual Anchoring video system on Leia using CONDOR’s wings (with gimbal mounts) to prove successful integration.

**Notes**

* Flight test on 05/20/2017 at Meadowbrooke Farms proved that the video system integrated successfully on Leia. Leia flew well with gimbal and camera mounted and video was received at the Ground Control Station.
* Video quality and gimbal stabilization are needing some improvement. Plan is to tune PID gains on gimbal and test different antennas on the video transmitter/receiver. Observed after flights that a loose antenna may have been resulting in some of the irregularity in video quality.

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**1578 – Validate UW Mode 2 on Leia**

**Content**

As a member of the Visual Anchoring Team, I will work to validate UW Mode 2 on Leia

**Definition of Done**

[ ] Find correct inner loop controller gain values that stabilize an orbit in UW Mode 2

**Notes**

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**1579 – Validate Vision System on Leia**

**Content**

As a member of the Visual Anchoring Team, I will work to validate the vision system on Leia

**Definition of Done**

[ ] Validate ability to track anchor successfully in realtime

[ ] Validate ability to estimate ground radius of tracked target in realtime by comparing to GPS radius values

**Notes**

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**1580 – Validate UW Mode 3 on Leia**

**Content**

As a member of the Visual Anchoring Team, I will work to validate UW Mode 3 on Leia

**Definition of Done**

[ ] Use Vision System Ground Radius estimates to stabilize an orbit around the tracked target

**Notes**

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**1581 – Implement Orbit Controllers in ArduPlane 3.7.1 (copy)**

**Content**

As a member of the Visual Anchoring Team, I would like to implement the Visual Anchoring orbit controllers in ArduPlane 3.7.1

**Definition of Done**

[ ] Implement orbit controllers in 3.7.1

[ ] Simulate custom 3.7.1 ArduPlane version in JSBSIM

[ ] Validate UW Mode 2 in JSBSIM

**Notes**

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## 1582 – Request a Waiver for sUAS – BVLOS (Part 2)

**Content**

As a lab member, I would like to request a waiver for sUAS with the FAA so that I can increase the radius of the flight beyond visual line of sight of 3 miles.

**Definition of Done**

[x] Coordinate with Chris Lum before starting this user story.

[x] Read the form instructions (\FlightOperations\Research\FAA\instructions.pdf) and  the [list of regulations subject to waiver](https://www.faa.gov/uas/beyond_the_basics/#waiver) prior to filling the online form.

[x] Filling the online form that is located at <https://www.faa.gov/uas/request_waiver/>.

[x] Revise the original waiver.

[x] Discuss the drafted form with lab members before submitting.

[x] Submit the revised form.

**Notes**

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## 1583 – Social Media Updates (copy) – MAY ’17

**Content**

Copy of user story 1082 – Social Media Updates

As a lab member, I would like to update the activities of the lab for publicity on the AFSL website, Facebook, and YouTube pages.

**Definition of Done**

[x] Consult with Chris Lum on the activity’s description and prospective posting photos/videos.

[x] Frequently post profiles of lab members and their specific involvement in the lab on Facebook.

For every post-flight test:

[x] Upload selected videos from the flight test onto YouTube.

[x] Update the video description (follow the template on YouTube)

[x] Make sure each video tag includes: university of washington autonomous flight systems laboratory uw afsl test (schoolyear e.g. 20162017) (date e.g. 20161119) (location e.g. meadowbrooke farm) (UAS e.g. tedd) run (run# e.g. 001) (title)

[x] everything is in lowercase

[x] every word has a space in between

[x] exclude all the parenthesis

[x] Make sure the uploaded videos are included in their perspective playlists (it is possible for each video to be in more than one playlist)

[x] Share the videos uploaded onto YouTube on Facebook.

[x] Upload selected photos from the flight test onto Facebook.

[x] Confirm that the photos and videos from each flight test are uploaded onto K drive.

Flight Test:

[x] 20170505 @ GUG 305

[x] 20170506 @ Meadowbrooke Farm

[x] 20170518 @ Meadowbrooke Farm

[x] 20170520 @ Meadowbrooke Farm

[x] 20170525 @ Meadowbrooke Farm

[x] 20170528 @ Bain Bridge

[x] Include every additional Flight Test from this quarter here…

[x] At the end of the month, please make a new copy user story 1082 – Social Media Updates for the next quarter.

**Notes**

* This is a quarter long commitment, please only pick it up if you can make the time.
* Every flight test for the quarter is to be included under Flight Test.
* Every video and photo needs to be in its best quality, meaning the videos are to be trimmed, and photos to be cropped if deemed necessary.
* Uploaded videos are automatically distributed into its perspective playlists if tagged correctly.
* Uploaded videos will automatically be shared through Twitter.
* Q&A about video tag: “school year (e.g. 20162017)” is considered from first day of summer courses of that year to the day before the first day of summer courses for the following year.

## 1584 – Social Media Updates (copy) – JUN ’17

**Content**

Copy of user story 1082 – Social Media Updates

As a lab member, I would like to update the activities of the lab for publicity on the AFSL website, Facebook, and YouTube pages.

**Definition of Done**

[x] Consult with Chris Lum on the activity’s description and prospective posting photos/videos.

[x] Frequently post profiles of lab members and their specific involvement in the lab on Facebook.

For every post-flight test:

[x] Upload selected videos from the flight test onto YouTube.

[x] Update the video description (follow the template on YouTube)

[x] Make sure each video tag includes: university of washington autonomous flight systems laboratory uw afsl test (schoolyear e.g. 20162017) (date e.g. 20161119) (location e.g. meadowbrooke farm) (UAS e.g. tedd) run (run# e.g. 001) (title)

[x] everything is in lowercase

[x] every word has a space in between

[x] exclude all the parenthesis

[x] Make sure the uploaded videos are included in their perspective playlists (it is possible for each video to be in more than one playlist)

[x] Share the videos uploaded onto YouTube on Facebook.

[x] Upload selected photos from the flight test onto Facebook.

[x] Confirm that the photos and videos from each flight test are uploaded onto K drive.

Flight Test:

[x] 20170601 @ Sixty Acres

[x] 20170603 @ Carnation

[x] 20170603 @ Meadowbrook

[x] 20170617 @ Carnation

[x] 20170621 @ Carnation

[x] 20170624 @ Carnation

[x] 20170629 @ Carnation

[x] Include every additional Flight Test from this quarter here…

[x] At the end of the month, please make a new copy user story 1082 – Social Media Updates for the next quarter.

**Notes**

* This is a quarter long commitment, please only pick it up if you can make the time.
* Every flight test for the quarter is to be included under Flight Test.
* Every video and photo needs to be in its best quality, meaning the videos are to be trimmed, and photos to be cropped if deemed necessary.
* Uploaded videos are automatically distributed into its perspective playlists if tagged correctly.
* Uploaded videos will automatically be shared through Twitter.
* Q&A about video tag: “school year (e.g. 20162017)” is considered from first day of summer courses of that year to the day before the first day of summer courses for the following year.

## 1585 – AFSL Website (Research) – JCATI 2016

**Content**

As a marketing agent, I would like to update the AFSL website “Research” section with the JCATI 2016 project so I can publicize our activities.

**Definition of Done**

[ ] Coordinate with Karine before starting this user story.

[ ] Write a project description for JCATI 2016.

[ ] Submit a photo of the project (include humanoid).

[ ] Submit a photo of the project (exclude humanoid).

[ ] Review all materials with Karine and/or Hannah.

[ ] Ensure that changes are made and correct on the final website.

**Notes**

* All website material is located in \\AFSL\WebsiteInfo
* The IEEE paper which outlines all of the work from the JCATI project is located in [\\JCATI2013\TechnicalDataPackage\IEEE Paper\CompiledVersions\MAIN\_collision\_awareness\_plugin.pdf](file:///\\JCATI2013\TechnicalDataPackage\IEEE%20Paper\CompiledVersions\MAIN_collision_awareness_plugin.pdf)

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## 1586 – AFSL Website (Research) – Visual Anchoring

**Content**

As a marketing agent, I would like to update the AFSL website “Research” section with the Visual Anchoring project so I can publicize our activities.

**Definition of Done**

[ ] Coordinate with Karine before starting this user story.

[ ] Write a project description for Visual Anchoring.

[ ] Submit a photo of the project (include humanoid).

[ ] Submit a photo of the project (exclude humanoids).

[ ] Review all materials with Karine and/or Hannah.

[ ] Ensure that changes are made and correct on the final website.

**Notes**

* All website material is located in \\AFSL\WebsiteInfo

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## 1587 – AFSL Website (Research) – MAPPS

**Content**

As a marketing agent, I would like to update the AFSL website “Research” section with the MAPPS project so I can publicize our activities.

**Definition of Done**

[ ] Coordinate with Karine before starting this user story.

[ ] Write a project description for MAPPS.

[ ] Submit a photo of the project (include humanoid).

[ ] Submit a photo of the project (exclude humanoids).

[ ] Review all materials with Karine and/or Hannah.

[ ] Ensure that changes are made and correct on the final website.

**Notes**

* All website material is located in \\AFSL\WebsiteInfo

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## 1588 – AFSL Website (Research) – Quad Plane

**Content**

As a marketing agent, I would like to update the AFSL website “Research” section with the Quad Plane project so I can publicize our activities.

**Definition of Done**

[ ] Coordinate with Karine before starting this user story.

[ ] Write a project description for Visual Anchoring.

[ ] Submit a photo of the project (include humanoid).

[ ] Submit a photo of the project (exclude humanoids).

[ ] Review all materials with Karine and/or Hannah.

[ ] Ensure that changes are made and correct on the final website.

**Notes**

* All website material is located in \\AFSL\WebsiteInfo

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## 1589 – AFSL Website (Research) – Mapping

**Content**

As a marketing agent, I would like to update the AFSL website “Research” section with the Mapping project so I can publicize our activities.

**Definition of Done**

[ ] Coordinate with Karine before starting this user story.

[ ] Write a project description for Mapping.

[ ] Submit a photo of the project (include humanoid).

[ ] Submit a photo of the project (exclude humanoids).

[ ] Review all materials with Karine and/or Hannah.

[ ] Ensure that changes are made and correct on the final website.

**Notes**

* All website material is located in \\AFSL\WebsiteInfo

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## 1590 – MAPSS Final Paper (Part 1)

**Content**

As a member of the MAPSS Team, I would like to prepare the Sci-Tech paper and AA Capstone Paper

**Definition of Done**

[ ] Ensure LaTex Document works after any edits

[ ] Add placeholder images

[ ] Add real images

[ ] Edit any changes

[ ] Submit for AA Paper 6/2 11:59pm (contains different requirements)

[ ] Submit for Sci-Tech Paper 6/12 (contains different requirements)

**Notes**

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## 1591 – MAPSS Final Paper (Part 1) (copy)

**Content**

Copy of user story 1590 – MAPSS Final Paper (Part 1)

**Definition of Done**

Copy definition of done from user story 1590 – MAPSS Final Paper (Part 1)

**Notes**

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## 1592 – MAPSS Final Paper (Part 1) (copy)

**Content**

Copy of user story 1590 – MAPSS Final Paper (Part 1)

**Definition of Done**

Copy definition of done from user story 1590 – MAPSS Final Paper (Part 1)

**Notes**

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## 1593 – MAPSS Final Paper (Part 1) (copy)

**Content**

Copy of user story 1590 – MAPSS Final Paper (Part 1)

**Definition of Done**

Copy definition of done from user story 1590 – MAPSS Final Paper (Part 1)

**Notes**

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## 1594 – MAPSS MicaSense Poster Printing for Demo. Flight PR

**Content**

As a member of the MAPSS Team, I would like to prepare a MicaSense Poster for the Demonstration Flight PR

**Definition of Done**

[ ] Prepare and Send MicaSense .svg file to Communications Printing

[ ] Bring poster for PR shots

**Notes**

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## 1595 – MAPSS Flight Test 17\_5\_06

**Content**

As a member of the MAPSS Team, I would like to prepare and participate for the MAPSS Flight Test on May 6th.

**Definition of Done**

[ ] Ensure Flight Readiness & Preparation

[ ] Pack up

[ ] Assist in flight

[ ] Unload

**Notes**

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## 1596 – MAPSS Flight Test 17\_5\_06 (copy)

**Content**

Copy of user story 1595 – MAPSS Flight Test 17\_5\_06

**Definition of Done**

Copy definition of done from user story 1595 – MAPSS Flight Test 17\_5\_06

**Notes**

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## 1597 – MAPSS Flight Test 17\_5\_06 (copy)

**Content**

Copy of user story 1595 – MAPSS Flight Test 17\_5\_06

**Definition of Done**

Copy definition of done from user story 1595 – MAPSS Flight Test 17\_5\_06

**Notes**

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## 1598 – MAPSS Flight Test 17\_5\_06 (copy)

**Content**

Copy of user story 1595 – MAPSS Flight Test 17\_5\_06

**Definition of Done**

Copy definition of done from user story 1595 – MAPSS Flight Test 17\_5\_06

**Notes**

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## 1599 – MAPSS Flight Test 17\_5\_25

**Content**

As a member of the MAPSS Team, I would like to prepare and participate for the MAPSS Flight Test on May 25th.

**Definition of Done**

[ ] Ensure Flight Readiness & Preparation

[ ] Pack up

[ ] Assist in flight

[ ] Unload

**Notes**

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## 1600 – MAPSS Flight Test 17\_5\_25 (copy)

**Content**

Copy of user story 1599 – MAPSS Flight Test 17\_5\_25

**Definition of Done**

Copy definition of done from user story 1599 – MAPSS Flight Test 17\_5\_25

**Notes**

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## 1601 – MAPSS Flight Test 17\_5\_25 (copy)

**Content**

Copy of user story 1599 – MAPSS Flight Test 17\_5\_25

**Definition of Done**

Copy definition of done from user story 1599 – MAPSS Flight Test 17\_5\_25

**Notes**

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## 1602 – MAPSS Flight Test 17\_5\_25 (copy)

**Content**

Copy of user story 1599 – MAPSS Flight Test 17\_5\_25

**Definition of Done**

Copy definition of done from user story 1599 – MAPSS Flight Test 17\_5\_25

**Notes**

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## 1603 – MAPSS Flight Test Analysis

**Content**

As a member of the MAPSS Team, I would like to prepare post flight test data for use in the AA Paper and Sci-Tech Paper

**Definition of Done**

[ ] Gather RedEdge and FLIR Vue Pro R footage

[ ] Gather Vibration Sensor Data

[ ] Perform analysis on both

**Notes**

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## 1604 – MAPSS Electrical System Wiring

**Content**

As a member of the MAPSS Team, I would like to prepare MAPSS as a single electrical system

**Definition of Done**

[ ] Ensure correct voltages and currents flow into the expensive camera payloads

[ ] Solder electrical components

[ ] Pack electrical components withing Dampening plate

**Notes**

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## 1605 – MAPSS Trade Studies Document and Bill of Materials

**Content**

As a member of the MAPSS Team, I would like to prepare a trade studies document for MicaSense viewing

**Definition of Done**

[ ] List all materials considered for MAPSS

[ ] List all materials located on MAPSS

[ ] Weigh all materials located on MAPSS

[ ] Evaluate price per MAPSS

[ ] Compare with Off-The-Shelf Pricing

**Notes**

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## 1606 – MAPSS Technical Drawing

**Content**

As a member of the MAPSS Team, I would like to prepare a trade studies document for MicaSense viewing

**Definition of Done**

[ ] Create Model on Solidworks

[ ] Create Technical Drawing on Solidworks

[ ] Upload to Perforce and into AA Paper and Sci-Tech Paper

**Notes**

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## 1607 – MAPSS Administration and Budget Role Sprint 1705

**Content**

As a member of the MAPSS Team, I would like to ensure completion of MAPSS Capstone Project and ensure funds are used up completely

**Definition of Done**

[ ] Maintain communication within team (eg establish timelines of due dates and deliverables)

[ ] Maintain communication with Industry Mentor and Faculty mentor

[ ] Ensure all funds are used

**Notes**

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## 1608 – MAPSS Technical Drawing

**Content**

As a member of the MAPSS Team, I would like to investigate and repair any vibration sensor issues.

**Definition of Done**

[ ] Repair Vibration sensor for next flight test

**Notes**

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## 1609 – 3D Printing Instruction

**Content**

As an undergraduate with experience in additive manufacturing, I would like to teach others in the lab how to 3D print items used on the sUAS.

**Definition of Done**

[X] Teach Makerbot settings

[X] Introduce users to CoMotion Makerspace

[X] Demonstrate how to place filament into on-campus Flashforges/Makerbot machines (FDM printers)

[X] Set up the machine and explain other various printing tips

[X] Test the part if they fit into the sUAS.

**Notes**

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## 1610 – AIAA Videos for Presentation

**Content**

As an undergraduate researcher, I would like to create media content to add to the AIAA presentation.

**Definition of Done**

[X] Talk with Dr. Lum about scope and desired media

[ ] create Google Earth captures

[ ] Edit videos

[ ] Present to Dr. Lum (i.e. Share on Google Drive)

**Notes**

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## 1611 – 3D Printing Course (Position 1)

**Content**

As an undergraduate researcher, I would like to learn from others in the lab about how to 3D print items used on the sUAS.

**Definition of Done**

[X] Understand Makerbot settings

[X] CoMotion Makerspace Safety Training

[X] Understand how to place filament into on-campus Flashforges/Makerbot machines (FDM printers)

[X] Set up the machine and understand other various printing tips

[X] Test the part if they fit into the sUAS.

**Notes**

* This is the trainee version of 1609

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## 1612 – New Mapping Project Preliminary Development

**Content**

To kick off the New Mapping Project, I need to research past practices as well as avialuble technology to determine the scheme, content and scope of the new mapping project

**Definition of Done**

[X] Research relative information regarding aerial mapping and deep learning

[X] Determine the content and scope of the New Mapping project

[X] Develop an outline about how to implement the project

[X] Develop a timeline for the project.

**Notes**

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## 1613 – New Mapping Project AIAA Paper Abstract Composition and Project Management(Part 1)

**Content**

To produce desired result for the New Mapping Project, I need to compose a abstract of a technical paper to be submitted to AIAA SciTECH before 06/12/2017, and manage members of AFSL working on the project to develop methods necessary to implement the project.

**Definition of Done**

[X] Research relative literatures and find references

[X] Finialize the outline for the abstract

[X] Coordinate with other team members and determine the status of project development

[X] Coordinate with other team members and determine what content to be included in the abstract

[X] Begin composing the abstract(Partially Finished)

**Notes**

* The user story is continued by User Story 1620, “New Mapping Project AIAA Paper Abstract Composition and Project Management(Part 2)”

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## 1614 – Grover Reparation

**Content**

Grover broke during a flight test and needs to be prepared before any work can continue on a swarm control. First the problem that caused Grover to fail has to be found, and then the cause of this problem has to be diagnosed. After finding the motors broke all of the motors were replaced with new functioning motors. Components of grover were also incorrectly installed, likely causing Grover to break in the first place. After figuring out the system we corrected the mistakes.

**Definition of Done**

[X] Grover Properly runs again with no issues

**Notes**

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## 1615 – Swarm Control Research and Ideation

**Content:**

We need to figure out a set method for getting both rovers to run based on the same flight without crashing into one another, and to create a method that can be replicated with both aerial drones and a system of more than two drones.

**Definition of Done**

[X] Set plan for how drones will be controlled and how they will be added to the system

**Notes**

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## 1616 – Mac Perforce guide using cask brewmaster

**Content:**

Perforce stopped supporting mac user downloads on their website, making it very difficult to get perforce for Mac users. The purpose of this is to create a guide for installing perforce and other applications using cask brewmaster

**Definition of Done**

[X] Document Created outlining how to download cask brewmaster and how to use it to download perforce

[X] Test download of perforce using cask brewmaster

[ ] Document uploaded to perforce in a location people will find it.

**Notes**

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## 1617 – Grover Flight Plan

**Content:**

WayPoint plan on mission planner for a grover autonomous test run as a pre-cursor to an autonomous test in pair with TARS

**Definition of Done**

[X] MissionPlanner created and uploaded to perforce in a new folder created for grover flight plans.

**Notes**

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## 1618 – CERES Maintenance and Test Cards

**Content:**

Prepare CERES for test flight by making power switches easily accessible from outside and radio telemetry to be outside aircraft and make test cards to test autonomous flight and also max payload for take off.

**Definition of Done**

[X] Make sure power switches can be operate without having to open the latch.

[X] Put the telemetry dongle on the outside of the aircraft

[X] Create test cards to test max payload and provide weighted sandbags inside orange box.

[X] Make waypoints to be used during test flight.

**Notes**

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## 1619 – New Mapping Project AIAA Paper Abstract Composition and Project Management(Part 2)

**Content**

To produce desired result for the New Mapping Project, I need to compose a abstract of a technical paper to be submitted to AIAA SciTECH before 06/12/2017, and manage members of AFSL working on the project to develop methods necessary to implement the project.

**Definition of Done**

[ ] Finish composing and submit the paper abstract by the above mentioned deadline

[X] Coordinate project development with Dr. Lum and other team members working on the project

**Notes**

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## 1620 – Machine Learning Project Conceptual Development

**Content**

I wish to learn more about machine learning and explore its applications on unmaned aerial systems. To do so, I would like to be involved with AFSL and come up with an project that involves machnie learning and UAS.

**Definition of Done**

[X] Talk to Dr. Christopher Lum about deep learning

[X] Determine a viable project topic that incorporates deep learning with UAS

[X] Investigate past research and current technologies related to the subject

[X] Coordinate with Dr. Lum to initiate the new project

**Notes**

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## 1621 – Canada Operations Research

**Content**

As a lab member, I would like to research the requirements for operating UAS in Canada for both hobbyist and research purposes.

**Definition of Done**

[ ] What are the regulations governing US persons operating drones in Canada

[ ] Does the FAA Part 107 certification carry over?

[ ] What other certifications or legal requirements need to be met?

[ ] What are the Canadian rules governing drone operations?

[ ] Can we bring a drone over the border?

[ ] Any restrictions on bringing LiPo batteries over the border?

**Notes**

* This should be written up in a brief report and added to perforce. Perhaps it can be added as a section to \FlightOperations\Operations\AFSLFlightOperations\AFSLFlightOperationsManual.docx.

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## 1622 – Firmware Upgrade Across Fleet

**Content**

As a lab member, I would like to work on upgrading the aircraft firmware across the fleet.

**Definition of Done**

[ ] Work with Dr. Lum to ensure data analysis script is up to date for ArduPlane 3.7.1

[ ] Work with Tadej Kosel to understand the changes between ArduPlane 3.6.0 and 3.7.1 for fixed wings and if any parameter values need changing

[ ] Update SAM, CERES and HAPRA to ArduPlane 3.7.1

[ ] Document the update on the appropriate flight manuals. Ex. \FlightOperations\UAS\CERES\CERESAircraftFlightManual.docx

[ ] Update Cera and MARV to ArduCopter 3.4.6

[ ] Document the update on the appropriate flight manuals.

[ ] Ensure these parameters are set, or determine better settings:

FS\_BATT\_ENABLE, 2

FS\_THR\_ENABLE, 1

GPS\_RATE\_MS, 50

INS\_STILL\_THRESH, 1 recommended for mulitirotors

LOG\_BACKEND\_TYPE, 3

LOG\_REPLAY, 0

PLND\_ENABLED, 0

**Notes**

* Firware updates can be done directly through mission planner under the Initial Setup tab. See an experienced lab member for assistance with all of this.

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## 1623 – DSLR Focus Problem Investigation

**Content**

As a lab member, I would like to investigate the auto focus problem on the lab’s DSLR camera.

**Definition of Done**

[ ] Try to figure out what the problem with the auto focus is and see if it can be fixed.

**Notes**

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## 1624 – Update Mission Planner on Lab Computers

**Content**

As a lab member, I would like to update Mission Planner on the lab computers.

**Definition of Done**

[ ] Install Mission Planner version 1.3.49 on all of the lab computers

[ ] This should be loaded from: "C:\dev\FlightOperations\UAS\CommonDocuments\MissionPlanner\binaries\_and\_installers"

**Do NOT use the auto download in Mission Planner.**

[ ] Make this the default Mission Planner that opens on all computers when opening from the desktop, start menu, opening tlogs, etc

**Notes**

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## 1625 – Standardize Parameters Across Fixed Wing Fleet

**Content**

As a lab member, I would like to standardize the important parameters across the fleet.

**Definition of Done**

[ ] View the standardized parameters in the Airworthiness Directives section of this document: \FlightOperations\Operations\AFSLFlightOperations\AFSLFlightOperationsManual.docx

[ ] Ensure that all these are set across all of the aircraft in the fleet:

* Anakin
* CERES
* CONDOR
* FUNRA
* HAPRA
* Leia
* SAM

[ ] To do this, you must connect each plane to a computer via mission planner. You can then access the parameters under Config/Tuning tab.

[ ] Save the new parameters under the aircraft’s parameter folder. For example here is Anakin’s: \FlightOperations\UAS\Anakin\SubSystems\Autopilot\

[ ] Naming convention is date, then A for the first new file for the day, B for the second etc

[ ] Update the parameter description file with your changes. For example here is Anakin’s: \FlightOperations\UAS\Anakin\SubSystems\Autopilot\ParameterDescriptions.xlsx

[ ] Turn aircraft on and verify control surfaces function normally.

**Notes**

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**1626 – Flight Ops Administration (1706)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other administrative stuff

**Notes**

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**1627 – Flight Ops Administration (1707)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other administrative stuff

**Notes**

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**1628 – Pixhawk 2 Testing**

**Content**

As a lab member, I would like to test out the new Pixhawk 2.

**Definition of Done**

[ ] Create a temporary HiL (hardware in the loop) unit to verify functionality of board and components

[ ] Play with it to make sure you understand how it works and anything else we need to know before implementing it on an aircraft

[ ] Document any important points

[ ] Decide what airframe it should be installed on

**Notes**

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**1629 – Investigate Irrecoverable 45˚ Descents & Crashes**

**Content**

As a lab member, I would like to investigate what could cause and prevent the deadly 45 degree pitch descents and inevitable crashes.

**Definition of Done**

[ ] Dig around on forums to see if other people have had similar problems, specifically,

* Aircraft enters approximately a 45 degree descent triggered by various problems. Some include:
  + Momentary loss of RC receiver error
  + High vibrations
  + Switching to buddy box mode
* Once it enters this condition, all control is lost. Switching between modes and commanding roll and/or pitch does not seem to affect anything, even though the Pixhawk registers and outputs these commands.

[ ] Do other relevant research as necessary to investigate how we can recover from these situations in the future. Generally we only have a couple seconds to react and pull up.

**Notes**

* It’s as if the servos lock up and don’t allow any control even though they are being sent commands to move them
* Is it possible that aerodynamically the aircraft can’t recover from this condition?

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**1630 – Battery Soldering**

**Content**

As a lab member, I would like to solder new battery connectors.

**Definition of Done**

[ ] Solder XT60 connector to the batteries that don’t have them, and the one that it came apart. See Hannah Rotta for batteries.

**Notes**

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## 1631 – Perforce Visual Client (copy)

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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**1632 – Public Relations Prep**

**Content**

As a lab member, I would like to get our lab, our equipment and our people camera ready.

**Definition of Done**

[ ] Put decals, stickers, logos, etc. on aircraft and vehicles

[ ] Clean/tidy up the lab (feel free to recruit helpers)

[ ] Figure out shirts or a uniform we can wear at flight tests and other external events (design and procure new shirts, Engineering Discovery Days shirts, something else?)

[ ] Ensure that the AFSL branded lab coats are ironed (or at least not wrinkly) and ready to go

[ ] Ensure our webpage is up to date, specifically the press kit and publications section. –Work with Karine Chen and/or Hannah Rotta on this

[ ] Look on the K drive to pinpoint some nice publicity photos. Determine the best way to make these photos available to external parties (perhaps the best way to start would be to make a publicity photos folder on the K drive)

**Notes**

* We have the opportunity to be featured in a non-fiction children’s book about UAS and we need to put our best foot forward. The first lab visit is scheduled for June 27th, so everything lab related should be completed by then. They writers/publishers might also visit during one or more flight tests.

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**1633 – Clean Air Vent**

**Content**

As a lab member, I would like to clean the air vent in the lab.

**Definition of Done**

[ ] Take a wet paper towel and wipe the dust/dirt off of the air vent in the lab by the door.

**Notes**

* It looks gross right now. Thanks.

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**1634 – Pix4D Familiarization**

**Content**

As a lab member, I would like to familizarize myself with Pix4D to support the wildfire mapping project.

**Definition of Done**

[ ] Look at necessary visual data from the 17/03/23 bainbridge island mission

[ ] Use Pix4D to generate a 3D map of the surveyed area and replicate the movie that Dr. Lum made using this data

**Notes**

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## 1635 – Flight Training Program – Fixed Wing (Copy)

**Content**

Copy of user story 1127 – Flight Training Program

**Definition of Done**

Copy definition of done from user story 1127 – Flight Training Program

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**1636 – New Swarm Research Ground Vehicle (copy)**

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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**1637 – Repair GROVER (copy)**

**Content**

Copy definition of done from user story **Error! Reference source not found.**

As a lab member, I would like to repair GROVER so that it is fully functional.

**Definition of Done**

[ ] Fix the wheel that falls off

[ ] Address the FPV servo – does it need fixing or replacing?

[ ] Make sure it can follow an auto path flawlessly and is ready to use for swarm research

[ ] Document Fixes at

\FlightOperations\UAS\GROVER\ConstructionAndMaintenenceLog.docx

**Notes**

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**1638 – Luke Rebuild (copy)**

**Content**

Copy of user story 1511 – Luke Rebuild

**Definition of Done**

Copy definition of done from user story 1511 – Luke Rebuild

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## 1639 – Flight Training Program – Fixed Wing (Copy)

**Content**

Copy of user story 1272 – Flight Training Program

**Definition of Done**

Copy definition of done from user story 1272 – Flight Training Program

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## 1640 – Flight Training Program – Multi-Rotor (Copy)

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

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**1641 – Part 107 Test Preparation (copy)**

**Content**

As a researcher, I would like to prepare for and take the FAA Part 107 Commercial Remote Pilot Certification test.

**Definition of Done**

[ ] Take the online course offered by the FAA

[ ] Take the three practice tests on the network drive

[ ] Study all topics identified as weak when taking practice tests

[ ] Take the part 107 test

[ ] Do the paperwork to get the license from the FAA

[ ] Do the paperwork to get reimbursed for test

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**1642 – Grover Repairs 2**

**Content**

Grover recently broke, smoke started coming out of the ESC’s. We are going to investigate the problem and attempt to repair Grover in such a way it will not break again.

**Definition of Done**

[ ] Find out what broke in Grover

[ ] Find out why Grover broke

[ ] Fix Grover so that it won’t break again

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**1643 – New Swarm Research Ground Vehicle (copy)**

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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**1644 – Grover Repairs 2 (Copy)**

**Content**

Grover recently broke, smoke started coming out of the ESC’s. We are going to investigate the problem and attempt to repair Grover in such a way it will not break again.

**Definition of Done**

[ ] Find out what broke in Grover

[ ] Find out why Grover broke

[ ] Fix Grover so that it won’t break again

**1645 – Luke Rebuild (copy)**

**Content**

Copy of user story 1511 – Luke Rebuild

**Definition of Done**

Copy definition of done from user story 1511 – Luke Rebuild

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**1646 – Luke Rebuild (copy)**

**Content**

Copy of user story 1511 – Luke Rebuild

**Definition of Done**

Copy definition of done from user story 1511 – Luke Rebuild

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**1647 – Luke Rebuild (copy)**

**Content**

Copy of user story 1511 – Luke Rebuild

**Definition of Done**

Copy definition of done from user story 1511 – Luke Rebuild

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## 1648 – Firmware Upgrade Across Fleet (copy)

**Content**

As a lab member, I would like to work on upgrading the aircraft firmware across the fleet.

**Definition of Done**

[ ] Work with Dr. Lum to ensure data analysis script is up to date for ArduPlane 3.7.1

[ ] Work with Tadej Kosel to understand the changes between ArduPlane 3.6.0 and 3.7.1 for fixed wings and if any parameter values need changing

[ ] Update SAM, CERES and HAPRA to ArduPlane 3.7.1

[ ] Document the update on the appropriate flight manuals. Ex. \FlightOperations\UAS\CERES\CERESAircraftFlightManual.docx

[ ] Update Cera and MARV to ArduCopter 3.4.6

[ ] Document the update on the appropriate flight manuals.

[ ] Ensure these parameters are set, or determine better settings:

FS\_BATT\_ENABLE, 2

FS\_THR\_ENABLE, 1

GPS\_RATE\_MS, 50

INS\_STILL\_THRESH, 1 recommended for mulitirotors

LOG\_BACKEND\_TYPE, 3

LOG\_REPLAY, 0

PLND\_ENABLED, 0

**Notes**

* Firware updates can be done directly through mission planner under the Initial Setup tab. See an experienced lab member for assistance with all of this.

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## 1649 – Firmware Upgrade Across Fleet (copy)

**Content**

As a lab member, I would like to work on upgrading the aircraft firmware across the fleet.

**Definition of Done**

[ ] Work with Dr. Lum to ensure data analysis script is up to date for ArduPlane 3.7.1

[ ] Work with Tadej Kosel to understand the changes between ArduPlane 3.6.0 and 3.7.1 for fixed wings and if any parameter values need changing

[ ] Update SAM, CERES and HAPRA to ArduPlane 3.7.1

[ ] Document the update on the appropriate flight manuals. Ex. \FlightOperations\UAS\CERES\CERESAircraftFlightManual.docx

[ ] Update Cera and MARV to ArduCopter 3.4.6

[ ] Document the update on the appropriate flight manuals.

[ ] Ensure these parameters are set, or determine better settings:

FS\_BATT\_ENABLE, 2

FS\_THR\_ENABLE, 1

GPS\_RATE\_MS, 50

INS\_STILL\_THRESH, 1 recommended for mulitirotors

LOG\_BACKEND\_TYPE, 3

LOG\_REPLAY, 0

PLND\_ENABLED, 0

**Notes**

* Firware updates can be done directly through mission planner under the Initial Setup tab. See an experienced lab member for assistance with all of this.

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## 1650 – Perforce Visual Client (copy)

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 1651 – ARGO Battery Monitor Upgrade

**Content**

As a lab member, I would like to construct a new battery monitor that can handle 6S batteries and provide current readings

**Definition of Done**

[x] Research battery monitors that can handle 180A and be wired inline with battery

[x] Solder wires and connectors to the battery monitor

[x] Solder the attopilot data wires to the power df13 cable

[x] make sure that the 3dr power module is still providing regulated power

[x] make sure the 3dr power module isn’t getting overloaded form argos PDU

[x] test with props off

[] cover with heat shrink tubing

**Notes**

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## 1652 – CERA fixes

**Content**

As a lab member, I would like to fix CERA’s yaw servo and other maintence items

**Definition of Done**

[x] rebuild yaw servo assembly

[x] fix motor mounts on the other motors

[x] clean up wiring

[x] add GPS mast

[x] reflash PX4 firmware and calibrate sensors

[x] bind receiver

[x] resolder telemetry radio wires (one was cut)

[x] test with props off and props on to ensure proper yaw servo response

[] go fly!

**Notes**

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## 1653 – INEXA Flight Test

**Content**

As a lab member, I would like to successfully perform a 3dr solo flight autonomously using the INEXA control software

**Definition of Done**

[x] get familiar with the software

[x] download terrain data

[x] plan waypoints

[] go to carnation and fly it

**Notes**

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## 1654 – Flight Operations Data Archival and MATLAB License Update

**Content**

As a lab member, I would like to archive flight test data gathered during flight operations. I would also like to teach a new lab member how to archive data.

**Definition of Done**

[x] Download all data flast and telemetry logs for each plane’s flight

[x] Clear the pixhawk after confirming data transfer

[x] Archive in the same file structure as seen on the AFSLSharedDrive

[x] Get permission and upload file structures into the AFSLSharedDrive

[x] Teach new members all of the previous steps

[x] Demonstrate how to run and edit robocopy and the Main\_data\_analysis matlab script

[x] Update MATLAB liscences for all of the lab computers

**Notes**

* Data Archived for Flight Operations on 6/24/17 and 6/17/17

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## 1655 – Learning Flight Operations Data Archival

**Content**

As a lab member, I would like to archive flight test data gathered during flight operations. I would also like to teach a new lab member how to archive data.

**Definition of Done**

Understand how to:

[x] Download all data flash and telemetry logs for each plane’s flight

[x] Clear the pixhawk after confirming data transfer

[x] Archive in the same file structure as seen on the AFSLSharedDrive

[x] Get permission and upload file structures into the AFSLSharedDrive

[x] Run/edit robocopy and main\_data\_analysis MATLAB script

**Notes**

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## 1656 – Leia Rebuild

**Content**

As a lab member, I would like to rebuild Leia.

**Definition of Done**

[ ] Analyze damage and repair

[ ] Rebuild stryofoam airframe

[ ] Complete hardware reintegration

[ ] Complete software integration, including Pixhawk calibration

[ ] Record all changes on Leia’s construction and maintenance log

\FlightOperations\UAS\Leia\Construction and Maintenance Log.docx

[ ] Make a test card for Leia’s first flight back in action

**Notes:**

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## 1657 – Leia Rebuild (copy)

**Content**

Copy of user story 1656 – Leia Rebuild.

**Definition of Done**

Copy definition of done from user story 1656 – Leia Rebuild.

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## 1658 – Dust Off TRAPIS Software

**Content**

As a lab member, I would like to run the old TRAPIS software.

**Definition of Done**

[ ] Break out the old TRAPIS software/code and make sure it still runs

[ ] Get comfortable with how it runs and what it does

**Notes:**

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## 1659 – Dust Off TRAPIS Hardware

**Content**

As a lab member, I would like to run the old TRAPIS hardware.

**Definition of Done**

[ ] Break out the old TRAPIS hardware (ADS-B equipment and transponder)

[ ] Get comfortable with how it works

[ ] Integrate it onto an airframe

[ ] Write a test card to flight test it

[ ] Verify it works in the air

**Notes:**

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## 1660 – Setup FPV on Multirotor

**Content**

As a lab member, I would like to setup and test FPV on either MARV or Cera.

**Definition of Done**

[ ] MARV already has an associated FPV camera (perhaps in the MARV box) – remount this back on either MARV or Cera

[ ] Flight test it to verify it works

**Notes:**

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## 1661 – Optimize Flight Test Videoing

**Content**

As a lab member, I would like to find a better way to do the videoing during flight tests. Right now, it is too hard to see the airplane in the sky and keep the video camera focused on it during the whole flight.

**Definition of Done**

[ ] Figure out a way to make it easier to keep the aircraft within view throughout each flight. The could be but is not limited to:

* Make some sort of sun shade so it’s easier to see the screen
* Add an external monitor (the FPV screens?)
* Is there a better tripod?
* Is there a specific technique that might make it easier?

**Notes:**

* It is difficult, but important to try to video all flights in case something goes wrong

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## 1662 – Set Up Simulator

**Content**

As a lab member, I would like to set up the x-plane simulator in the lab.

**Definition of Done**

[ ] Collect all the components (yoke, pedals, etc) from the wind tunnel deep storage

[ ] Setup sim on a lab computer and verify operation

**Notes:**

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## 1663 – QGIS Familiarization

**Content**

As a lab member, I would like to familiarize myself with QGIS mapping software in an effort to support the wildfire mapping project

**Definition of Done**

[ ] Learn how to load vector/raster data and digital surface models into QGIS

[ ] Explore the capabilities of manipulating DSM’s, extracting data from them, and making measurements – Utilize GRASS plug-in

[ ] Look into compatibility with MATLAB to make engineering calculations

**Notes:**

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## 1664 – CASE Set-up and Waypoints test

**Content**

As a lab member, I would like to set up ground vehicle, CASE, with Pixhawks and test its autonomous mode (waypoints)

**Definition of Done**

[ ] Instal Pixhawks and necessary components to make it run.

[ ] Able to run successful autonomous mode (with waypoints) with mission planner.

**Notes:**

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## 1665 – CASE Set-up and Waypoints test (copy)

**Content**

Copy of user story 1664 – CASE Set-up and Waypoints test

**Definition of Done**

Copy definition of done from user story 1664 – CASE Set-up and Waypoints test

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## 1666 – CASE Set-up and Waypoints test (copy)

**Content**

Copy of user story 1664 – CASE Set-up and Waypoints test

**Definition of Done**

Copy definition of done from user story 1664 – CASE Set-up and Waypoints test

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## 1667– CASE Set-up and Waypoints test (copy)

**Content**

Copy of user story 1664 – CASE Set-up and Waypoints test

**Definition of Done**

Copy definition of done from user story 1664 – CASE Set-up and Waypoints test

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## 1668 – CASE Set-up and Waypoints test (copy)

**Content**

Copy of user story 1664 – CASE Set-up and Waypoints test

**Definition of Done**

Copy definition of done from user story 1664 – CASE Set-up and Waypoints test

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## 1669 – Social Media Updates (copy) – JUL ‘17

**Content**

As a lab member, I would like to update the activities of the lab for publicity on the AFSL website, Facebook, and YouTube pages.

**Definition of Done**

[ ] Consult with Chris Lum on the activity’s description and prospective posting photos/videos.

[ ] Frequently post profiles of lab members and their specific involvement in the lab on Facebook.

For every post-flight test:

[ ] Upload selected videos from the flight test onto YouTube.

[ ] Update the video description (follow the template on YouTube)

[ ] Make sure each video tag includes: university of washington autonomous flight systems laboratory uw afsl test (schoolyear e.g. 20162017) (date e.g. 20161119) (location e.g. meadowbrooke farm) (UAS e.g. tedd) run (run# e.g. 001) (title)

[ ] everything is in lowercase

[ ] every word has a space in between

[ ] exclude all the parenthesis

[ ] Make sure the uploaded videos are included in their perspective playlists (it is possible for each video to be in more than one playlist)

[ ] Share the videos uploaded onto YouTube on Facebook.

[ ] Upload selected photos from the flight test onto Facebook.

[ ] Confirm that the photos and videos from each flight test are uploaded onto K drive.

Flight Test:

[x] 20170707 @ Carnation

[x] 20170713 @ Carnation

[x] 20170721 @ Carnation

[x] 20170725 @ Carnation

[x] 20170728 @ Carnation

[x] Include every additional Flight Test from this quarter here…

[x] At the end of the month, please make a new copy user story 1082 – Social Media Updates for the next quarter.

**Notes**

* This is a quarter long commitment, please only pick it up if you can make the time.
* Every flight test for the quarter is to be included under Flight Test.
* Every video and photo needs to be in its best quality, meaning the videos are to be trimmed, and photos to be cropped if deemed necessary.
* Uploaded videos are automatically distributed into its perspective playlists if tagged correctly.
* Uploaded videos will automatically be shared through Twitter.
* Q&A about video tag: “school year (e.g. 20162017)” is considered from first day of summer courses of that year to the day before the first day of summer courses for the following year.

## 1670 – AFSL Website Updates (People Section) (copy)

**Content**

Copy of user story 495 – AFSL Website Updates (People Section)

As a marketing agent, I would like to update the AFSL website “People” section with new information so I can publicize our activities.

**Definition of Done**

[ ] Coordinate with Chris Lum before starting this user story.

[ ] Update the “People” section

[ ] Obtain photos and short bios of all active members

[ ] Remove all inactive members to past researchers section

[ ] Determine where old members are now and update/highlight success stories

[ ] Review all materials with Chris Lum

[ ] Send mock ups to Kevin Ward.

[ ] Ensure that changes are made and correct on the final website.

[ ] When the user story is coming to 100% completion, please make a new copy user story 495 – AFSL Website Updates (People Section) for the next quarter/year.

**Notes**

* All website material is located in [\\AFSL\WebsiteInfo](file:///\\AFSL\WebsiteInfo)
* Coordinate with development champion for user story ‘**Error! Reference source not found.**’ (the parent user story for this current story) only if this is part of a large update.
* **This is the original UserStory [Read-Only], please make a copy of this for every quarter or year it is to be updated instead. Delete this note in the new copy.**

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## 1671 – VTOL/QuadPlane (copy)

**Content**

Copy of user story **Error! Reference source not found.Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

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## 1672 – VTOL/QuadPlane (copy)

**Content**

Copy of user story **Error! Reference source not found.Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

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## 1673 – MATLAB Analysis of DSMs (copy)

**Content**

Copy of user story 816-MATLAB Analysis of DSMs**Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story 816-MATLAB Analysis of DSMs

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## 1674 – Leia Rebuild (copy)

**Content**

Copy of user story 1656 – Leia Rebuild.

**Definition of Done**

Copy definition of done from user story 1656 – Leia Rebuild.

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## 1675 – Perforce Visual Client (copy)

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 1676 – JCATI2016 Timestamp Analysis for Database

**Content**

As a lab member I would like to determine the offset between the time stamp on the data flash logs and the SDR paket data so that we can use the time stamps as a method of relating these data sets for the database.

**Definition of Done**

[ ] Become familiar with the data flash log structure

[ ] Become familiar with the SDR packet data structure

[ ] Become familiar with the flight logs and how these fit into the JCATI data logging process

[ ] Within the flash logs, determine the data that corresponds to each waypoint

[ ] Compare the flash log time stamps to the SDR data and determine if there is a constant offset between these times

[ ] Report findings to Abhinav Jadon and Hannah Rotta so that this can be utilized for creating the public database

**Notes**

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## 1677 – Leia Rebuild (copy)

**Content**

Copy of user story 1656 – Leia Rebuild.

**Definition of Done**

Copy definition of done from user story 1656 – Leia Rebuild.

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**1678 – Visual Anchoring Journal Artice**

**Content**

As a lab member I would like to create a draft of the visual anchoring joural article by the internal review due date

**Definition of Done**

[ ] Create draft of journal article and update information to reflect current project

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## 1679 – Leia Rebuild (copy)

**Content**

Copy of user story 1656 – Leia Rebuild.

**Definition of Done**

Copy definition of done from user story 1656 – Leia Rebuild.

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## 1680 – Familarize with Raspberry Pi and Pixhawk

**Content**

As a lab member I would like to familiarize myself with Raspberry Pi and Pixhawk by being able to connect RPi to Pixhawk system and command Pixhawk with command-line interface in computer through RPi

**Definition of Done**

[ ] Able to ssh to RPi

[ ] Install required python libraries (eg. numpy, DroneKit, DroneKit-sitl etc.) and MavProxy

[ ] Understand basic usage of MavProxy

[ ] Able to change params or arm/disarm throttle via command-line interface.

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## 1681 – Control pixhawk via basic python script using SITL

**Content**

As a lab member I would like to write basic python script to simulate Pixhawk using MavProxy, DroneKit, and DroneKit-sitl libraries to check params, arm vehicle, takeoff to an altitude, head to a waypoint (by giving GPS coordinate), land, and disarm. Test the code with SITL and connect it to Mission Planner

**Definition of Done**

[ ] Understand how to write python script using DroneKit and DroneKit-sitl libraries

[ ] Write a python script for simulation of takeoff, head to waypoint, land.

[ ] Able to connect SITL to Mission Planner to monitor behavior of the vehicle

[ ] Successfully run the script and view vehicle behavior in Mission Planner

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## 1682 – Leia Rebuild (copy)

**Content**

Copy of user story 1656 – Leia Rebuild.

**Definition of Done**

Copy definition of done from user story 1656 – Leia Rebuild.

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## 1683 – Familarize with Raspberry Pi and Pixhawk (copy)

**Content**

Copy of user story [1680 – Familarize with Raspberry Pi and Pixhawk](#_1680_–_Familarize)

**Definition of Done**

Copy definition of done from user story [1680 – Familarize with Raspberry Pi and Pixhawk](#_1680_–_Familarize)

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## 1684 – Familarize with Raspberry Pi and Pixhawk (copy)

**Content**

Copy of user story [1680 – Familarize with Raspberry Pi and Pixhawk](#_1680_–_Familarize)

**Definition of Done**

Copy definition of done from user story [1680 – Familarize with Raspberry Pi and Pixhawk](#_1680_–_Familarize)

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## 1685 – Familarize with Raspberry Pi and Pixhawk (copy)

**Content**

Copy of user story [1680 – Familarize with Raspberry Pi and Pixhawk](#_1680_–_Familarize)

**Definition of Done**

Copy definition of done from user story [1680 – Familarize with Raspberry Pi and Pixhawk](#_1680_–_Familarize)

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## 1686 – Control pixhawk via basic python script using SITL (copy)

**Content**

Copy of user story [1681 – Control pixhawk via basic python script using SITL](#_1681_–_Control)

**Definition of Done**

Copy definition of done from user story [1681 – Control pixhawk via basic python script using SITL](#_1681_–_Control)

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## 1687 – Control pixhawk via basic python script using SITL (copy)

**Content**

Copy of user story [1681 – Control pixhawk via basic python script using SITL](#_1681_–_Control)

**Definition of Done**

Copy definition of done from user story [1681 – Control pixhawk via basic python script using SITL](#_1681_–_Control)

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## 1688 – Control pixhawk via basic python script using SITL (copy)

**Content**

Copy of user story [1681 – Control pixhawk via basic python script using SITL](#_1681_–_Control)

**Definition of Done**

Copy definition of done from user story [1681 – Control pixhawk via basic python script using SITL](#_1681_–_Control)

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## 1689 – Sorting equipments from Leia, Luke, Case, Tars, and Grover (copy)

**Content**

As a lab member I would like to track equipment number on the following UAVs and enter it in the equipment tracking excel and label any part that is not labelled.

**Definition of Done**

[ ] Label or relabel every part in those UAVs

[ ] Enter part number and information about the part (previous airframe, new airframe etc) into ComponentTracker.xlsx

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## 1690 – Sorting equipments from Leia, Luke, Case, Tars, and Grover (copy)

**Content**

Copy of user story [1689 – Sorting equipments from Leia, Luke, Case, Tars, and Grover (copy)](#_1689_–_Sorting)

**Definition of Done**

Copy definition of done from user story [1689 – Sorting equipments from Leia, Luke, Case, Tars, and Grover (copy)](#_1689_–_Sorting_1)

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## 1691 – Anakin Upgrades

**Content**

As a lab member I would like to work on Anakin’s construction and maintenance log.

**Definition of Done**

[ ] Work through the maintenance to-do items on the construction and maintenance log for Anakin, located here: \FlightOperations\UAS\Anakin\ConstructionAndMaintenenceLog.docx

**Notes**

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## 1692 – Sort RC Parts Medium

**Content**

As a lab member I would like to sort through RC Parts Medium. Specifically I would like to sort the huge, ugly mass of wires.

**Definition of Done**

[ ] Sort through all the components in the box to better organize it

[ ] Sort through the wires and determine which ones work with which components

[ ] Remove any wires that are useless

**Notes**

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## 1693 – Matlab Script for Reference Propeller Data

**Content**

As a lab member I would like to write a matlab script that will allow us to interpolate eta values based on data from the UIUC Propeller Database.

**Definition of Done**

[ ] Import necessary data into matlab

[ ] Matlab script should be able to return an eta value given the following inputs: Model, Dimension, RPM Value, and J Value

[ ] Script should allow user to roughly reproduce plots provided in the scientific paper

**Notes**

## 1694 – Mission Planner control panel

**Content**

As a lab member I would like to build a hardware control panel for mission planner that allows for arming, changing flight modes, and flexibility for additional features.

**Definition of Done**

[ ] Research feasibility

[ ] Choose a microcontroller

[ ] Write python scripts to interface with microcontroller over serial

[ ] Drill press holes for the buttons

[ ] Sodler the buttons to the perf board

[ ] Test and verify functionality

**Notes**

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## 1695 – CASE Set-up and Waypoints test (copy)

**Content**

Copy of user story 1664 – CASE Set-up and Waypoints test

**Definition of Done**

Copy definition of done from user story 1664 – CASE Set-up and Waypoints test

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## 1696 – Eachine TX03 FPV Camera Setup

**Content**

As a lab member I would like to successfully use and setup the Eachine TX03 camera so that it can be used with other UAS.

**Definition of Done**

[X] Research and understand controls/how to setup camera

[ ] Find/use a compatible battery for the camera

[ ] Transmit the camera’s signal to a receiver which will display the video feed to a monitor

[ ] Test functionality during a flight test (Attach to a UAS and see video feed)

[ ] Create document thoroughly describing how to use/setup the camera

[ ] Find a place for the camera and its wires/equipment to stay for easy access in the future

**Notes**

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**1697 – Implement Orbit Controllers in ArduPlane 3.8.0**

**Content**

As a member of the Visual Anchoring Team, I would like to implement the Visual Anchoring orbit controllers in ArduPlane 3.8.0

**Definition of Done**

[ ] Implement orbit controllers in 3.8.0

[ ] Simulate custom 3.8.0 ArduPlane version in JSBSIM

[ ] Validate UW Mode 2 in JSBSIM

**Notes**

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## 1698 – Carnation Flight Test

**Content**

I will participate in the testing of UW mode 2 and 3 and the visual anchoring system.

**Definition of Done**

[ ] Participate in the Carnation Flight Test on Aug 4th, 2017.

**Notes**

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## 1699 – Telemetry Radio Pairing

**Content**

As a lab member, I would like to investigate 915 MHz telemetry radio pairing.

**Definition of Done**

[ ] Look at this document to learn how to configure the radio IDs: \FlightOperations\UAS\CommonDocuments\TelemetryRadios\TelemetryRadioNotes.docx

[ ] Determine a concept of operations: how would we implement radio pairing in the lab reasonably?

[ ] Do we need to buy a second set of radios?

[ ] Is there an easier way to implement this?

[ ] Assign unique IDs to vehicle radios so we can operate mulitiple vehicles at the same time

[ ] Update \\FlightOperations\UAS\CommonDocuments\TelemetryRadios\TelemetryRadioNotes.docx  document to track radio IDs of various systems.

[ ] Update \FlightOperations\Operations\AFSLFlightOperations\AFSLFlightOperationsManual.docx to reflect the new radio procedures

[ ] Present the new system to the group so that everyone knows how to use it

**Notes:**

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## 1700 – Aircraft Firmware Upgrades

**Content**

As a lab member, I would like to upgrade our ArduPlane software across the fleet to 3.8.0.

**Definition of Done**

[x] Research what has changed between the firmware we are using and the newer versions by reading online release notes and documentation for ArduPilot

[x] Ensure the program files have been saved to \FlightOperations\UAS\CommonDocuments\MissionPlanner\binaries\_and\_installers\firmware\

[ ] Also ensure that the firmware we are using for the copters and rovers are saved on perforce

[x] Compare how the parameters change between one of the parameters on 3.8.0 and the earlier versions. You can use Perforce’s “Diff Against” feature to do this.

[x] Determine if any of the parameters need adjusting to be functional

[ ] Document these in the Airworthiness Directives section under Parameter Standardizations of this document: \FlightOperations\Operations\AFSLFlightOperations\AFSLFlightOperationsManual.docx

[x] Write a few test cards so that we can do a few shakedown flight tests to ensure everything operates normally and safely before rolling this out on all of our systems.

[x] Collect data flash and tlog data from the new firmware. Ensure that these files are consumable by the UWMatlab software (in other words, generate test data and run \\FlightOperations\Operations\Missions\MASTER\DataAnalysis\MAIN\_data\_analysis.m )

[ ] Upgrade firmware on all fixed wing aircraft.

[ ] Save new parameter files per user story instructions.

[ ] Ensure that user story has been completed, reflecting all of the parameter standardizations listed in the AFSL flight ops manual.

[ ] Check if Pixhawk Minis are supported with new Mission Planner

[ ] Look it up

[ ] Try connecting to Cera

**Notes:**

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## 1701 – Carnation Flight Test AMFAV July

**Content**

I will participate in the flight test for the AMFAV project in July.

**Definition of Done**

[ ] Participate in the Carnation Flight Test on Jul 7th, Jul 24th 2017.

**Notes**

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## 1702 – AMFAV Commissioned Project Development July

**Content**

I will work im coordiance with Dr. Ronan Paugam and Jim Cronan to perform data analysis and develop algorithms .

**Definition of Done**

[ ] Perform data analysis and develop algorithm per instructions provided by Dr. Ronan Paugam and Jim Cronan.

**Notes**

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## 1702 – AIAA SciTech Mapping Paper Composition July

**Content**

I will continue working on relevant fields regarding the mapping project and further composition of the paper for AIAA SciTech Conference

**Definition of Done**

[ ] Integrate PCL into UWCpp

[ ] Investigate Mechine Learning implementations

[ ] Determine targeted testing environment

[ ] Determine desiered rendering tool

**Notes**

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## 1703 – Creating CASE Wheels

**Content**

As a lab member I would like to design and create (3D print) a set of wheels to add onto the CASE rover that help with traction in thick/long grass.

**Definition of Done**

[ ] Design CASE Wheels in 3D Modeling Software (Solidworks)

[ ] 3D Print CASE Wheels

[ ] Attach to CASE

[ ] Test functionality and durability

**Notes**

* These are in addition to the wheels already on CASE.

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**1704 – LiDAR Procurement (copy)**

**Content**

As a lab member, I would like to move forward with with the LiDAR sensor procurement.

**Definition of Done**

[x] Work with relevant department faculty & staff to put in an order for the LiDAR puck

[x] Coordinate with STF team

**Notes**

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**1705 – LiDAR Equipment Box Procurement**

**Content**

As a lab member, I would like to move forward with the LiDAR equipment box procurement.

**Definition of Done**

[x] Work with relevant department faculty & staff to put in an order for the LiDAR equipment box.

[x] Coordinate with STF team

**Notes**

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## 1706 – Social Media Updates (copy) – AUG ‘17

**Content**

As a lab member, I would like to update the activities of the lab for publicity on the AFSL website, Facebook, and YouTube pages.

**Definition of Done**

[x] Consult with Chris Lum on the activity’s description and prospective posting photos/videos.

[x] Frequently post profiles of lab members and their specific involvement in the lab on Facebook.

For every post-flight test:

[x] Upload selected videos from the flight test onto YouTube.

[x] Update the video description (follow the template on YouTube)

[x] Make sure each video tag includes: university of washington autonomous flight systems laboratory uw afsl test (schoolyear e.g. 20162017) (date e.g. 20161119) (location e.g. meadowbrooke farm) (UAS e.g. tedd) run (run# e.g. 001) (title)

[x] everything is in lowercase

[x] every word has a space in between

[x] exclude all the parenthesis

[x] Make sure the uploaded videos are included in their perspective playlists (it is possible for each video to be in more than one playlist)

[x] Share the videos uploaded onto YouTube on Facebook.

[x] Upload selected photos from the flight test onto Facebook.

[x] Confirm that the photos and videos from each flight test are uploaded onto K drive.

Flight Test:

[x] 20170804 @ Carnation

[x] 20170810 @ Carnation

[x] 20170811 @ Carnation

[x] 20170828 @ Carnation

[x] At the end of the quarter, please make a new copy user story 1082 – Social Media Updates for the next quarter.

**Notes**

* This is a quarter long commitment, please only pick it up if you can make the time.
* Every flight test for the quarter is to be included under Flight Test.
* Every video and photo needs to be in its best quality, meaning the videos are to be trimmed, and photos to be cropped if deemed necessary.
* Uploaded videos are automatically distributed into its perspective playlists if tagged correctly.
* Uploaded videos will automatically be shared through Twitter.
* Q&A about video tag: “school year (e.g. 20162017)” is considered from first day of summer courses of that year to the day before the first day of summer courses for the following year.

## 1707 – LiDAR Unboxing and Integration

**Content**

As a lab member, I would like to move forward with unboxing and integrating the procured LiDAR equipment.

**Definition of Done**

[x] See Karine before starting this task.

[x] DO NOT TOUCH THE BLACK PART!!

[x] Watch the unboxing and integration video.

[x] Follow the steps in the video.

**Notes**

* DO NOT TOUCH THE BLACK PART!!

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## 1708 – Plum Airworthiness

**Content**

As a lab member, I would like to ensure that Plum is airworthy so that AA198 can use it by early September.

**Definition of Done**

[ ] Complete To-Do items: \FlightOperations\UAS\Plum\ConstructionAndMaintenenceLog.docx

[ ] Ensure everthing else on it is fully functional

**Notes**

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## 1709 – Excelsior Airworthiness

**Content**

As a lab member, I would like to ensure that Excelsior is airworthy.

**Definition of Done**

[ ] Complete To-Do items: \FlightOperations\UAS\Excelsior\ExcelsiorConstructionAndMaintenenceLog.docx

[ ] Ensure everything else on it is fully functional

**Notes**

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## 1710 – Learning Python Basics

**Content**

As a lab member, I would like to learn basic Python syntax and concepts.

**Definition of Done**

[ ] Complete DataCamp’s “Intro to Python for Data Science” : <https://www.datacamp.com/courses>

[ ] Understand how to install Python packages

[ ] Install the NumPy packages for practice

**Notes**

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## 1711 – MissionPlanner Simulation Setup

**Content**

As a lab member, I would like to setup a simulator for ardupilot on my personal PC.

**Definition of Done**

[ ] Follow and complete the instructions on ardupilot’s website: <http://ardupilot.org/dev/docs/sitl-native-on-windows.html>

[ ] Run a simulation of a Fixed Wing aircraft using the following website: <http://ardupilot.org/dev/docs/plane-sitlmavproxy-tutorial.html>

[ ] Add UW Custom Modes to your flight mode options in MissionPlanner

* Open the *ParameterMetaDataBackup.xml*
* Search for (CRTL F) *FlightMode1*
* In that sections, for FlightMode1-6, add the following to the <Values> (right before <\Values>)

,22:UW\_M\_1,23:UW\_M\_2,24:UW\_M\_3,25:UW\_M\_4

**Notes**

* When installing Cygwin packages, make sure name AND description matches.
* If you miss something when installing Cygwin packages, just re-run the setup file to add/change packages.
* Get the most recent versions of the packages
* If you can’t see all the buttons in Mission Planner, go to Config/Tuning, Planner, and switch the basic option to *Advanced*.

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## 1712 – AMFAV Commissioned Project Development August

**Content**

I will work im coordiance with Dr. Ronan Paugam and Jim Cronan to perform data analysis and develop algorithms .

**Definition of Done**

[ ] Perform data analysis and develop algorithm per instructions provided by Dr. Ronan Paugam and Jim Cronan.

**Notes**

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## 1713 – AIAA SciTech Mapping Paper Composition August/September

**Content**

I will continue working on relevant fields regarding the mapping project and further composition of the paper for AIAA SciTech Conference

**Definition of Done**

[ ] Investigate Mechine Learning implementations

[ ] Investigate Rendering options with OpenGL

[ ] Confirm dataset conposition for the project

**Notes**

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## 1714 – Rendering Research

**Content**

I will research and learn OpenGL to support the mapping project

**Definition of Done**

[ ] Research and find tutorials of OpenGL

[ ] Learn to program a cube in OpenGL

**Notes**

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## 1715 – Social Media Updates (copy) – SEP ‘17

**Content**

As a lab member, I would like to update the activities of the lab for publicity on the AFSL website, Facebook, and YouTube pages.

**Definition of Done**

[ ] Consult with Chris Lum on the activity’s description and prospective posting photos/videos.

[ ] Frequently post profiles of lab members and their specific involvement in the lab on Facebook.

For every post-flight test:

[ ] Upload selected videos from the flight test onto YouTube.

[ ] Update the video description (follow the template on YouTube)

[ ] Make sure each video tag includes: university of washington autonomous flight systems laboratory uw afsl test (schoolyear e.g. 20162017) (date e.g. 20161119) (location e.g. meadowbrooke farm) (UAS e.g. tedd) run (run# e.g. 001) (title)

[ ] everything is in lowercase

[ ] every word has a space in between

[ ] exclude all the parenthesis

[ ] Make sure the uploaded videos are included in their perspective playlists (it is possible for each video to be in more than one playlist)

[ ] Share the videos uploaded onto YouTube on Facebook.

[ ] Upload selected photos from the flight test onto Facebook.

[ ] Confirm that the photos and videos from each flight test are uploaded onto K drive.

Flight Test:

[ ] “Date (e.g. 20161126)” @ “Location (e.g. Meadowbrooke Farm)”

[ ] “Date (e.g. 20161126)” @ “Location (e.g. Meadowbrooke Farm)”

[ ] “Date (e.g. 20161126)” @ “Location (e.g. Meadowbrooke Farm)”

[ ] Include every additional Flight Test from this quarter here…

[ ] At the end of the quarter, please make a new copy user story 1082 – Social Media Updates for the next quarter.

**Notes**

* This is a quarter long commitment, please only pick it up if you can make the time.
* Every flight test for the quarter is to be included under Flight Test.
* Every video and photo needs to be in its best quality, meaning the videos are to be trimmed, and photos to be cropped if deemed necessary.
* Uploaded videos are automatically distributed into its perspective playlists if tagged correctly.
* Uploaded videos will automatically be shared through Twitter.
* Q&A about video tag: “school year (e.g. 20162017)” is considered from first day of summer courses of that year to the day before the first day of summer courses for the following year.
* **This is the original UserStory [Read-Only], please make a copy it of this at the end of every quarter. Delete this note in the new copy.**

## 1716 – LiDAR Documentation

**Content**

As a lab member, I would like to start the documentation process for the LiDAR sensor.

**Definition of Done**

[x] Create a manual for the LiDAR sensor.

[x] Create a test log for the LiDAR sensor.

[x] Upload the user manual and programming guide onto Perforce.

[x] Upload all documentation in the folder \FlightOperations\UAS\CommonDocuments\VelodynePuckLite\

**Notes**

* DO NOT TOUCH THE BLACK PART!!
* \FlightOperations\UAS\CommonDocuments\VelodynePuckLite\PuckLite\_ConstructionandMaintenanceLog.docx

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## 1717 – VeloView Software Research - VeloView

**Content**

As a lab member, I would like to research on specific software for LiDAR integration.

**Definition of Done**

[ ] See Hannah and/or Karine before starting this userstory.

[ ] Go to \FlightOperations\UAS\CommonDocuments\VelodynePuckLite\PuckLite\_Manual.docx

[ ] Find a new software that is not listed in the log to research on.

[ ] Research on the software selected.

[ ] Include procedural steps on how to use it with the Velodyne LiDAR sensor.

[ ] See Hannah and/or Karine again when the documentation is completed and get it approved.

[ ] Prepare a mini presentation to share at the research meeting.

**Notes**

* DO NOT TOUCH THE BLACK PART!!
* \FlightOperations\UAS\CommonDocuments\VelodynePuckLite\PuckLite\_ConstructionandMaintenanceLog.docx

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## 1718 – FugroViewer Software Research

**Content**

As a lab member, I would like to research on specific software for LiDAR integration.

**Definition of Done**

[ ] See Hannah and/or Karine before starting this userstory.

[ ] Go to \FlightOperations\UAS\CommonDocuments\VelodynePuckLite\PuckLite\_ConstructionandMaintenanceLog.docx

[ ] Find a new software that is not listed in the log to research on.

[ ] Research on a software and include procedural steps on how to use it with the Velodyne LiDAR sensor.

**Notes**

* DO NOT TOUCH THE BLACK PART!!
* \FlightOperations\UAS\CommonDocuments\VelodynePuckLite\PuckLite\_ConstructionandMaintenanceLog.docx

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## 1719 – Dummy Payload Testing

**Content**

As a lab member, I would like to research on testing a LiDAR payload dummy.

**Definition of Done**

[ ] See Hannah and/or Karine before starting this userstory.

[ ] Create a sensor dummy.

[ ] Create a interface dummy box.

[ ] Add weight to replicate the LiDAR system.

[ ] Flight test the payload and ensure the success of the take-off and landing of the dummy payload.

**Notes**

* DO NOT TOUCH THE BLACK PART!!
* \FlightOperations\UAS\CommonDocuments\VelodynePuckLite\

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## 1720 – LiDAR Flight System Mount Research (Position 1)

**Content**

As a lab member, I would like to research on specific software for LiDAR integration.

**Definition of Done**

[ ] See Hannah and/or Karine before starting this userstory.

[ ] Design a new mount for the LiDAR system for a flight autonomous system.

[ ] Physically create a new mount for the LiDAR system for a ground autonomous system.

[ ] Bring the mount for an inspection.

**Notes**

* DO NOT TOUCH THE BLACK PART!!
* \FlightOperations\UAS\CommonDocuments\VelodynePuckLite\

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## 1721 – Plum Airworthiness (copy)

**Content**

As a lab member, I would like to ensure that Plum is airworthy so that AA198 can use it by early September.

**Definition of Done**

[x] Complete To-Do items: \FlightOperations\UAS\Plum\ConstructionAndMaintenenceLog.docx

[x] Ensure everthing else on it is fully functional

**Notes**

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## 1722 – Visual Studio 2017 Compatibility

**Content**

As a software developer, I would like to verify that AFSL software compiles and executes properly using Visual Studio 2017 so that I can use it for future projects.

**Definition of Done**

[x] Upgrade the following solutions to VS2017 and verify they compile correctly.

[x] "C:\dev\UWSDK\UWSDK\UW.sln"

[x] Ensure all unit tests execute (you do not need to fix failing tests as this is captured in another user story)

[x] "C:\dev\JCATI2015\Software\UW\TRAPIS\TRAPIS.sln"

[ ] Verify that this operates in conjunction with the TRAPISSimulator application

[x] "C:\dev\JCATI2015\Software\UW\TRAPISSimulator\TRAPISSimulator.sln"

[x] "C:\dev\JCATI2015\Software\UW\UDPListener\UDPListener.sln"

[ ] Verify that this operates in conjunction with the UDPSender.sln.

[x] "C:\dev\JCATI2015\Software\UW\UDPSender\UDPSender.sln"

[x] "C:\dev\UWCpp\UWCpp\UWCpp.sln"

**Notes**

* In essence, this story involves “dusting off” old software and ensuring it still operates correctly.

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## 1723 – Unit Background Testing (copy)

See 006 – Software Developer Background Training (Algorithm and Back End)

See 132 – Unit Testing Beckground Training

**Notes**

Helpful Resources:

<https://www.youtube.com/watch?v=lisiwUZJXqQ> (90 min Crash Course)

<http://www.tutorialspoint.com/csharp/index.htm> (Good for referencing back to)

https://www.edx.org/course/programming-c-microsoft-dev204x-2 (Will need to sign in, Ends March 31st)

https://mitseu.files.wordpress.com/2014/08/microsoft\_visual\_c-sharp\_\_2013\_step\_by\_step.pdf (PDF book)

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## 1724 – Unit Testing for UWSDK

**Content**

As a software quality assurance engineer, I would like get the unit testing suite for the UWSDK up to date

**Definition of Done**

[ ] Ensure the "C:\dev\UWSDK\UWSDK\UnitTests\NotesAndTemplates\unit\_tests.xlsx" spreadsheet is up to date.

[ ] Coordinate with Chris Lum to fix failing unit tests

[ ] Write missing unit tests

**Notes**

* We need multiple developers working on this user story

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## 1724 – TRAPIS to Mission Planner Interface

**Content**

As a software developer, I would like to enable TRAPIS to send information to Mission Planner so that I can use this to relay LAMS position to the aircraft.

**Definition of Done**

[ ] Coordinate with Chris Lum and development champion of ‘’ to design an architecture to output data from TRAPIS for consumption by Mission Planner.

[ ] Document the interface and its operation

[ ] Determine a way to extract the desired vehicle from the multitude of vehicles in TRAPIS.

[ ] Demonstrate this to the lab group using a simple proof of concept demo.

**Notes**

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## 1725 – ANPC LAMS Simulator Familiarization

**Content**

As a software developer, I would like to familiarize myself with the ANPC LAMS simulator so I can use it for the TRAPIS2 project.

**Definition of Done**

[ ] Coordinate with Chris Lum to explore the files in "C:\dev\JCATI2015\Software\ANPC\”. In particular, read "C:\dev\JCATI2015\Software\ANPC\LAMS\_User\_Guide.docx"

[ ] Update the "C:\dev\JCATI2015\Software\ANPC\LAMS\_User\_Guide.docx" if necessary

[ ] Conduct a flight test of this at Carnation to ensure proper operation in the field.

[ ] Demonstrate this to the lab group.

**Notes**

* If necessary, we can schedule a conference call with Gage Winde to obtain a briefing on how the simulator works.

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## 1726 – TRAPIS Simulator Familiarization

**Content**

As a software developer, I would like to familiarize myself with the TRAPIS simulator so I can use it for the TRAPIS2 project.

**Definition of Done**

[ ] Familiarize yourself with the simulator located at. "C:\dev\JCATI2015\Software\UW\TRAPISSimulator\TRAPISSimulator.sln"

[ ] Add a scenario at Carnation Farms that emulates the mission described in ‘’

[ ] Demonstrate this to the lab group.

**Notes**

* The TRAPISSimulator application is designed to generate both LAMS and Clarity (ADS-B) packets. These can be used as inputs to the TRAPIS application so we can test operating in the lab.

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## 1727 – TRAPIS Flight Test Scenario Design

**Content**

As a flight operations director, I would like to generate a mission that will serve as the concept-of-operations (CONOPS) and final demonstration for the TRAPIS2 project.

**Definition of Done**

[ ] Design a mission that can be used as a CONOPS scenario for the TRAPIS 2 project. This should involve but is not limited to

[ ] Participating UAS

[ ] Participating manned aircraft

[ ] Flight plans, order of operations, etc.

[ ] Present mission to group.

[ ] Schedule mock flights at Carnation to exercise this mission.

[ ] Document this mission (AKA generate test cards) in "C:\dev\FlightOperations\Operations\Missions\18\_XX\_XX\_dallesport\_TRAPIS2\MissionDocument.docx"

**Notes**

* The goal of this user story is to have a scenario that everyone can point to and use as a concrete mission that we can work towards.
* Visuals such as mock flight plans will be very useful (these will be included in papers and presentations in the future)

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## 1728 – Mission Planner Customization for TRAPIS2 – Receive from TRAPIS

**Content**

As a software developer, I would like to modify/customize Mission Planner so that it can accept packets from TRAPIS so I can use this for the TRAPIS2 project.

**Definition of Done**

[ ] Obtain access to the UWAFSL Fork of Mission Planner ([link](https://github.com/uwafsl/MissionPlanner))

[ ] Update the UW Github branch of Mission Planner to 1.3.49. Verify this builds and operates as expected.

[ ] Coordinate with Chris Lum and development champion of ‘1724 – TRAPIS to Mission Planner Interface’ to design an architecture to output data from TRAPIS for consumption by Mission Planner.

[ ] Document the interface and its operation.

[ ] Demonstrate this to the lab group using a simple proof of concept demo.

**Notes**

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## 1729 – Mission Planner Customization for TRAPIS2 – Send to UAV

**Content**

As a software developer, I would like to modify/customize Mission Planner so that it can send information to the UAS via the data telemetry link so I can use this for the TRAPIS2 project.

**Definition of Done**

[ ] Complete ‘’ before starting this user story.

[ ] Coordinate with Ryan Grimes (see notes)

[ ] Read the following notes/tutorials

[ ] [MAVLink Tutorial](http://diydrones.com/group/arducopterusergroup/forum/topics/mavlink-tutorial-for-absolute-dummies-part-i) (also downloaded to \\TRAPIS2\Research\MAVLink\Tutorial)

[ ] [Create a new MAVLink Message](http://qgroundcontrol.org/mavlink/create_new_mavlink_message)

[ ] Demonstrate this to the lab group using a simple proof of concept demo.

**Notes**

* Ryan Grimes has already done something similar for the Visual Anchoring project.
* Currently Ryan sends information over RC channel 8. We may want to investigate creating a private/custom MAVLink message.
* Perhaps we can get away with just using Python scripts executed in Mission Planner.
* 11/30/17 – We should call the MAVLink message the WGPS message.

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## 1730 – ArduPlane Customization for TRAPIS2 – WA\_SMP

**Content**

As a software developer, I would like to modify/customize ArduPlane so I can generate a custom flight mode so I can use this for the TRAPIS2 project.

**Definition of Done**

[ ] Obtain access to the UWAFSL Fork of ArduPilot ([link](https://github.com/uwafsl/ardupilot))

[ ] Update the UW ArduPilot branch to ArduPlane 3.8.0. Verify this builds and operates as expected.

[ ] Build a custom flight mode in ArduPlane. This mode can do something very simple such as move an extraneous servo.

[ ] Coordinate with Ryan Grimes (see notes)

[ ] Coordinate with Chris Lum to design an architecture to support more complicated software development in the future.

[ ] Test the simple flight mode (a ground test is sufficient)

[ ] Document the interface and its operation in

[ ] Demonstrate this to the lab group using a simple proof of concept demo.

**Notes**

* Ryan Grimes has already done something similar for the Visual Anchoring project.
* The goal of this is to simply create a skeleton for a custom flight mode. The implementation of this mode will be captured in another user story.
* Perhaps it would be easier to overwrite GPS position info with LAMS info and then use the currently existing flight modes.
* This mode should be called WA\_SMP

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## 1731 – ArduPlane Customization for TRAPIS2 – Receive from GCS

**Content**

As a software developer, I would like to modify/customize ArduPlane so that it can accept packets from the GCS so I can use this for the TRAPIS2 project.

**Definition of Done**

[ ] Complete ‘’

[ ] Coordinate with Chris Lum and development champion of ‘’ to design an architecture to output data from GCS for consumption by ArduPlane.

[ ] Test the simple flight mode (a ground test is sufficient)

[ ] Document the interface and its operation.

[ ] Demonstrate this to the lab group using a simple proof of concept demo.

**Notes**

* Ryan Grimes has already done something similar for the Visual Anchoring project.

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## 1732 – Upgrade Flight Logs

**Content**

As a lab member, I would like to upgrade the flight log formatting across the fleet.

**Definition of Done**

[ ] Update all flight logs for all aircraft to the standard .xlsx extension

[ ] Add formula from Excelsior flight 004 to all flight logs so that the time stamp occurs automatically

[ ] Hyperlink all of the flight logs (see Anakin’s log) from the summary page to the flight sheets and vice versa

**Notes**

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## 1733 – Make Lab Stations Functional

**Content**

As a lab member, I would like to ensure that all of the lab computer workstations are fully functional.

**Definition of Done**

[ ] Ensure all the computer workstations have functional mice, keyboards and monitors

[ ] Determine if extra stuff needs purchasing to make it work

**Notes**

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## 1734 – Mobius Timestamp

**Content**

As a lab member, I would like to fix the timestamp on the standard view Mobius camera.

**Definition of Done**

[ ] Fix the timestamp on the camera so that it reflects an accurate time

**Notes**

* There may or may not be documentation for this on perforce. Otherwise google can probably help.

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## 1735 – Organize Lab

**Content**

As a lab member, I would like to organize the lab.

**Definition of Done**

[ ] Put stuff back in their appropriate boxes

[ ] Put boxes back on their labelled shelves

[ ] Relabel boxes/shelves as necessary if labels are falling off or need moving

[ ] Update \AFSL\LabInfo\EquipmentInventory\EquipmentInventory.docx to reflect new boxes both in the lab and in the MFOC

[ ] Pull power supplies from the surplus computers in the KWT storage and turn them into DC power supplies for battery chargers (we need 2 for the MFOC and more would be helpful). See video at <https://www.youtube.com/watch?v=CT1tiQOz3LU>

[ ] Surplus/dispose of excess computers in KWT storage

[ ] Clean up KWT storage

**Notes**

* Relabeled the boxes and shelves
* Updated the Equipment Inventory
* Checked through the boxes to make sure everything was in their appropriate boxes

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## 1736 – Checklist Updates

**Content**

As a lab member, I would like to make updates to the checklists.

**Definition of Done**

[ ] Add a check to make sure the aircraft launcher has appropriate safety gear on

* Globe, helmet, etc

[ ] Remove extra items – clean it up

[ ] Add note to ensure Mission Planner audio is audible in MFOC before launch

**Notes**

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## 1737 – Purchase Chairs

**Content**

As a lab member, I would like to research and purchase camp chairs for flight tests.

**Definition of Done**

[ ] Research, some good camp chairs for flight tests

[ ] Work with Dr. Lum or Hannah to purchase 3-4 chairs

**Notes**

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## 1738 – Cockpit Voice Recorder

**Content**

As a lab member, I would like to research and purchase a “cockpit” voice recorder that we can use to record cell phone traffic during our flight tests.  This would be like a cockpit voice recorder so we have a record of what is going on.  This could be something as simple as plugging into someone’s cell phone (between the phone and the earpiece).

**Definition of Done**

[ ] Research a simple voice recorder

[ ] Work with Dr. Lum or Hannah to purchase it if necessary

[ ] Write up use instructions

**Notes**

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## 1739 – ArduPlane Development Workflow

**Content**

As a software developer, I would like to determine an efficient workflow to build custom ArduPlane firmware so I can use it for the TRAPIS2 and other projects.

**Definition of Done**

[ ] Coordiante with Alex Banh to discuss the software development workflow.

[ ] Test this workflow and ensure that you can build and upload viable firmware.

[ ] Document this workflow in \\FlightOperations\UAS\CommonDocuments\ArduPlane\OperationalChecklistsAndNotes.docx

[ ] Review workflow with Chris Lum

[ ] Ensure relevant machines in the lab have the software necessary and can build customized ArduPlane.

[ ] Present/demo to lab group.

**Notes**

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## 1740 – Finwing Sabre Build (Peach)

**Content**

As a test engineer, I would like to build the two Finwing Sabre aircraft so I can use it for the TRAPIS2 project.

**Definition of Done**

[ ] Coordinate with Hannah, Selina, and Karine to discuss the TRAPIS payload.

[ ] Build the two Finwing Sabre aircraft.

[ ] Name both systems.

[ ] Update \FlightOperations\UAS\ComponentTracker.xlsx

[ ] Flight test these aircraft, and ensure they are tuned appropriately for safe and reliable flight.

[ ] Preliminary tuning can be done with the Plum aircraft.

[ ] Create necessary documentation/paperwork for these aircraft

[ ] Ensure they are airworthy.

[ ] Present/demo to lab group.

**Notes**

* The TRAPIS payload should be the primary responsibility/priority of the aircraft. Other components should be built around the payload.
* Check in with Chris and Hannah before you glue or permanently affix components.

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## 1741 – TRAPIS Payload Familiarization

**Content**

As a test engineer, I would like to ensure that the TRAPIS payload is airworthy so I can use it for the TRAPIS2 project.

**Definition of Done**

[ ] Read relevant sections of Ward Handley and Robert Larson’s thesis documents (those pertaining to the payload).

[ ] Coordiante with Selina Lui.

[ ] Collect all components needed for this system and organize into toolboxes

[ ] Perform ground tests of the system.

[ ] Determine if we should change the architecture to be a completely standalone payload (the current system uses the main aircraft Pixhawk)

[ ] Perform flight tests of the system.

[ ] Ensure system is airworthy

[ ] Demonstrate system to group

**Notes**

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## 1742 – ANPC LAMS Simulator Familiarization (copy)

**Content**

See 1725 (original)

As a software developer, I would like to familiarize myself with the ANPC LAMS simulator so I can use it for the TRAPIS2 project.

**Definition of Done**

[ ] Coordinate with Chris Lum to explore the files in "C:\dev\JCATI2015\Software\ANPC\”. In particular, read "C:\dev\JCATI2015\Software\ANPC\LAMS\_User\_Guide.docx"

[ ] Update the "C:\dev\JCATI2015\Software\ANPC\LAMS\_User\_Guide.docx" if necessary

[ ] Conduct a flight test of this at Carnation to ensure proper operation in the field.

[ ] Demonstrate this to the lab group.

**Notes**

* If necessary, we can schedule a conference call with Gage Winde to obtain a briefing on how the simulator works.

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## 1743 – SDR Familiarization

**Content**

As a lab member, I would like to get familiar with the SDR hardware and software to be able to run flight tests

**Definition of Done**

[ x] Receive hardware from Abhinav (bladeRF(x3), xb300 amplifier, raspberry pi, FUNLAB laptops (x2)

[ x] Build code on FUNLAB machines

[ ] Get familiar with the codebase and sending/receiving packets

[ ] Add file writing capabilities to the software

**Notes**

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## 1744 – Finish FUNRA

**Content**

As a lab member, I would like to finally complete the construction and testing of FUNRA.

**Definition of Done**

[ ] Talk to Cole Morgan and Zach Kirwan to get background on the project and what the problems have been

[ ] Get familiar with the QuadPlane parameters and determine if any need different values

[ ] Continue to troubleshoot until it can successfully hover at altitude

[ ] Investigate transition to forward flight and transition to vertical flight (for landing)

[ ] Write a test card to do a full hover test at Carnation

[ ] Write a test card to do a full test including vertical and forward flight

[ ] Update \FlightOperations\UAS\FUNRA\FUNRAAircraftFlightManual.docx to reflect currecnt configuration, tips and tricks as well as an operational checklist. Ensure checklist gets updated on \FlightOperations\UAS\CommonDocuments\Checklists\Excel Checklists.xlsx

**Notes**

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## 1745 – Install FPV DVR in MFOC

**Content**

As a lab member, I would like to test and install the FPV DVR in the MFOC

**Definition of Done**

[ ] Test the DVR and make sure it works properly by connecting it to an FPV feed in the lab

[ ] Add documentation for use under a new folder here: \FlightOperations\UAS\CommonDocuments\

[ ] Create policies and procedures for how to best use it and retrieve the data from it out in the field

[ ] Install in the MFOC so that it is easy to use

[ ] Verify it works with an aircraft

[ ] Mark task as completed here: \FlightOperations\UAS\MFOC\ConstructionAndMaintenenceLog.docx

**Notes**

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## 1746 – Address Aircraft Construction & Maintenance Logs

**Content**

As a lab member, I would like to address the Construction and Maintenance Log to-do items for Anakin and CONDOR.

**Definition of Done**

[ ] Complete the items in the to-do list for each aircraft, and update document to reflect completed maintenance

[ ] Anakin: \FlightOperations\UAS\Anakin\ConstructionAndMaintenenceLog.docx

[ ] CONDOR: \FlightOperations\UAS\CONDOR\ConstructionAndMaintenenceLog.docx

**Notes**

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## 1747 – TRAPIS to Mission Planner Interface (copy)

See 1724 – TRAPIS to Mission Planner Interface

## 1748 – TRAPIS2 Strategic Planning

**Content**

As a project manager, I would like to plan for the TRAPIS2 project.

**Definition of Done**

[ ] Develop strategy for the TRAPIS2 project

**Notes**

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## 1749 – Investigate Plum’s Auto Takeoff

**Content**

As a lab member, I would like to investigate why Plum’s auto takeoff didn’t work during the AA198 9/12/17 flight test.

**Definition of Done**

[ ] Look at the data flash logs, parameters, flight plan and videos for this mission to determine why the auto takeoff didn’t work.

[ ] You should also compare this to the parameters and flight plan for Anakin’s successful auto takeoffs as well as Tadej’s powerpoint: \AFSL\HowToDocumentation\How to make an autoflight.pptx

**Notes**

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## 1750 – Test Data Transfer Cables

**Content**

As a lab member, like to identify the USB cables that work for aircraft data transfer.

**Definition of Done**

[ ] Try all of the unlabeled micro USB cables in the lab and determine if they work for data transfer.

[ ] Plug them into a computer and one or two aircraft Pixhawks and determine if they turn the aircraft on

[ ] Verify it will download at least one log

[ ] Use the label maker to label good ones with “Data Transfer Works” and the bad ones with “No Data Transfer”

**Notes**

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## 1751 – Ground Penetrating Radar

**Content**

As a lab member, I would like to work on the list of action items involving GPR.

**Definition of Done**

[ ] Work on this list: \FlightOperations\UAS\Argo\Subsystems\GroundPenetratingRadar\GroundPenetratingRadarNotes.docx

**Notes**

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## 1752 – TRAPIS Position Estimate Selection Control

**Content**

As a software developer, I would like to create a control within TRAPIS that allows a user to select different position estimates to output from TRAPIS so it can be consumed by external entities.

**Definition of Done**

[ ] Create a control and controller withing TRAPIS to allow the user to select different types of position estimate to output from TRAPIS. This should include but is not limited to

[ ] Raw ADS-B measurements

[ ] Raw LAMS measurements

[ ] Filtered or fused versions of various signals (see Robert Larson thesis)

[ ] Test this control with the TRAPIS simulator

**Notes**

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## 1753 – TRAPIS2 Preliminary Flight Test Using ADS-B Output

**Content**

As a flight test engineer, I would like to design and test a scenario where ADS-B is used to as a surrogate for LAMS packets so that I can test the system at a location that does not have a LAMS installation.

**Definition of Done**

[ ] Coordinate with development champion of ‘’.

[ ] Design a test card that involves TRAPIS consuming ADS-B out packets from the TRAPIS payload. These packets are then routed back to the aircraft to be consumed and used by the GPS-denied flight mode.

[ ] Conduct a ground test of this system.

[ ] Conduct a flight test of this system at Carnation.

[ ] Document and share results with research group.

**Notes**

* KDLS is the only location with a LAMS and is therefore impractical to use for preliminary flight testing due to the 8 hour rounds trip. This user story is designed to allow initial testing at a local flight test facility to work out bugs and ensure the system is robust before expending significant time and expenses to test at KDLS.
* The UW GPS-Denied Flight Mode should not care whether the position estimates it receives come from LAMS or from ADS-B. This allows testing of a packet that has been routed from TRAPIS and used for control.

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## 1754 – Organize Lab (copy)

**Content**

Copy of user story 1735 – Organize Lab.

**Definition of Done**

Copy definition of done from user story 1735 – Organize Lab.

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## 1755 – Organize Lab (copy)

**Content**

Copy of user story 1735 – Organize Lab.

**Definition of Done**

Copy definition of done from user story 1735 – Organize Lab.

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## 1756 – Organize Tapes and Glues Box

**Content**

As a lab member, I would like to organize the tapes and glues box.

**Definition of Done**

[ ] Clean the box so it is not sticky.

[ ] Clean the glue bottles so it is not sticky.

[ ] Clean the tapes so it is not sticky where it shouldn’t be.

[ ] Find a way to divide the box so the glue bottles doesn’t knock over and make everything sticky again.

[ ] Decide and work with Hannah to see if any glues and tape needs to be ordered.

**Notes**

* consider 3D printing an interior divider
* cleaned the box
* separated the tapes and glues into different boxes
* used cardboard to create compartments so the glue bottles won’t fall over and everything won’t become sticky again 😊

## 1757 – Organize Raw Wires

**Content**

As a lab member, I would like to organize the small 28 guage wires in the raw wires box.

**Definition of Done**

[ ] Take a look at all the 28 guage wires mixed with the various resistors, capacitors, etc.

[ ] Separate the 28 guage wires from everything else (e.g. resistors, capacitors, etc).

[ ] Find out what the extra stand alone components are and label them.

[ ] Take off all the unnecessary tape labels on the wires.

[ ] Straighten out and sort the raw wires into the smaller perspective boxes.

**Notes**

* Took off all the tape labels that weren’t needed
* Separated all the wires and other components from one another and organized them into their respective compartments
* Straightened out the raw wires

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## 1758 – Organize Strings on the Ceiling

**Content**

As a lab member, I would like to organize the strings on the ceiling.

**Definition of Done**

[ ] Take down any strings found on the sprinkler line.

[ ] Move Cera a little higher so someone who is 6’5 or under would not run into the tricopter.

[ ] Devise a good way to string up Funra and label its strings.

[ ] Make room to allow all aircrafts to be able to be on the ceiling.

[ ] Create more strings for various aircrafts.

[ ] Adjust the old locations of the strings to accomodate for more aircrafts.

**Notes**

* Still need to make or keep space for Finwing Sabre (x3), Excelsior, Funra, TEDD, Ben, etc.

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**1759 – Luke Rebuild (copy)**

**Content**

Copy of user story 1360 – Luke Rebuild

**Definition of Done**

Copy definition of done from user story 1360 – Luke Rebuild

**Notes**

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**1760 – Flight Ops Administration (1708)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other miscellaneous lab administration

**Notes**

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**1761 – Flight Ops Administration (1709)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other miscellaneous lab administration

**Notes**

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**1762 – Flight Ops Administration (1710)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other miscellaneous lab administration

**Notes**

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**1763 – EFB for ADS-B in Traffic**

**Content**

As flight operator, I would like to find an EFB app for iPad that supports the Sagetech Clarity ADS-B in receiver.

**Definition of Done**

[ ] Research if there are any free EFB apps available that support ADS-B in data

[ ] Test it with the Clarity receiver

[ ] Get familiar with its operation

**Notes**

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## 1764 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

* Original copy located in user story 002

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## 1765 – LiDAR Flight System Mount Research (Position 2)

Content

**Copy of user story**

**1766 – Fix 2 Cell Battery**

**Content**

As wire master, I would like to fix the leads on the 2 cell battery.

**Definition of Done**

[ ] Solder or otherwise reconnect the balance leads to the battery.

**Notes**

* Ask Hannah for battery location

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**1767 – Assess Status of Pixhawk**

**Content**

As lab member, I would like to figure out if the sketchy Pixhawk actually works or if it needs to go to the graveyard.

**Definition of Done**

[ ] Plug it into a HiL unit and do a full test, plugging it into all the components, connecting to mission planner, arming, controlling servos, etc

[ ] Be able to say confidently that it works. If not confident, then it should be disposed of as it’s not worth the risk.

[ ] If it works, make sure it gets a number and is added to the equipment inventory doc: \FlightOperations\UAS\ComponentTracker.xlsx

**Notes**

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**1768 – Reprint Leia Cover**

**Content**

As lab member, I would like to reprint a cover for Leia’s belly.

**Definition of Done**

[ ] Modify the file.

[ ] Print the cover.

**Notes**

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**1769 – Reprint Leia Cover (copy)**

**Content**

Copy of user story 1768 – Reprint Leia Cover.

**Definition of Done**

Copy definition of done from user story 1768 – Reprint Leia Cover.

**Notes**

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## 1770 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1771 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1772 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1773 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1774 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1775 – Standardize Parameters Across Fixed Wing Fleet (copy)

**Content**

Copy of user story .

**Definition of Done**

Copy definition of done from user story .

**Notes**

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## 1776 – Standardize Parameters Across Fixed Wing Fleet (copy)

**Content**

Copy of user story .

**Definition of Done**

Copy definition of done from user story .

**Notes**

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## 1777 – Aircraft Firmware Upgrades (copy)

**Content**

Copy of user story .

**Definition of Done**

Copy definition of done from user story .

**Notes**

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## 1778 – Aircraft Firmware Upgrades (copy)

**Content**

Copy of user story .

**Definition of Done**

Copy definition of done from user story .

**Notes**

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## 1779 – Visual Anchoring Conference Paper (copy)

**Content**

Copy of user story 1034 – Visual Anchoring Conference Paper.

**Definition of Done**

Copy definition of done from user story 1034 – Visual Anchoring Conference Paper.

**Notes**

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## 1780 – Flight Training Program – Fixed Wing (Copy)

**Content**

Copy of user story 1127 – Flight Training Program

**Definition of Done**

Copy definition of done from user story 1127 – Flight Training Program

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## 1781 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1782 – Finwing Sabre Build (Peach) (copy)

**Content**

Copy of user story 1740.

**Definition of Done**

Copy definition of done from user story 1740.

**Notes**

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## 1783 – Finwing Sabre Build (Peach) (copy)

**Content**

Copy of user story 1740.

**Definition of Done**

Copy definition of done from user story 1740.

**Notes**

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## 1784 – Finwing Sabre Builds (copy)

**Content**

Copy of user story .

**Definition of Done**

Copy definition of done from user story .

**Notes**

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## 1785 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1786 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1787 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1788 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1789 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1790 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1791 – TRAPIS Simulator Familiarization (Copy)

See 1726 for original

**Content**

As a software developer, I would like to familiarize myself with the TRAPIS simulator so I can use it for the TRAPIS2 project.

**Definition of Done**

[ ] Familiarize yourself with the simulator located at. "C:\dev\JCATI2015\Software\UW\TRAPISSimulator\TRAPISSimulator.sln"

[ ] Add a scenario at Carnation Farms that emulates the mission described in ‘’

[ ] Demonstrate this to the lab group.

**Notes**

* The TRAPISSimulator application is designed to generate both LAMS and Clarity (ADS-B) packets. These can be used as inputs to the TRAPIS application so we can test operating in the lab.

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## 1792 – TRAPIS Simulator Familiarization (Copy)

**See 1726 for original**

**Content**

As a software developer, I would like to familiarize myself with the TRAPIS simulator so I can use it for the TRAPIS2 project.

**Definition of Done**

[ ] Familiarize yourself with the simulator located at. "C:\dev\JCATI2015\Software\UW\TRAPISSimulator\TRAPISSimulator.sln"

[ ] Add a scenario at Carnation Farms that emulates the mission described in ‘’

[ ] Demonstrate this to the lab group.

**Notes**

* The TRAPISSimulator application is designed to generate both LAMS and Clarity (ADS-B) packets. These can be used as inputs to the TRAPIS application so we can test operating in the lab.

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## 1793 – Make Lab Stations Functional (copy)

**Content**

Copy of user story .

**Definition of Done**

Copy definition of done from user story .

**Notes**

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## 1794 – Organize Lab (copy)

**Content**

Copy of user story 1735 – Organize Lab.

**Definition of Done**

Copy definition of done from user story 1735 – Organize Lab.

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## 1795 – Organize Strings on the Ceiling (copy)

**Content**

Copy of user story .

**Definition of Done**

Copy definition of done from user story .

**Notes**

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## 1796 – Address Aircraft Construction & Maintenance Logs (copy)

**Content**

Copy of user story **Error! Reference source not found.**.

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**.

**Notes**

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## 1797 – Drill Propeller

**Content**

As a lab member, I would like to drill out the spare propeller for operation.

**Definition of Done**

[ ] Use the hand drill and special prop drill to drill out the hub for prop #329 so that it can fit on our motor mounts

[ ] Make sure this prop makes it back out to the MFOC

**Notes**

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## 1798 – Emergency (Auto) Landing Preparation

**Content**

As a fligh test engineer, I would like to make a an easy system for landing the aircraft should the operator in command lose connection to the aircraft.

**Definition of Done**

[ ] Create a waypoint file that will complete an autonomous landing for our fixed wing aircraft.

[ ] Save this file somewhere (on perforce) that is very easily accessible. This should be somewhere that the GCS operator can access it quickly in the case of an emergency.

[ ] Come up with a concept of operations and a standardized operational checklist. Things to think about:

* How will this waypoint file be accessed? Will it be pulled up and ready to go before every flight, or will it just be pulled up during an emergency?
* If the batteries die on the transmitter, should the operator attempt to change the batteries and regain control, or should the emergency landing be immediately initiated?

[ ] Write a test card and complete a simulated emergency landing.

[ ] Update the aircraft emergency checklist to reflect the necessary steps to complete the autonomous, emergency landing.

[ ] Present this to the group during a lab meeting.

**Notes**

* The reason this has come up is sometimes the transmitters will suddenly die mid flight. This typically triggers the aircraft to enter a failsafe, causing it to safely RTL. However, the operator needs to be able to regain control of the aircraft in order to land it. If the transmitter battery is switched, as soon as the operator turns the transmitter back on, the aircraft immediately switches into a manual mode at zero throttle, which makes for a scary few seconds until the operator fully regains control. The first time this happened, the operator was caught unaware and the aircraft entered a rapid descent, being recovered barely in time. Another time, the operator switched batteries three straight times, but the transmitter continued to immediately die. This leaves the possibility that the transmitter might never be able to reconnect, so we need some way to bring the aircraft down. If all of this happens at the end of a long flight, that doesn’t leave a lot of aircraft battery time to do much troubleshooting, so the emergency landing needs to be able to be executed quickly. We need a safe, and easy way to reliably land the aircraft without any manual input.

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## 1799 – Troubleshoot Transmitter A

**Content**

As a fligh test engineer, I would like to troubleshoot the power problems with Transmitter A.

**Definition of Done**

[ ] Determine why the transmitter was burning through batteries at an unreasonable rate

* It got to the point where batteries that were taken out of other transmitters, full, wouldn’t even turn on transmitter A

[ ] Try to fix the problem if possible.

* If it proves too difficult then we will retire the transmitter, so all the models should be transferred to another transmitter
* Make sure any transmitter assignment changes are reflected here: \FlightOperations\UAS\CommonDocuments\Transmitters\TransmitterNotes.docx

**Notes**

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## 1800 – Change Excelsior Transmitter

**Content**

As a lab member, I would like to move Excelsior to a new transmitter.

**Definition of Done**

[ ] Copy Excelsior’s settings over to a new TGY-i10 transmitter

[ ] Copy over the trim settings to the new transmitter

[ ] Update the transmitter notes to reflect change: \FlightOperations\UAS\CommonDocuments\Transmitters\TransmitterNotes.docx

**Notes**

* Ask Hannah for assistance
* Transmitter L has a loose throttle/rudder stick

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## 1801 – Mission Planner Familiarization (Copy)

**Content**

Copy of user story 638 – Mission Planner Familiarization (Position 1)

**Definition of Done**

Copy definition of done from user story 638 – Mission Planner Familiarization (Position 1).

**Notes**

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## 1802 – Aircraft Part Familiarization (Copy)

**Content**

Copy of user story 1079 – Aircraft Part Familiarization

**Definition of Done**

Copy definition of done from user story 1079 – Aircraft Part Familiarization.

**Notes**

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## 1803 – COA Renewal

**Content**

As flight operations director, I would like to renew AFSL’s COA.

**Definition of Done**

[ ] Look into what it would take to renew the COA for the lab.

[ ] Renew it.

[ ] Document all the renewal documents on P4V.

**Notes**

## 1804 – TRAPIS Payload Familiarization (copy)

**Content**

Copy of user story 1741 – TRAPIS Payload Familiarization.

**Definition of Done**

Copy definition of done from user story 1741 – TRAPIS Payload Familiarization .

**Notes**

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## 1805 – Organize Strings on the Ceiling (copy)

**Content**

Copy of user story .

**Definition of Done**

Copy definition of done from user story .

**Notes**

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## 1806 – Organize Strings on the Ceiling (copy)

**Content**

Copy of user story .

**Definition of Done**

Copy definition of done from user story .

**Notes**

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## 1807 – Finish FUNRA Step 1

**Content**

As a lab member, I would like to help finally complete the construction and testing of FUNRA.

**Definition of Done**

[] Get familiar with the QuadPlane parameters: <http://ardupilot.org/plane/docs/quadplane-overview.html>

[] Examine the pros and cons of different propeller dimensions, pitch angles, and materials

[] Determine which type of propeller is ideal for lifting heavy weight at slow, stable speeds

[] Create a document that briefly describes the situations where certain propellers are used (eg. larger props are used for lifting heavier objects and what those dimensions and pitch may be for different flight scenarios)

[] Determine which propellers go best with which motors for different tasks

[] Determine if the propellers currently on FUNRA are suitable for takeoff, their current application, and the current motors being used.

**Notes**

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## 1808 – Finish FUNRA Step 2

**Content**

As a lab member, I would like to help finally complete the construction and testing of FUNRA.

**Definition of Done**

[] Get familiar with the QuadPlane parameters: <http://ardupilot.org/plane/docs/quadplane-overview.html>

[] Determine whether the motors are receiving enough power

[] Can the escs handle the power from the Power distribution board?

[] Is the power distribution board supplying enough power to the escs?

[] Is the battery supplying enough power to the power distribution board?

[Is the ESC supplying enough power to the motors?

[] Put together a document that highlights what to look for when purchasing escs, motors, and batteries (eg. How the battery’s CC rating relates to the Amperage of the esc and how that relates to the motor’s kv, etc)

**Notes**

·        For analysis of whether the motors and escs are sufficient try using this calculator: <https://ecalc.ch/>

https://ecalc.ch/xcoptercalc.php

## 1809 – Finish FUNRA Step 3

**Content**

As a lab member, I would like to help finally complete the construction and testing of FUNRA.

**Definition of Done**

[] Get familiar with the QuadPlane parameters and determine if any need different values: <http://ardupilot.org/plane/docs/quadplane-overview.html>

[] Go through FUNRA’s parameters and determine if there are any discrepancies

[] For help on this refer to ardupilot.org and the document listed above

[] Present a brief report on certain parameters to be aware of and what needs to be done in order for FUNRA to take off

**Notes**

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## 1810 – Investigate RTL Settings

**Content**

As a flight test engineer, I would like to get familiar with the settings associated with the return to launch (RTL) mode in ArduPlane.

**Definition of Done**

[ ] Research online (look at online ArduPlane resources) to figure out how RTL works and get familiar with its function

[ ] Determine what loiter point it uses and if it is possible to change this point. It seems to loiter around the arming point, not the Home waypoint, is this true?

[ ] What parameters dictate the altitude and radius of loiter?

[ ] At the completion of an auto mission, does the aircraft automatically RTL? Does it go to the home point, or some other point?

**Notes**

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## 1811 – Standardize Aircraft Battery Mounting

**Content**

As a flight test engineer, I would like to determine a standardized way of mounting the batteries within the fixed wing aircraft.

**Definition of Done**

[ ] Get familiar with how the batteries fit within the aircraft and the dummy weights utilized for the various aircraft

[ ] Determine a standardized way of fitting the batteries within the aircraft and implement it

[ ] This could be adding Velcro to a specific location on all the batteries, and making sure each of the aircraft and/or weights are also outfitted with appropriate Velcro

**Notes**

* The batteries need to fit within the aircraft in a way that is going to prevent them from sliding around during flight.
* As it is, we often have to adjust the Velcro on the batteries or aircraft each flight, because not all the batteries have Velcro, or we end of taping them down, which is often a waste of duct tape.
* It is annoying, and a waste of time of time/materials to have to custom fit every battery every flight, so if this could be standardized so they all are secured the same way, that would be great!

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## 1812 – Investigate Dallesport Wind History

**Content**

As a test engineer, I would like research the wind history at Dallesport to help in the TRAPIS2 flight demo planning.

**Definition of Done**

[ ] Find weather almanac/history records for the Dallesport/The Dalles/KDLS region.

[ ] Look up late summer/early fall data and determine which dates are traditionally highest wind and lowest wind.

[ ] Determine what times of day are typically highest and lowest wind.

[ ] Put together a proposal for a range of dates (along the lines of “last week of August” or “September 12-20”) and times (ex. 6am-10am) that are the best and worst times to fly our UAVs.

[ ] If you have a better way of presenting this data, go for it.

[ ] Think of other potential ways to mitigate wind problems.

**Notes**

* Last time, for the TRAPIS project the winds were sustained at something like 20+ mph, which greatly inhibited the abilities of our UAV to fly. For the next TRAPIS project, will be having a flight demonstration down there at the end the 2018 summer or early fall and will likely require very little to no wind to successfully complete our demonstration.
* The Dalles area along the Columbia River is a popular windsurfing area, which unfortunately means high winds are common, but hopefully also means that historic wind data should also be well documented.
* We need to determine a time to go down there that is most likely going to provide us with safe operating conditions. We also need to determine what time of day is most likely going to give us the lowest wind conditions possible.
* KDLS is the airport at which our operations will be based.

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## 1813 – AA101/198 Promo Video

**Content**

As a video producer, I would like to put together a promo video for AA101/198.

**Definition of Done**

[ ] Compile a promotional video for AA101/198 that can be used for advertising the class in a future (you just need to make one video using material from both classes, since they were essentially the same)

[ ] Should be similar to the following two videos

[ ] ESS 205 video: <https://www.youtube.com/watch?v=ogij1zLyb14&hd=1>

[ ] SARP’s video: <https://www.youtube.com/watch?v=I3Rn1XwoJ-Q>

[ ] There are videos and pictures available here:

[ ] K:\AFSL\LabInfo\PublicRelations\Outreach\AAClassesPromoVideo

[ ] K:\Teaching\AA101

[ ] K:\Teaching\AA198

[ ] K:\Teaching\AA198\PhotosAndMedia\StudentTestimonials

[ ] K:\FlightOperations\Operations\Missions\17\_06\_29\_engine\_fire\_test\_AA101

[ ] K:\FlightOperations\Operations\Missions\17\_07\_13\_carnation\_solid\_rockets\_AA101

[ ] K:\FlightOperations\Operations\Missions\17\_08\_10\_carnation\_AA101

[ ] K:\FlightOperations\Operations\Missions\17\_09\_01\_carnation\_AA198

[ ] K:\FlightOperations\Operations\Missions\17\_09\_12\_carnation\_AA198

[ ] In total, the video should be ~2-4 minutes long

**Notes**

* See \\AFSL\LabInfo\PublicRelations\Outreach\AAClassesPromoVideo\ProductionNotes.docx on Perforce for more information.
* Talk to Selina Lui, as she did some very preliminary work on this
* AFSL\_Condor in the lab has a super simple video production software on it that you can use, or use your own software. Odegaard and probably other campus libraries should have video editing software as well on their computers.
* A video showing an AA198 student project is located at <https://www.youtube.com/watch?v=LBigBg8JfxQ> . This has some good footage.

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## 1814 – New Mapping AIAA SciTech Paper Composition October

**Content**

As an author I would continue composition on the AIAA SciTech Paper

**Definition of Done**

[ ] Revise paper structure from the abstract

[ ] Research and add content to the paper accordingly

**Notes**

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## 1815 – New Mapping Project Software Development

**Content**

As an author I would continue software development in support of the AIAA SciTech paper

**Definition of Done**

[ ] Continue developing processing algorithm for voxel and object processing

[ ] Research and familiarize with computer graphics (OpenGL, UE 4.0)

**Notes**

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## 1816 – New Mapping AIAA SciTech Paper Composition October

**Content**

As an author I would continue composition on the AIAA SciTech Paper

**Definition of Done**

[ ] Coordinate with Shida Xu and Chris Lum to support composition of the paper

[ ] Research and add content to the paper accordingly

**Notes**

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## 1817 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

* See \AFSL\UserStories\user\_stories\_0001\_to\_1000.docx

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## 1818 – JCATI2016 SciTech Conference Paper

**Content**

As an author, I would like to finalize the JCATI 2016 AIAA SciTech Conference Paper.

**Definition of Done**

[ ] Read through paper and address comments \JCATI2016\TechnicalDataPackage\ConferencePaper\MAIN\_SDRs\_on\_UAS\_17\_08\_31.pdf

[ ] Fill in appropriate sections to reflect all the work that has been done \JCATI2016\TechnicalDataPackage\ConferencePaper\

[ ] Proofread and ensure it is ready for submission

**Notes**

* Internal deadline of November 27, final deadline is December 5.

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## 1819 – JCATI2016 SciTech Conference Paper (copy)

**Content**

Copy of user story .

**Definition of Done**

Copy definition of done from user story .

**Notes**

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## 1820 – JCATI2016 SciTech Conference Paper (copy)

**Content**

Copy of user story .

**Definition of Done**

Copy definition of done from user story .

**Notes**

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## 1821 – Headset Repair

**Content**

As a lab member, I would like to repair the headsets that are missing the head rest piece.

**Definition of Done**

[ ] Come up with a way to make the headsets useable again by finding or making some sort of replacement piece so it is comfortable to wear.

**Notes**

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## 1822 – GPS-Denied Literature Review

**Content**

As a TRAPIS2 team member, I would like to conduct a literature review of work other groups have done on GPS-denied and degraded navigation.

**Definition of Done**

[ ] Look through journal articles to see if there is anything out there related to the TRAPIS2 project

[ ] Search Google for anything out there related to the TRAPIS2 project

[ ] Determine if there is anything useful for this project to consider

[ ] Present the research to TRAPIS2 group

**Notes**

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## 1823 – Surplus Extra Computers

**Content**

As a lab member, I would like to surplus the extra computers in the wind tunnel storage.

**Definition of Done**

[ ] Determine if we want to keep any of the computers.

[ ] Work with Dr. Lum to surplus the computers that have the UW AA tag on them

[ ] Work with the UW surplus store to get rid of all the extras

**Notes**

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## 1824 – Social Media Updates (copy) – AUT ’17

**Content**

As a lab member, I would like to update the activities of the lab for publicity on the AFSL website, Facebook, and YouTube pages.

**Definition of Done**

[ ] Consult with Chris Lum on the activity’s description and prospective posting photos/videos.

[ ] Frequently post profiles of lab members and their specific involvement in the lab on Facebook.

For every post-flight test:

[ ] Upload selected videos from the flight test onto YouTube.

[ ] Update the video description (follow the template on YouTube)

[ ] Make sure each video tag includes: university of washington autonomous flight systems laboratory uw afsl test (schoolyear e.g. 20162017) (date e.g. 20161119) (location e.g. meadowbrooke farm) (UAS e.g. tedd) run (run# e.g. 001) (title)

[ ] everything is in lowercase

[ ] every word has a space in between

[ ] exclude all the parenthesis

[ ] Make sure the uploaded videos are included in their perspective playlists (it is possible for each video to be in more than one playlist)

[ ] Share the videos uploaded onto YouTube on Facebook.

[ ] Upload selected photos from the flight test onto Facebook.

[ ] Confirm that the photos and videos from each flight test are uploaded onto K drive.

Flight Test:

[ ] “Date (e.g. 20161126)” @ “Location (e.g. Meadowbrooke Farm)”

[ ] “Date (e.g. 20161126)” @ “Location (e.g. Meadowbrooke Farm)”

[ ] “Date (e.g. 20161126)” @ “Location (e.g. Meadowbrooke Farm)”

[ ] Include every additional Flight Test from this quarter here…

[ ] At the end of the quarter, please make a new copy user story 1082 – Social Media Updates for the next quarter.

**Notes**

* This is a quarter long commitment, please only pick it up if you can make the time.
* Every flight test for the quarter is to be included under Flight Test.
* Every video and photo needs to be in its best quality, meaning the videos are to be trimmed, and photos to be cropped if deemed necessary.
* Uploaded videos are automatically distributed into its perspective playlists if tagged correctly.
* Uploaded videos will automatically be shared through Twitter.
* Q&A about video tag: “school year (e.g. 20162017)” is considered from first day of summer courses of that year to the day before the first day of summer courses for the following year.
* **This is the original UserStory [Read-Only], please make a copy it of this at the end of every quarter. Delete this note in the new copy.**

## 1825 – Supervise Social Media Updates

**Content**

As a lab member, I would like to update the activities of the lab for publicity on the AFSL website, Facebook, and YouTube pages.

**Definition of Done**

[ ] Consult with Chris Lum about passing on the torch for social media updates to another member.

[ ] Get the new member set up for social media updates.

[ ] Supervise for the quarter until the new member is comfortable and can work independently.

For every post-flight test:

**Notes**

## 1826 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1827 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1828 – ArduPlane Development Workflow (copy)

**Content**

As a software developer, I would like to determine an efficient workflow to build custom ArduPlane firmware so I can use it for the TRAPIS2 and other projects.

**Definition of Done**

[ ] Coordiante with Alex Banh to discuss the software development workflow.

[ ] Test this workflow and ensure that you can build and upload viable firmware.

[ ] Document this workflow in \\FlightOperations\UAS\CommonDocuments\ArduPlane\OperationalChecklistsAndNotes.docx

[ ] Review workflow with Chris Lum

[ ] Ensure relevant machines in the lab have the software necessary and can build customized ArduPlane.

[ ] Present/demo to lab group.

**Notes**

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## 1829 – ArduPlane Development Workflow (copy)

**Content**

As a software developer, I would like to determine an efficient workflow to build custom ArduPlane firmware so I can use it for the TRAPIS2 and other projects.

**Definition of Done**

[ ] Coordiante with Alex Banh to discuss the software development workflow.

[ ] Test this workflow and ensure that you can build and upload viable firmware.

[ ] Document this workflow in \\FlightOperations\UAS\CommonDocuments\ArduPlane\OperationalChecklistsAndNotes.docx

[ ] Review workflow with Chris Lum

[ ] Ensure relevant machines in the lab have the software necessary and can build customized ArduPlane.

[ ] Present/demo to lab group.

**Notes**

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## 1830 – Mission Planner Familiarization (Copy)

**Content**

Copy of user story 638 – Mission Planner Familiarization (Position 1)

**Definition of Done**

Copy definition of done from user story 638 – Mission Planner Familiarization (Position 1).

**Notes**

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## 1831 – Leia Maintenance

**Content**

As a lab member, I would like to complete the Leia maintenance to-do items and get her airworthy again.

**Definition of Done**

[ ] Complete to-do list here: \FlightOperations\UAS\Leia\Construction and Maintenance Log.docx.

[ ] Update the table with work completed, time etc at the top of that document.

[ ] Update the component tracker to reflect changes: \FlightOperations\UAS\ComponentTracker.xlsx

**Notes**

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## 1832 – Luke Maintenance

**Content**

As a lab member, I would like to complete the Luke maintenance to-do items and get him airworthy again.

**Definition of Done**

[ ] Complete to-do list here: \FlightOperations\UAS\Luke\Construction and Maintenance Log.docx.

[ ] Update the table with work completed, time etc at the top of that document.

**Notes**

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## 1833 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1834 – LiDAR Software Research – VeloView (copy)

**Content**

Copy of user story 1717 – LiDAR Software Research – VeloView.

**Definition of Done**

Copy definition of done from user story 1717 – LiDAR Software Research - VeloView.

**Notes**

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## 1835 – VeloView Software Research (copy)

**Content**

Copy of user story 1717 – LiDAR Software Research – VeloView.

**Definition of Done**

Copy definition of done from user story 1717 – LiDAR Software Research - VeloView.

**Notes**

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## 1836 – Dummy Payload Testing (copy)

**Content**

Copy of user story 1719 – Dummy Payload Testing.

**Definition of Done**

Copy definition of done from user story 1719 – Dummy Payload Testing.

**Notes**

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## 1837 – Dummy Payload Testing (copy)

**Content**

Copy of user story 1719 – Dummy Payload Testing.

**Definition of Done**

Copy definition of done from user story 1719 – Dummy Payload Testing.

**Notes**

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## 1838 – Raspberry Pi Integration

**Content**

As a lab member, I would like to integrate the Raspberry Pi to the LiDAR interface box.

**Definition of Done**

[ ] See Hannah and/or Karine before starting this userstory.

[ ] Establish a physical connection between the Raspberry Pi and the interface box.

[ ] Develop a code to allow data acquisition from the LiDAR system to be saved to the MicroSD card on the Raspberry Pi.

[ ] Ensure that the system works.

[ ] DOCUMENT

**Notes**

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## 1839 – Raspberry Pi Integration (copy)

**Content**

Copy of user story 1838 – Raspberry Pi Integration.

**Definition of Done**

Copy definition of done from user story 1838 – Raspberry Pi Integration.

**Notes**

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## 1840 – Raspberry Pi Integration (copy)

**Content**

Copy of user story 1838 – Raspberry Pi Integration.

**Definition of Done**

Copy definition of done from user story 1838 – Raspberry Pi Integration.

**Notes**

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## 1841 – LiDAR to Li-Po Power Supply

**Content**

As a lab member, I would like to solder a power supply connection between the LiDAR and 3S Li-Po battery.

**Definition of Done**

[ ] See Hannah and/or Karine before starting this userstory.

[ ] Solder a power supply connection between the LiDAR and 3S Li-Po battery.

[ ] Ensure that the connection is stable.

**Notes**

* 3S Li-Po battery or battery within 9 to 18 V.

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## 1842 – Continuous Waypoint Mapping

**Content**

As a lab member, I would like to map a waypoint that will be utilized for LiDAR sensor testing.

**Definition of Done**

[ ] See Hannah and/or Karine before starting this userstory.

[ ] Map a waypoint on Mission Planner for the aircraft to carry the LiDAR sensor.

[ ] Ensure that there will not be any obstructions in the near future as this test will be conducted repeatedly throughout multiple flight tests.

[ ] Confirm with Hannah when completed.

**Notes**

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## 1843 – Minimize Data Error

**Content**

As a lab member, I would like to research in minimizing the error in data analysis.

**Definition of Done**

[ ] See Hannah and/or Karine before starting this userstory.

[ ] Research possible errors for the acquired data.

[ ] Determine how to match up its actual location versus distance from its previous location.

**Notes**

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## 1844 – Infrared Testing

**Content**

As a lab member, I would like to research in the feasibility to utilize the LiDAR sensor for night operations.

**Definition of Done**

[ ] See Hannah and/or Karine before starting this userstory.

[ ] Test the infrared features the sensor itself emits.

[ ] Compare the sensor’s capabilities in the dark and/or dimly lit settings, versus in light.

[ ] Determine the feasibility to utilize this system during night operations.

**Notes**

* Do not focus any light at the sensor!

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## 1845 – Request a Waiver for sUAS – BVLOS (Part 3)

**Content**

As a lab member, I would like to request a waiver for sUAS with the FAA so that I can increase the radius of the flight beyond visual line of sight of 3 miles.

**Definition of Done**

[x] Coordinate with Chris Lum before starting this user story.

[x] Read the form instructions (\FlightOperations\Research\FAA\instructions.pdf) and  the [list of regulations subject to waiver](https://www.faa.gov/uas/beyond_the_basics/#waiver) prior to filling the online form.

[x] Filling the online form that is located at <https://www.faa.gov/uas/request_waiver/>.

[ ] Revise the original waiver.

[ ] Discuss the drafted form with lab members before submitting.

[ ] Submit the revised form.

**Notes**

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## 1846 – Request a Waiver for sUAS – BVLOS (Part 3) (copy)

**Content**

Copy of user story 1845 – Request a Waiver for sUAS – BVLOS (Part 3).

**Definition of Done**

Copy definition of done from user story 1845 – Request a Waiver for sUAS – BVLOS (Part 3).

**Notes**

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## 1847 – Request a Waiver for sUAS – Night

**Content**

As a lab member, I would like to request a waiver for sUAS with the FAA so that I can increase the radius of the flight beyond visual line of sight of 3 miles.

**Definition of Done**

[x] Coordinate with Chris Lum before starting this user story.

[x] Read the form instructions (\FlightOperations\Research\FAA\instructions.pdf) and  the [list of regulations subject to waiver](https://www.faa.gov/uas/beyond_the_basics/#waiver) prior to filling the online form.

[x] Filling the online form that is located at <https://www.faa.gov/uas/request_waiver/>.

[x] Discuss the drafted form with lab members before submitting.

[x] Submit the revised form.

**Notes**

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## 1848 – Request a Waiver for sUAS – Night (copy)

**Content**

Copy of user story 1847 – Request a Waiver for sUAS – Night.

**Definition of Done**

Copy definition of done from user story 1847 – Request a Waiver for sUAS – Night.

**Notes**

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## 1849 – Stand-Alone GPS Integration

**Content**

As a lab member, I would like to research on integrating a stand-alone GPS for the LiDAR sensor.

**Definition of Done**

[ ] See Hannah and/or Karine before starting this userstory.

[ ] Acquire a GPS that can be plugged into or integrated to the plug in the interface box.

[ ] Determine where the GPS will be mounted on the aircraft.

[ ] Determine whether calibration will be needed to account for the actual distance between the sensor and the GPS location.

[ ] Work the software team at the time to see if there is a offset solution to ensure GPS accuracy.

**Notes**

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## 1850 – LiDAR Flight Test Scenario Design

**Content**

As a flight operations director, I would like to generate a mission that will serve as the concept-of-operations (CONOPS) for the LiDAR project.

**Definition of Done**

[ ] Design a mission that can be used repeatedly for the LiDAR project. This should involve but is not limited to

[ ] Flight plan test cards

[ ] Participating UAS

[ ] Participating manned aircraft

[ ] Flight plans, order of operations, etc.

[ ] Present mission to group.

[ ] Schedule flights at Carnation to exercise this mission.

**Notes**

* The goal of this user story is to have a scenario that everyone can point to and use as a concrete mission that we can work towards.

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## 1851 – Standardize LiDAR Parameters

**Content**

As a lab member, I would like to standardize all the parameters for the LiDAR sensor.

**Definition of Done**

[x] Document the original parameters.

[ ] Test flight a set of parameters.

[ ] Go through all the sensor calibrations.

[x] Standardize all parameters.

[x] Document the parameters standardized in the manual.

[ ] Check with Hannah and/or Karine when finished.

[ ] Possibly present the standardized parameters.

**Notes**

* \FlightOperations\UAS\CommonDocuments\VelodynePuckLite\PuckLite\_Manual.docx

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**1851 – Standardize LiDAR Parameters**

**Content**

As a lab member, I would like to research

**Definition of Done**

[ ] PUCK LiTE

[ ] Standardize the sensor IP address settings.

[ ] Standardize the calibration settings in VeloView.

[ ] Ensure that all PUCK parameters are standardized AND documented in the manual.

[ ] Raspberry Pi

[ ] Standardize the Raspberry Pi settings.

[ ] Standardize the SD card settings.

[ ] Standardize how often the SD card saves.

[ ] Confirm that the Raspberry Pi isn’t skipping any instances.

[ ] Confirm that the SD card is saving ALL the data points generated.

[ ] Ensure that all Raspberry parameters are standardized AND documented in the manual.

**Notes**

* \FlightOperations\UAS\CommonDocuments\VelodynePuckLite\PuckLite\_Manual.docx

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**1852 – Flight Ops Administration (1711)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other miscellaneous lab administration

**Notes**

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**1853 – Flight Ops Administration (1712)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other miscellaneous lab administration

**Notes**

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**1854 – Design and Test Vision System**

**Content**

As lab member, I would like to design and test the vision system algorithm and gimbal for use in the visual anchoring project.

**Definition of Done**

[ ] Design algorithm to estimate slant range and ground radius using visual information

[ ] Unit test algorithm using a phone camera and Mobius camera

[ ] Calibrate gimbal to ensure proper measurement of tilt angle for algorithm

[ ] Flight test vision system and create plot of GPS radius vs Vision radius

**Notes**

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## 1855 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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**1856 – ArduPilot Software Development Setup**

**Content**

* Copy of user story [1711 – MissionPlanner Simulation Setup](#_1711_–_MissionPlanner)
* As a software developer, I want to setup my personal computer so that I can modify code and test those modifications.

**Definition of Done**

[ ] Copy definition of done from user story [1711 – MissionPlanner Simulator Setup](#_1711_–_MissionPlanner).

[ ] Download [Visual Studio Community 2017](https://www.visualstudio.com/downloads/)

[ ] Follow the documentation here: [ArduPlane Build Notes](https://paper.dropbox.com/doc/ArudPilot-Windows-10-Build-Notes-ZFehgvzSE9jHJru2Pv4ww)

* Make sure to look at the notes at the bottom of the page to clone our **custom** firmware, not just default ardupilot.
* Don’t need to do Upload Firmware section just yet

[ ] Test the custom firmware through the simulation that was set up in US\_1711

* Test UW\_Mode\_2. You will not be able to select that mode unless you full complete US\_1711. See *Notes* below.

[ ] Build the custom firmware and upload (look at upload firmware section in build notes) to the HiL (the test HiL, please don’t do your first test on an actual plane)

[ ] See if the UW\_M\_X (X can be any number) does actually switch on Mission Planner.

See *Notes* below. You should test this by switching modes and looking at the HUD. You can also check the Parameter Tree for uw parameters if you are having trouble setting up Mission Planner.

**Notes**

* If you could not accurately setup Mission Planner to show the custom flight modes from User Story 1711, just try testing the parameters for the last step (see if they are there).
* Prepare a lot of space to download all these programs! (Hopefully no more than 10 Gb)

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## 1857 – ArduPilot Software Development Setup (copy)

**Content**

Copy of user story 1856 – ArduPilot Software Development Setup.

**Definition of Done**

Copy definition of done from user story 1856 – ArduPilot Software Development Setup.

**Notes**

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## 1858 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

* Find user story here: \AFSL\UserStories\user\_stories\_0001\_to\_1000.docx

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## 1859 – Finish Mapping SciTech Paper (November)

**Content**

As developer of the mapping paper I would like to complete the paper before the draft submission deadline.

**Definition of Done**

[ ] Finish composing the initial draft Mapping SciTech Paper before Thanksgiving

[ ] Modify and revise the paper according to peer review advise

[ ] Confirm submission with Chris Lum before the Dec.5 deadline

**Notes**

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## 1860 – Mapping SciTech Presentation Slides

**Content**

As presenter of the mapping paper at SciTech 2018 I would like to complete a draft presentation slide and make a trail presentation to receive peer review/feedback.

**Definition of Done**

[ ] Finish a draft version of the presentation slides of the mapping SciTech Presentation

[ ] Trail presentation at team meeting on Thu Dec. 7.

**Notes**

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## 1861 – Mapping SciTech Presentation

**Content**

As presenter of the mapping paper at SciTech 2018 I would like to travel to Kissimmee, FL to present the paper on Jan. 10

**Definition of Done**

[ ] Travel to Kissimmee, FL and present the paper on Jan. 10

**Notes**

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## 1862 – Send Mavlink message with Python Dronekit Library

**Content**

As lab member, I would like to investigate methods to send Mavlink message to the Pixhawk with Python script using Dronekit library.

**Definition of Done**

[ ] Set up Python 2.7, install dronekit and dronekit-sitl (simulator), and Mavproxy.

[ ] Simulate a copter using dronekit-sitl, use Mavproxy to connect to the simulated copter and connect Python script to Mavproxy.

[ ] Using existing Mavlink command and edit parameters inside python script and send the command to the copter.

**Notes**

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## 1863 – Update lab computers to Windows 10

**Content**

As lab member, I would like to update lab computers to Windows 10.

**Definition of Done**

[ ] Update necessary machines to Windows 10.

**Notes**

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## 1864 – Generate custom Mavlink message

**Content**

As lab member, I would generate custom Mavlink message to the Pixhawk via Python dronekit library.

**Definition of Done**

[ ] Study Mavlink protocol and how it works.

[ ] Study how to create custom Mavlink message.

[ ] Generate custom Mavlink message and send it to Pixhawk or simulator.

**Notes**

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## 1865 – User Interface for connecting Mavproxy to Pixhawk

**Content**

As lab member, I would make easy graphic user interface for user to be able select COM ports and browse script to run without having to type into command prompt to initialize Mavproxy and entering long IP address and UDP ports. Use C# and visual studio to do it.

**Definition of Done**

[ ] Create graphic user interface with buttons to select COM ports and connect to Pixhawk.

[ ] Create button for browsing file

[ ] Auto-fill IP address and generate UDP ports

[ ] Test with the swarm python script.

**Notes**

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## 1866 – Unit Background Testing (copy)

See 006 – Software Developer Background Training (Algorithm and Back End)

See 132 – Unit Testing Beckground Training

**Notes**

Helpful Resources:

<https://www.youtube.com/watch?v=lisiwUZJXqQ> (90 min Crash Course)

<http://www.tutorialspoint.com/csharp/index.htm> (Good for referencing back to)

https://www.edx.org/course/programming-c-microsoft-dev204x-2 (Will need to sign in, Ends March 31st)

https://mitseu.files.wordpress.com/2014/08/microsoft\_visual\_c-sharp\_\_2013\_step\_by\_step.pdf (PDF book)

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## 1867 – Unit Testing Background Training (copy)

See user story ‘**Error! Reference source not found.**’

## 1868 – Build Wing Rack for AFSL Lab

**Content**

As a lab member, I will design and build a wall-mounted shelving unit to store the lab’s wings.

**Definition of Done**

[ ] Design completed with budget and approved by Dr. Lum and Hannah.

[ ] Build wing rack.

[ ] Mount wing rack on wall, and check to make sure it is secure and won’t fall.

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## 1869 – Plum Wiring Replaced

**Content**

As lab member, I will replace the corroded or otherwise damaged wiring in the Plum airframe.

**Definition of Done**

[ ] Damaged wiring removed.

[ ] New wiring purchase approved and made.

[ ] Wiring installed in Plum.

[ ] Plum tested with new wiring to prove done.

**Notes**

The new wiring will likely need to be a lower gauge than originally used.

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## 1870 – Control pixhawk via basic python script using SITL

**Content**

As a lab member I would like to write basic python script to simulate Pixhawk using MavProxy, DroneKit, and DroneKit-sitl libraries to check params, arm vehicle, takeoff to an altitude, head to a waypoint (by giving GPS coordinate), land, and disarm. Test the code with SITL and connect it to Mission Planner

**Definition of Done**

[ ] Understand how to write python script using DroneKit and DroneKit-sitl libraries

[ ] Write a python script for simulation of takeoff, head to waypoint, land.

[ ] Able to connect SITL to Mission Planner to monitor behavior of the vehicle

[ ] Successfully run the script and view vehicle behavior in Mission Planner

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## 1871 – Multirotor Training Administration

**Content**

**As a Lab member I would like to train new multirotor pilots and oversee a flight test.**

**Definition of Done**

[ ] Create a flight training process and a user story

[ ] Help train new lab members on how to use mission planner, perforce, and other lab resources

[ ] Help new lab members create waypoints

[ ] Oversee multiple flight training tests so multirotor pilots can gain experience in the field

[ ] Approve lab members as certified multirotor pilots

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## 1872 – JCATI 2016 AIAA Conference Presentation

**Content**

**As a Lab member I would like to create a presentation for the JCATI 2016 AIAA conference.**

**Definition of Done**

[ ] Work with other JCATI members to create a presentation for the conference

[ ] Review the presentation and execute a practice run at one of the lab meetings

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## 1873 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1874 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1875 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1876 – VeloView Software Research (copy)

**Content**

Copy of user story 1717 – VeloView Software Research - VeloView.

**Definition of Done**

Copy definition of done from user story 1717 – VeloView Software Research - VeloView.

**Notes**

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## 1877 – Test LiDAR to Li-Po Power Supply

**Content**

As a lab member, I would like to the power supply connection between the LiDAR and 3S Li-Po battery.

**Definition of Done**

[ ] See Hannah and/or Karine before starting this userstory.

[ ] Test the power supply connection between the LiDAR and 3S Li-Po battery.

[ ] Ensure that the connection is stable.

**Notes**

* 3S Li-Po battery or battery within 9 to 18 V.

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## 1878 – Minimize Data Error (copy)

**Content**

Copy of user story 1843 – Minimize Data Error.

**Definition of Done**

Copy definition of done from user story 1843 – Minimize Data Error.

**Notes**

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## 1879 – Document Dummy Payload

**Content**

As a lab member, I would like to document the dummy payload that was used in place of the LiDAR sensor.

**Definition of Done**

[ ] Document weight.

[ ] Document dimensions the dummy payload.

[ ] Upload Solidworks files.

**Notes**

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## 1880 – Request a Waiver for sUAS – Night (copy)

**Content**

Copy of user story 1847 – Request a Waiver for sUAS – Night.

**Definition of Done**

Copy definition of done from user story 1847 – Request a Waiver for sUAS – Night.

**Notes**

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## 1881 – TRAPIS Software Quality Assurance (SQA) Testing

**Content**

As a software engineer I would like to test the software developed for TRAPIS.

**Definition of Done**

[ ] See Hannah or Dr. Lum to get familiar with running TRAPIS and the TRAPIS Simulator together

[ ] As new features/functions are developed for the software, test them out to ensure that everything works as it should

[ ] Work with the software development team to correct and problems

**Notes**

* This will require manual testing, so it is not a unit testing project

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## 1882 – ANPC Remote LAMS Connection Testing

**Content**

As a software engineer I would like to test the remote connection to the LAMS data.

**Definition of Done**

[ ] Familiarize yourself with the TRAPIS software

[ ] Familiarize yourself with how to remotely connect to the ANPC LAMS system (they should still be sending the data live via UDP). See notes below.

[ ] Test the ANPC remote connection in the lab on AFSL\_CONDOR

* You will likely need to change the IP address on the computer to accept the data
  + 128.95.35.206 UDP port 20550
  + The mapping computer might already be set to this IP address so it would need to be changed first.
* Verify the data can be received
  + To verify reception, run \\UWSDK\Applications\UDPListener\UDPListener.sln
* Verify it can be fed into the TRAPIS software
  + You should be able to see actual planes moving around on the map in the vicinity of KDLS

[ ] Determine if there is anything special we will need to do to run this out at Carnation using a Wifi hotspot.

* This won’t be running on the UW network as it is in the lab – will this cause a problem?
* We will be running this off someone’s data plan – how much data will it use?

[ ] Test the ANPC remote connection in the field i.e. Carnation

* Verify the data can be received
* Verify it can be fed into the TRAPIS software
* Identify if there seems to be any obvious lag, or other issues with the feed

[ ] Develop CONOPS of how this can easily and successfully be used with the TRAPIS software

[ ] Write up documentation so that it is repeatable

**Notes**

* We would like to use this feature to test WSTR. Basically we want to be able to feed an actual aircraft’s position from the live LAMS feed into our UAS while flying at Carnation. This will be one of the last tests we do at Carnation prior to the actual KDLS test.

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## 1883 – Lab Safety

**Content**

As a lab member, I would like to incorporate better safety procedures for the lab.

**Definition of Done**

[ ] Clean up AERB 139

[ ] Hang all aircraft from ceiling

[ ] Collect and audit any questionable equipment/materials and throw away extraneous items

[ ] Get monitor #4 operating on AFSL04

[ ] Investigate battery charging box (look on HobbyKing)

* [https://hobbyking.com/en\_us/bat-safe](https://hobbyking.com/en_us/bat-safe-lipo-battery-charging-safe-box.html)
* [https://www.youtube.com](https://www.youtube.com/watch?v=0nrsoMsEMNU) (you'll want to skip to the 12:40 mark or so)

[ ] Purchase 2 units of the Bat-Safe box.

[ ] Create a mechanism for storing safety glasses/gloves in a more accessible manner

[ ] Post safety signs in the lab and MFOC (ex. Required gear while soldering, required gear while hand launching a UAS in the field)

[ ] Create a document outlining safety risks in the lab and the appropriate safety mechanism to combat this risk (work with Hannah & Dr. Lum) (see \\AFSL\LabInfo\LabSafety.docx)

[ ] Procure earplugs to be used during flight tests, and motor tests on campus. These can be cheap, disposable ones. We might also already have the large over ear protection in the lab’s Safety box.

[x] Audit lab safety agreements and ensure everyone has completed one: \\FlightOperations\Operators\Certifications\AFSL\_safety

[ ] Include <http://www.ehs.washington.edu/psotrain/>

[ ] Determine which trainings are pertinent to us.

[ ] Ensure certifications are up to date

[ ] Include <https://depts.washington.edu/ehas/pubcookie/prod/labsurvey/index.php>**.**

[ ] Safety conduct a test of the chainmail glove to see if it actually protects against a prop strike (video tape the test and wear PPE)

[ ] Investigate if there is a prop-cover or clip that we can manufacture or buy that will prevent the prop from spinning. This should be able to slip on and off of any prop. Can we purchase an existing “propeller lock”?

[ ] Research cartridge filter gas masks vs. disposable face masks and purchase 4 units of.

* <http://www.approvedgasmasks.com/dp-gasmask.htm>
* <http://www.approvedgasmasks.com/filter-survivair.htm>

3M-

* [3M Full Facepiece Reusable Respirator 6000 series](https://www.amazon.com/3M-Facepiece-Reusable-Respirator-Multiple/dp/B007QY8WTY?ref=ast_p_ei)
* [3M Multi Gas/Vapor Cartridge/Filter 60926, P100 Respiratory Protection](https://www.amazon.com/3M-Cartridge-60926-Respiratory-Protection/dp/B00TO64THG/ref=sr_1_2?s=industrial&ie=UTF8&qid=1515710221&sr=1-2&keywords=Filter+60926)

[ ] Purchase lead free solder

* [Sn 99%, Ag 0.3%, Cu 0.7% with Flux 2.0%](https://www.amazon.com/YOUSHARES-Sn99-Ag0-3-Cu0-7-Electrical-Soldering-Purpose/dp/B01MT1N462/ref=sr_1_1_sspa?ie=UTF8&qid=1515695827&sr=8-1-spons&keywords=solder+wire+lead+free&psc=1)

[ ] Purchase more hearing protection (ie over the ear earmuffs)

* [ClearArmor\_Hearing Protection Safety Ear Muffs](https://www.amazon.com/dp/B00NKSMPZW?aaxitk=I-ez9lMlc83sziLBRGu8qA&pd_rd_i=B00NKSMPZW&pf_rd_m=ATVPDKIKX0DER&pf_rd_p=3365067662&pd_rd_wg=q9bE1&pf_rd_r=VH59V3YMHBBFFV71HV04&pf_rd_s=desktop-sx-top-slot&pf_rd_t=301&pd_rd_w=NLnuJ&pf_rd_i=ear+protection&pd_rd_r=cbc7571e-cf76-42c7-98fd-e141de404139&hsa_cr_id=6973146520101)

[ ] Figure out a better solution for the charging station (perhaps this needs to be clearly labeled and access to power strips restricted so people cannot arbitrarily reconfigure the station).

[ ] Coordinate with Chris Lum to arrange for disposal of old batteries.

**Notes**

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## 1884 – YouTube Tutorials

**Content**

As a lab member, I would like to work to create YouTube tutorials and how-to videos for various aspects of the lab.

**Definition of Done**

[ ] Work with relevant leads on projects to create tutorials and how-to videos for the lab.

[ ] Some of these include:

[ ] How to use Perforce

[ ] How to perform unit testing

[ ] How to install the UWMatlab SDK

[ ] Get approval from Dr. Lum

[ ] Post these on the AFSL YouTube channel

[ ] Link them to the appropriate documents/user stories, such as \AFSL\HowToDocumentation\installing\_p4v.docx and the unit testing user stories

**Notes**

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## 1885 – AFSL Web Server Setup

**Content**

As a lab member, I would like to setup an online database for the lab.

**Definition of Done**

[ ] Research purchasing a computer

[ ] Setup an Apache or Django server

[ ] Link the server to an IP address/domain name

**Notes**

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## 1886 – ArduPilotAFSL.sln Competition

**Content**

As a software engineer, I would like to complete setting up the ArduPilotAFSL.sln.

**Definition of Done**

[ ] Finish building the Visual Studio solution for the ArduPilot system

**Notes**

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## 1887 – MAVProxy Testing

**Content**

As a software engineer, I would like to work on the TRAPIS MAVLink/MAVProxy solution.

**Definition of Done**

[ ] Create our custom MAVLink message

[ ] Test with TRAPIS and ensure we are sending data to the aircraft.

**Notes**

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## 1888 – Heinemann Book

**Content**

As a lab member, I would like to work with the Heinemann team to progress their book.

**Definition of Done**

[ ] Work with Heinemann to keep the book moving forward.

**Notes**

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## 1889 – Research and Develop FUNRA Safety Procedures

**Content**

As a FUNRA team member, I would like to research what caused FUNRA’s incident and how to avoid it in the future.

**Definition of Done**

The following MUST be completed before attempting another FUNRA flight:

[ ] Take the props off and do some testing to determine exactly how and when the quadrotors are armed/disarmed. Make sure you have a complete understanding of this.

[ ] Document this thoroughly in FUNRA’s AFM: \FlightOperations\UAS\FUNRA\FUNRAAircraftFlightManual.docx

[ ] Investigate possible options for installing a switch or other manual, hard cutoff of the motors (something similar the motor switch on our other vehicles).

[ ] If possible install a hard cutoff mechanism onboard FUNRA

[ ] Complete FUNRA’s checklist (\FlightOperations\UAS\CommonDocuments\Checklists\Excel Checklists.xlsx), being sure to integrate all of the safety procedures from above. This should include the steps that must be completed to ensure the motors etc are fully disarmed before someone approaches/tries to pick it up. Talk to Helen Kuni for assistance with checklist formatting.

**Notes**

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## 1890 – Research and Develop FUNRA Safety Procedures (copy)

**Content**

Copy of user story 1889 – Research and Develop FUNRA Safety Procedures.

**Definition of Done**

Copy definition of done from user story 1889 – Research and Develop FUNRA Safety Procedures.

**Notes**

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## 1891 – HiL Airworthiness

**Content**

As a lab member, I would like to fix all three HiL units to get them completely “airworthy.”

**Definition of Done**

[ ] Assess the current condition of the three HiL units in the lab

[ ] Identify missing hardware. Minimum:

* Pixhawk
* Power module
* ESC
* Motor
* 1-4 servos
* 915 MHz telemetry radio
* On/Off switch
* Arming switch
* 2.4 GHz receiver
* Buzzer

[ ] Look through inventory and purchase new parts as necessary

Install new components

[ ] Update component tracker to reflect changes: \FlightOperations\UAS\ComponentTracker.xlsx

[ ] Update construction and maintenance logs to show what has been done, and what is still a “To-Do” item: \FlightOperations\UAS\HiLPixhawk1\ConstructionAndMaintenenceLog.docx

[ ] Flash Plane 3.8.0 firmware onto Pixhawk \FlightOperations\UAS\CommonDocuments\MissionPlanner\binaries\_and\_installers\firmware\Plane\stable\PX4\v3\_8\_0\ArduPlane-v2.px4

[ ] Load Excelsior default parameters onto Pixhawk \FlightOperations\UAS\Excelsior\Subsystems\Autopilot\17\_09\_07B.param

[ ] Bind receiver to a transmitter and update transmitter notes: \FlightOperations\UAS\CommonDocuments\Transmitters\TransmitterNotes.docx

[ ] Calibrate radio

[ ] Calibrate accelerometers

[ ] Calibrate compass

[ ] Ensure tlogs & data flash logs record correctly and can be downloaded

**Notes**

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## 1892 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1893 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1894 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1895 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1896 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1897 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1898 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1899 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1900 – Senior Design Capstone Setup

**Content**

As a student participating in the senior design capstone program, I would like to setup infrastructure for the project and become familiarized with the background, prior work, policies, and procedures so I can start contributing to the team.

**Definition of Done**

[X] Read the paper located at \\MAPSS\TechnicalDataPackage\ConferencePaper\MAIN\_MAPSS\_AS\_SUBMITTED.pdf (see notes)

[X] Peruse the depots of pervious senior capstone projects.

[ ] CERES – 2016 (Crop dusting ExpeRimEntal System)

[ ] MAPSS – 2017 (MicaSense Aerial Pointing and Stabilization System)

[X] Coordinate with Chris Lum to schedule a time to talk with a member of last year’s capstone group to understand their experience. This should be a team that was working closely with AFSL to complete the capstone project (see notes).

[X] Read the proposal that the industry sponsor submitted.

[X] Establish a name/moniker for the project (this can be a descriptive acronym).

[X] Coordinate with Chris Lum to setup file structure to support your project.

[X] Setup a LaTeX editor/compiler on your machine ([Texmaker](http://www.xm1math.net/texmaker/) is recommended). Do not use a cloud-based version (i.e. Overleaf) as this is not compatible with AFSL infrastructure.

[X] Assign one of your members to be an administrative lead for the team.

[X] Assign one of your members to be a budget lead for the team.

[X] Ensure everyone is on the \*.u.washington.edu email list.

[X] Ensure everyone is on the Slack channel

[X] Coordinate weekly internal meetings

[X] Coordinate weekly industry meetings

[X] Sign the project contract (likely located in the \Administrative\Contract folder of your depot)

[X] Setup user stories for the first 2 months of the project.

[X] Identify a professional conference to publish results to (suggestions include AIAA SciTech or AVIATION)

[X] Setup file structure for the conference paper at within the \TechnicalDataPackage\ConferencePaper folder of your depot.

[X] Make a note of the self evaluation form located in the \Administrative\SelfEvaluations\self\_evaluation.doc folder of your depot. These will be filled out twice each quarter.

**Notes**

* Relevant seniors from the class of 2017 are Zachary Caratao and Kelsey Gabel.

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## 1901 – Senior Design Capstone Setup (copy)

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## 1902 – Senior Design Capstone Setup (copy)

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## 1903 – Senior Design Capstone Setup (copy)

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## 1904 – Senior Design Capstone Setup (copy)

**Content**

As a student participating in the senior design capstone program, I would like to setup infrastructure for the project and become familiarized with the background, prior work, policies, and procedures so I can start contributing to the team.

**Definition of Done**

[ ] Read the paper located at \\MAPSS\TechnicalDataPackage\ConferencePaper\MAIN\_MAPSS\_AS\_SUBMITTED.pdf (see notes)

[ ] Peruse the depots of pervious senior capstone projects.

[ ] CERES – 2016 (Crop dusting ExpeRimEntal System)

[ ] MAPSS – 2017 (MicaSense Aerial Pointing and Stabilization System)

[ ] Coordinate with Chris Lum to schedule a time to talk with a member of last year’s capstone group to understand their experience. This should be a team that was working closely with AFSL to complete the capstone project (see notes).

[ ] Read the proposal that the industry sponsor submitted.

[X] Establish a name/moniker for the project (this can be a descriptive acronym).

[X] Coordinate with Chris Lum to setup file structure to support your project.

[ ] Setup a LaTeX editor/compiler on your machine ([Texmaker](http://www.xm1math.net/texmaker/) is recommended). Do not use a cloud-based version (i.e. Overleaf) as this is not compatible with AFSL infrastructure.

[X] Assign one of your members to be an administrative lead for the team.

[X] Assign one of your members to be a budget lead for the team.

[X] Assign one of your members to be a communications/marketing lead.

[X] Ensure everyone is on the \*.u.washington.edu email list.

[X] Ensure everyone is on the Slack channel

[X] Coordinate weekly internal meetings

[X] Coordinate weekly industry meetings

[X] Sign the project contract (likely located in the \Administrative\Contract folder of your depot)

[X] Setup user stories for the first 2 months of the project.

[ X] Identify a professional conference to publish results to (suggestions include AIAA SciTech or AVIATION)

[X] Setup file structure for the conference paper at within the \TechnicalDataPackage\ConferencePaper folder of your depot.

[X] Make a note of the self evaluation form located in the \Administrative\SelfEvaluations\self\_evaluation.doc folder of your depot. These will be filled out twice each quarter.

**Notes**

* Relevant seniors from the class of 2017 are Zachary Caratao and Kelsey Gabel.

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## 1905 – Senior Design Capstone Setup (copy)

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## 1906– Senior Design Capstone Setup (copy)

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## 1907 – Senior Design Capstone Setup (copy)

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## 1908 – KDLS Airport Use Permissions

**Content**

As a flight operations director, I would like to coordinate with the KDLS airport management to get permission for TRAPIS2 flight operations.

**Definition of Done**

[ ] Contact KDLS airport manager and begin the process of getting permission to fly at the airport during summer 2018.

**Notes**

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## 1909 – Mission Planner Custom Modes Procedure

**Content**

As a lab member, I would like to create a procedure to confidently and quickly allow access and use of the custom UW modes on any Mission Planner version.

**Definition of Done**

[ ] Create a procedure that allows selection of the UW modes on Mission Planner on any version

[ ] Test the procedure by connecting the HiL to Mission Planner and changing modes

[ ] Create a document describing the procedure and upload to Perforce

[ ] Test the procedure during a flight test

[ ] Make any revisions/troubleshooting notes necessary on the Perforce document

**Notes**

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## 1910 – WSTR Development

**Content**

As a software developer, I would like to develop the software for the basic UW mode to test TRAPIS2

**Definition of Done**

[ ] Code the custom mode in the TRAPIS2 code on UWAFSL GitHub

[ ] Design, implement, and test a simple wing leveler controller (investigate if we can copy the stabilize flight mode for this)

[ ] Design, implement, and test a simple heading hold controller (investigate if we can copy the stabilize flight mode for this)

[ ] Test functionality through simulation, make changes as necessary

[ ] Test the mode during ground test

[ ] Test the mode during a flight test

**Notes**

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## 1911 – HIPPO First Steps

**Content**

As a HIPPO team member, I would like to take some initial technical steps towards completing the project.

**Definition of Done**

[X] Coordinate with Vulcan to obtain prior work/research.

[X] Perform a literature review on existing/prior art.

[X] Alex to coordinate schedules so we can setup our weekly meeting with Vulcan. Preferred time is Tuesday afternoon ending before 4:30pm.

[X] Alex to setup draft agenda for first meeting

[X] Setup user stories for Jan 2018 (sprint 1801).

[X] Assign people to the following 3 roles

[X] Administrative lead (maintaining user stories, coordinating meetings, etc.)

[X] Communications/marketing lead (social media, communicating w/ UW CoE)

[X] Budget/procurement (purchasing equipment, maintaining budget)

~~[ ] Setup a budget spreadsheet on Perforce~~

**Notes**

* See Shida Xu’s paper and Chris Lum’s previous work on searching with magentometers. Also look at UW work using multi-spectral imagers to detect car tracks (talk with Chris Lum)

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## 1912 – White Bird Aircraft Flight Manual Documentation

**Content**

As a LARAMID team member, I would like to document White Bird manual so that I can use it to effectively.

**Definition of Done**

[X] Finish specifying features such as weight, battery and speed.

[X] Finish documenting documents in subsystem

[X] Complete doc here: \FlightOperations\UAS\WhiteBird\WhiteBirdAircraftFlightManual.docx

[X] Setup user stories for Jan 2018 (sprint 1801).

**Notes**

Speed will be updated after real flight testing

## 1913 – Mini-Talon Build

**Content**

As a LARAMID team member, I would like to build the Mini-Talon so I can use it for demonstration purposes as well as research and testing.

**Definition of Done**

[X] Build the Mini Talon and make it airworthy. Some subsystem to consider

[X] ESC

[X] Battery

[X] Pixhawk

[X] Servo

[X] etc

[X] Review final product with Chris Lum

[X] Document all construction in appropriate location

[X] Conduct flight tests

[X] Additional tasks TBD

[X] Setup user stories for Jan 2018 (sprint 1801).

**Notes**

* See build notes for LARAMID

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## 1914 – ArduPlane Customization for TRAPIS2 – WA\_SMP (copy)

**Content**

Copy of user story 1914.

**Definition of Done**

Copy of user story 1914.

**Notes**

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## 1915 – Visual Anchoring Conference Powerpoint

**Content**

As a lab member, I would like to create a Powerpoint presentation for the visual anchoring AIAA conference

**Definition of Done**

[ ] Complete draft of powerpoint

[ ] Review with Dr. Lum

[ ] Make revisions

[ ] Finalize presentation for AIAA conference

**Notes**

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## 1916 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1917 – Part 107 Test Preparation (copy)

**Content**

Copy of user story 1055 – Part 107 Test Preparation.

**Definition of Done**

Copy definition of done from user story 1055 – Part 107 Test Preparation.

**Notes**

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## 1918 – Visual Anchoring Conference Powerpoint

**Content**

As a lab member, I would like to create a Powerpoint presenation for the visual anchoring AIAA conference

**Definition of Done**

[ ] Complete draft of powerpoint

[ ] Review with Dr. Lum

[ ] Make revisions

[ ] Finalize presentation for AIAA conference

**Notes**

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## 1919 – Luke Aircraft Flight Manual

**Content**

As a lab member, I would like to complete Luke’s AFM.

**Definition of Done**

[ ] \FlightOperations\UAS\Luke\LukeAircraftFlightManual.docx

[ ] Add photos

[ ] Fill in known weights

[ ] Ensure ArduPlane firmware and Mission Planner versions listed are correct and up-to-date

[ ] Remove sections that are not applicable

**Notes**

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## 1920 – Peach Aircraft Flight Manual

**Content**

As a lab member, I would like to complete Peach’s AFM.

**Definition of Done**

[ ] \FlightOperations\UAS\Peach\PeachAircraftFlightManual.docx

[ ] Add photos

[ ] Fill in known weights

[ ] Ensure ArduPlane firmware and Mission Planner versions listed are correct and up-to-date

[ ] Address any other missing values and update with known values.

[ ] Remove sections that are not applicable

[ ] Ensure an operational checklist exists and is accurate: \FlightOperations\UAS\CommonDocuments\Checklists\Excel Checklists.xlsx

**Notes**

* Yellow highlight means that section needs checking to confirm accuracy

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## 1921 – Pear Aircraft Flight Manual

**Content**

As a lab member, I would like to complete Pear’s AFM.

**Definition of Done**

[ ] \FlightOperations\UAS\Pear\PearAircraftFlightManual.docx

[ ] Add photos

[ ] Fill in known weights

[ ] Ensure ArduPlane firmware and Mission Planner versions listed are correct and up-to-date

[ ] Address any other missing values and update with known values.

[ ] Remove sections that are not applicable

[ ] Ensure an operational checklist exists and is accurate: \FlightOperations\UAS\CommonDocuments\Checklists\Excel Checklists.xlsx

**Notes**

* Yellow highlight means that section needs checking to confirm accuracy

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## 1922 – Plum Aircraft Flight Manual

**Content**

As a lab member, I would like to complete Plum’s AFM.

**Definition of Done**

[ ] \FlightOperations\UAS\Plum\PlumAircraftFlightManual.docx

[ ] Fill in known weights

[ ] Ensure ArduPlane firmware and Mission Planner versions listed are correct and up-to-date

[ ] Address any other missing values and update with known values.

[ ] Remove sections that are not applicable

[ ] Ensure an operational checklist exists and is accurate: \FlightOperations\UAS\CommonDocuments\Checklists\Excel Checklists.xlsx

**Notes**

* Yellow highlight means that section needs checking to confirm accuracy

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## 1923 – 3D Print Dummy Sagetech Transponder

**Content**

As a lab member, I would like print a dummy transponder for use in the lab.

**Definition of Done**

[ ] Look around online to see if a 3D model already exists. Sagetech might have one available.

[ ] If not, create one in SolidWorks

[ ] Print

[ ] Ensure its size is interchangeable with the actual transponder

**Notes**

* The transponder is very expensive, so the less we have to handle it the better

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## 1924 – Activate Argo’s Landing Gear

**Content**

As a lab member, I would ensure that Argo’s landing gear is fully functional.

**Definition of Done**

[ ] Make sure that Argo’s landing gear is fully operational

[ ] Demonstrate results to the lab group

**Notes**

* Try not to activate the landing gear while argo is on the ground, or it will fall

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## 1925 – Activate Argo’s Landing Gear (copy)

**Content**

As a lab member, I would ensure that Argo’s landing gear is fully functional.

**Definition of Done**

[ ] Make sure that Argo’s landing gear is fully operational

[ ] Demonstrate results to the lab group

**Notes**

* Try not to activate the landing gear while argo is on the ground, or it will fall

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## 1926 – TEMPEST First Steps

**Content**

As a TEMPEST team member, I would like to take some initial technical steps towards completing the project.

**Definition of Done**

[X] Coordinate with industry sponsor to obtain prior work, research, documents, etc. and archive in Perforce at "C:\dev\TEMPEST\TechnicalDataPackage\AeroTECDocuments"

[X] Team administrator to coordinate schedules so we can setup our weekly meeting with industry sponsor.

[X] Setup user stories for Jan 2018 (sprint 1801).

[ X] Fill in 2 or 3 major deliverables in "C:\dev\TEMPEST\Administrative\Contract\TEMPEST\_Contract.docx" and sign contract after discussing this at an internal meeting

[X] Update document at "C:\dev\TEMPEST\Administrative\People\people.docx"

[X] Assign people to the following 3 roles

[X] Administrative lead (maintaining user stories, coordinating meetings, etc.)

[X] Communications/marketing lead (social media, communicating w/ UW CoE)

[X] Budget/procurement (purchasing equipment, maintaining budget)

[X] Setup a budget spreadsheet on Perforce

[X] Setup a project schedule in Microsoft Project.

[X] Read over "C:\dev\AFSL\HowToDocumentation\installing\_NX.docx"

[X] Transcribe notes from kickoff meetings to "C:\dev\TEMPEST\TechnicalDataPackage\PresentationsAndMeetings\MeetingNotes.docx"

**Notes**

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## 1927 – AFSL Website Updates (Public Relations/Media Section)

**Content**

As a marketing agent, I would like to create a “People” section on the AFSL website with new information so I can publicize our activities.

**Definition of Done**

[ ] Coordinate with Chris Lum before starting this user story.

[ ] Create and update the “Media” section

[ ] Review all materials with Chris Lum

~~[ ] Send mock ups to Kevin Ward.~~ (Kevin has left UW)

[ ] Send mock ups to AA department.

[ ] Ensure that changes are made and correct on the final website.

**Notes**

* All website material is located in [\\AFSL\WebsiteInfo](file:///\\AFSL\WebsiteInfo)

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## 1928 – Leia Maintenance (copy)

**Content**

Copy of user story 1831 – Leia Maintenance.

**Definition of Done**

Copy of user story 1831 – Leia Maintenance.

**Notes**

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## 1929 – Leia Maintenance (copy)

**Content**

Copy of user story 1831 – Leia Maintenance.

**Definition of Done**

Copy of user story 1831 – Leia Maintenance.

**Notes**

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## 1930 – Research into Past Work

**Content**

As a HIPPO member, I would like to take some initial steps to understand and find past wok that has been done that is related to anti-Poaching operations.

**Definition of Done**

[X] Coordinate with other team members about research topics and findings

[X] Explore sensor ideas and methods of detecting poachers

[X] Create and post summaries of findings on Slack

[X] Create summary slides of findings and prepare to present findings

**Notes**

Presentation material is located in \HIPPO\TechnicalDataPackage\PresentationsAndMeetings\08\_01\_11\_VulcanKickoffMeeting

## 1931 – Research into Past Work

**Content**

As a HIPPO member, I would like to take some initial steps to understand and find past wok that has been done that is related to anti-Poaching operations.

**Definition of Done**

[X] Coordinate with other team members about research topics and findings

[X] Explore sensor ideas and methods of detecting poachers

[X] Create and post summaries of findings on Slack

[X] Create summary slides of findings and prepare to present findings

**Notes**

Presentation material is located in \HIPPO\TechnicalDataPackage\PresentationsAndMeetings\08\_01\_11\_VulcanKickoffMeeting

## 1932 – Research into Past Work

**Content**

As a HIPPO member, I would like to take some initial steps to understand and find past wok that has been done that is related to anti-Poaching operations.

**Definition of Done**

[X] Coordinate with other team members about research topics and findings

[X] Explore sensor ideas and methods of detecting poachers

[X] Create and post summaries of findings on Slack

[X] Create summary slides of findings and prepare to present findings

**Notes**

Presentation material is located in \HIPPO\TechnicalDataPackage\PresentationsAndMeetings\08\_01\_11\_VulcanKickoffMeeting

## 1933 – Research into Past Work

**Content**

As a HIPPO member, I would like to take some initial steps to understand and find past wok that has been done that is related to anti-Poaching operations.

**Definition of Done**

[X] Coordinate with other team members about research topics and findings

[X] Explore sensor ideas and methods of detecting poachers

[X] Create and post summaries of findings on Slack

[X] Create summary slides of findings and prepare to present findings

**Notes**

Presentation material is located in \HIPPO\TechnicalDataPackage\PresentationsAndMeetings\08\_01\_11\_VulcanKickoffMeeting

## 1934 – TEMPEST Preliminary Research

**Content**

As a TEMPEST member, I would like to take some initial steps to understand and find past wok that has been done that is related to flight testing, RVSM certification, potential electronics, and potential design options.

**Definition of Done**

[X] Coordinate with other team members about research topics and findings

[ ] Perform a literature review on existing/prior art.

~~[ ] Create and post summaries of findings on Slack~~

~~[ ] Create summary slides of findings and prepare to present findings~~

[ ] Distill and summarize prior art in the introduction section of the LaTeX paper (introduction.tex). Be sure to update the bibliography file.

**Notes**

Presentation material is located in \TEMPEST\TechnicalDataPackage\PresentationsAndMeetings\Preliminary\_Research

## 1935 – TEMPEST Preliminary Research

**Content**

As a TEMPEST member, I would like to take some initial steps to understand and find past wok that has been done that is related to flight testing, RVSM certification, potential electronics, and potential design options.

**Definition of Done**

[ ] Coordinate with other team members about research topics and findings

[ ] Perform a literature review on existing/prior art.

[ ] Create and post summaries of findings on Slack

[ ] Create summary slides of findings and prepare to present findings

**Notes**

Presentation material is located in \TEMPEST\TechnicalDataPackage\PresentationsAndMeetings\Preliminary\_Research

## 1936 – TEMPEST Preliminary Research

**Content**

As a TEMPEST member, I would like to take some initial steps to understand and find past wok that has been done that is related to flight testing, RVSM certification, potential electronics, and potential design options.

**Definition of Done**

[ ] Coordinate with other team members about research topics and findings

[ ] Perform a literature review on existing/prior art.

[ ] Create and post summaries of findings on Slack

[ ] Create summary slides of findings and prepare to present findings

**Notes**

Presentation material is located in \TEMPEST\TechnicalDataPackage\PresentationsAndMeetings\Preliminary\_Research

## 1937 – TEMPEST Preliminary Research

**Content**

As a TEMPEST member, I would like to take some initial steps to understand and find past wok that has been done that is related to flight testing, RVSM certification, potential electronics, and potential design options.

**Definition of Done**

[ ] Coordinate with other team members about research topics and findings

[ ] Perform a literature review on existing/prior art.

[ ] Create and post summaries of findings on Slack

[ ] Create summary slides of findings and prepare to present findings

**Notes**

Presentation material is located in \TEMPEST\TechnicalDataPackage\PresentationsAndMeetings\Preliminary\_Research

## 1938 – TEMPEST Financial First Steps

**Content**

As a TEMPEST member, I would like to kickstart the financial aspects of our capstone project.

**Definition of Done**

[X] Coordinate with Dr. Morgansen to learn how to access funds, how much money we have to work with

[X] Obtain training for Ariba, or alternative purchasing means as necessary

[X] Create a budgeting document in Perforce and prepare to keep track of funds and expenses which may be incurred during the course of the project. Document should follow UWAA budget office guidelines.

~~[ ] Report rough estimate of project cost to project plan~~

**Notes**

Financial material is located in \TEMPEST\Budget

**1939 - TEMPEST Project Plan Deliverables**

**Content**

As a TEMPEST Member, I would like to complete a portion of the Project Plan Deliverables.

**Definition of Done**

[ ] Complete assigned sections of the Project Plan

[ ] Review and Edit sections with team

[ ] Upload work to Perforce

[ ] Review with Lum before sending to AeroTEC

**Notes:**

Project plan Word doc found in TEMPEST\Administrative\Project\_Plan

## 1940 – TEMPEST Project Plan Deliverables (copy)

**Content**

Copy of user story 1939 – TEMPEST Project Plan Deliverables

**Definition of Done**

Copy definition of done from user story 1939 – TEMPEST Project Plan Deliverables

**Notes**

## 1941 – TEMPEST Project Plan Deliverables (copy)

**Content**

Copy of user story 1939 – TEMPEST Project Plan Deliverables

**Definition of Done**

Copy definition of done from user story 1939 – TEMPEST Project Plan Deliverables

**Notes**

## 1942 – TEMPEST Project Plan Deliverables (copy)

**Content**

Copy of user story 1939 – TEMPEST Project Plan Deliverables

**Definition of Done**

Copy definition of done from user story 1939 – TEMPEST Project Plan Deliverables

**Notes**

## 1943 – TEMPEST Rough Schedule

**Content**

As a TEMPEST team member, I would like to develop a rough schedule for our project

**Definition of Done**

[ ] Generate rough schedule in the form of a Gantt chart in Microsoft Project

[ ] Review and edit with teammates

[ ] Review with Lum before sending to AeroTEC

**Notes**

**1944 - TEMPEST Workspace and Equipment Procurement**

**Content**

Secure a workspace and equipment for TEMPEST team work.

**Definition of Done**

[X] Determine how much space will be necessary for the project

[X] Come up with a rough list of necessary equipment for the project

[X] Determine how to get these items: whether they will be readily available through the department or need to be acquired some other way

~~[ ] Set up ORG chart~~

[X] Check this list with Dr. Lum

[X] Send list to Dr. Morgansen

[ ] Obtain and move into this space

**Notes:**

[fspencer@aa.washington.edu](mailto:fspencer@aa.washington.edu) – Fiona Spencer

[ezgeorge@uw.edu](mailto:ezgeorge@uw.edu) – Eliot George

**1945 - TEMPEST Unigraphics/NX First Steps**

**Content**

Download and become familiar with Unigraphics/NX to become team’s go to CAD person.

**Definition of Done**

[ ] Download Unigraphics/NX onto lab machine.

[ ] Spend some time familiarizing yourself with the mechanics of the software

[ ] Share anything you feel the rest of the team should know.

**Notes:**

Installation guide found at <https://1drv.ms/w/s!AiTozuZSklGQjJ1-1Z4jw6roTeDmeg>

## 1946 – Replace SSD for lab computer AFSL05

**Content**

Replace the dead SSD for lab computer AFSL05.

**Definition of Done**

[ ] Find replacement for SSD

[ ] Purchase replacement

[ ] Install SSD

**Notes**

## 1947 – HIPPO Safety Training

**Content**

As a HIPPO member, I will take steps to ensure I have adequate safety training.

**Definition of Done**

[X] Take Fire Extinguisher Safety training, upload certificate

[X] Take Electrical Safety, Basic training, upload certificate

**Notes**

Trainings courses can be found at:

<https://www.ehs.washington.edu/psotrain/corsdesc.shtm>

Upload certificates to \HIPPO\Administrative\People\SafetyCertificates

Chris Lum info for faculty advisor

## 1948 – HIPPO Safety Training

**Content**

As a HIPPO member, I will take steps to ensure I have adequate safety training.

**Definition of Done**

[X] Take Fire Extinguisher Safety training, upload certificate

[X] Take Electrical Safety, Basic training, upload certificate

**Notes**

Trainings courses can be found at:

<https://www.ehs.washington.edu/psotrain/corsdesc.shtm>

Upload certificates to \HIPPO\Administrative\People\SafetyCertificates

Chris Lum info for faculty advisor

## 1949 – HIPPO Safety Training

**Content**

As a HIPPO member, I will take steps to ensure I have adequate safety training.

**Definition of Done**

[x] Take Fire Extinguisher Safety training, upload certificate

[x] Take Electrical Safety, Basic training, upload certificate

**Notes**

Trainings courses can be found at:

<https://www.ehs.washington.edu/psotrain/corsdesc.shtm>

Upload certificates to \HIPPO\Administrative\People\SafetyCertificates

Chris Lum info for faculty advisor

## 1950 – HIPPO Safety Training

**Content**

As a HIPPO member, I will take steps to ensure I have adequate safety training.

**Definition of Done**

[ ] Take Fire Extinguisher Safety training, upload certificate

[ ] Take Electrical Safety, Basic training, upload certificate

**Notes**

Trainings courses can be found at:

<https://www.ehs.washington.edu/psotrain/corsdesc.shtm>

Upload certificates to \HIPPO\Administrative\People\SafetyCertificates

Chris Lum info for faculty advisor

## 1951 – Non-optical Sensor Trade Study

**Content**

As a HIPPO member, I would like to begin the process of conducting a trade study on non-optical sensing equipment that could be applied for use on a fixed-wing UAV to detect poachers.

**Definition of Done**

[X] Explore non-optical sensor ideas and methods of detecting poachers

[X] Coordinate with other team members about which sensors will be researched, initially choosing 1 sensor to focus on

[X] Identify the functions of a non-optical sensor

[X] Identify a price range of the sensor being studied

[X] Determine the probability of a successful integration of the sensor into a fixed wing UAV with optimal payload allowance of less than 1kg, and optimal flight altitude (think sensor range) of 100-150m AGL

[X] Estimate the probability of the sensor’s ability to fulfill mission goals

[X] Use a scale of 1-10 qualification scale for determining suitability of sensors, entering results into summary excel sheet in perforce

[X] Add summary of findings to Trade Study document

**Notes**

Trade Study Document path: HIPPO\Research\Sensors\Non-opticalSensorTradeStudySummary

## 1952 – Non-optical Sensor Trade Study

**Content**

As a HIPPO member, I would like to begin the process of conducting a trade study on non-optical sensing equipment that could be applied for use on a fixed-wing UAV to detect poachers.

**Definition of Done**

[X] Explore non-optical sensor ideas and methods of detecting poachers

[X] Coordinate with other team members about which sensors will be researched, initially choosing 1 sensor to focus on

[X] Identify the functions of a non-optical sensor

[X] Identify a price range of the sensor being studied

[ ] Determine the probability of a successful integration of the sensor into a fixed wing UAV with optimal payload allowance of less than 1kg, and optimal flight altitude (think sensor range) of 100-150m AGL

[ ] Estimate the probability of the sensor’s ability to fulfill mission goals

[X] Use a scale of 1-10 qualification scale for determining suitability of sensors, entering results into summary excel sheet in perforce

[X] Add summary of findings to Trade Study document

**Notes**

Trade Study Document path: HIPPO\Research\Sensors\Non-opticalSensorTradeStudySummary

## 1953 – Non-optical Sensor Trade Study

**Content**

As a HIPPO member, I would like to begin the process of conducting a trade study on non-optical sensing equipment that could be applied for use on a fixed-wing UAV to detect poachers.

**Definition of Done**

[ ] Explore non-optical sensor ideas and methods of detecting poachers

[ ] Coordinate with other team members about which sensors will be researched, initially choosing 1 sensor to focus on

[ ] Identify the functions of a non-optical sensor

[ ] Identify a price range of the sensor being studied

[ ] Determine the probability of a successful integration of the sensor into a fixed wing UAV with optimal payload allowance of less than 1kg, and optimal flight altitude (think sensor range) of 100-150m AGL

[ ] Estimate the probability of the sensor’s ability to fulfill mission goals

[ ] Use a scale of 1-10 qualification scale for determining suitability of sensors, entering results into summary excel sheet in perforce

[ ] Add summary of findings to Trade Study document

**Notes**

Trade Study Document path: HIPPO\Research\Sensors\Non-opticalSensorTradeStudySummary

## 1954 – Non-optical Sensor Trade Study

**Content**

As a HIPPO member, I would like to begin the process of conducting a trade study on non-optical sensing equipment that could be applied for use on a fixed-wing UAV to detect poachers.

**Definition of Done**

[ ] Explore non-optical sensor ideas and methods of detecting poachers

[ ] Coordinate with other team members about which sensors will be researched, initially choosing 1 sensor to focus on

[ ] Identify the functions of a non-optical sensor

[ ] Identify a price range of the sensor being studied

[ ] Determine the probability of a successful integration of the sensor into a fixed wing UAV with optimal payload allowance of less than 1kg, and optimal flight altitude (think sensor range) of 100-150m AGL

[ ] Estimate the probability of the sensor’s ability to fulfill mission goals

[ ] Use a scale of 1-10 qualification scale for determining suitability of sensors, entering results into summary excel sheet in perforce

[ ] Add summary of findings to Trade Study document

**Notes**

Trade Study Document path: HIPPO\Research\Sensors\Non-opticalSensorTradeStudySummary

## 1955 – Admin Team Lead Duties

**Content**

As a HIPPO member, I will fulfill my duties as the administrative team lead.

**Definition of Done**

[X] Coordinate scheduling with other team members, Chris Lum and Joel Reiter

[X] Update User Stories with new projects for team members

[X] Maintain clear communication with group to ensure everyone has tasks assigned

[X] Coordinate research efforts into identifying candidate non-optical sensor technologies

[X] Identify relevant safety trainings through EH&S for this project and communicate them to the group

[X] Create Trade Study Summary excel doc, coordinating ideas for sensor research and sensor evaluation process

[X] Set up user stories for 1802

**Notes**

## 1956 – Budgeting Manager Duties

**Content**

As a HIPPO member, I will fulfill my duties as the team budgeting manager.

**Definition of Done**

[ ] I will familiarize myself with purchasing procedures

[ ] Create a budgeting document in Perforce and prepare to keep track of funds and expenses which may be incurred during the course of the project. Document should follow UWAA budget office guidelines.

[ ] Purchase appropriate adapters for computers

**Notes**

## 1957 – Fulfill Capstone Requirements

**Content**

As a HIPPO member, I will keep weekly summaries of Capstone activities done during that week and fulfill other general Capstone requirements.

**Definition of Done**

[X] I will write weekly summaries and submit them via Canvas for review by the TA

[X] I will keep a regular lab book documenting Capstone activities

[X] Attend Capstone class sections when possible

[X] Complete required design homework assignments

**Notes**

Lab book summaries are due to Canvas every Friday by 5 PM

## 1958 – Fulfill Capstone Requirements

**Content**

As a HIPPO member, I will keep weekly summaries of Capstone activities done during that week and fulfill other general Capstone requirements.

**Definition of Done**

[ ] I will write weekly summaries and submit them via Canvas for review by the TA

[ ] I will keep a regular lab book documenting Capstone activities

**Notes**

Lab book summaries are due to Canvas every Friday by 5 PM

## 1959 – Fulfill Capstone Requirements

**Content**

As a HIPPO member, I will keep weekly summaries of Capstone activities done during that week and fulfill other general Capstone requirements.

**Definition of Done**

[ ] I will write weekly summaries and submit them via Canvas for review by the TA

[ ] I will keep a regular lab book documenting Capstone activities

[X] Attend Capstone class sections when possible

[X] Complete required design homework assignments

**Notes**

Lab book summaries are due to Canvas every Friday by 5 PM

## 1960 – Fulfill Capstone Requirements

**Content**

As a HIPPO member, I will keep weekly summaries of Capstone activities done during that week and fulfill other general Capstone requirements.

**Definition of Done**

[ ] I will write weekly summaries and submit them via Canvas for review by the TA

[ ] I will keep a regular lab book documenting Capstone activities

[X] Attend Capstone class sections when possible

[X] Complete required design homework assignments

**Notes**

Lab book summaries are due to Canvas every Friday by 5 PM

## 1961 – LARAMID Designing Docking Mechanism

**Content**

As a LARAMID team member, I would like to design a docking mechanism that would be compatible for vertical lift and vertical landing with smooth detachment.

**Definition of Done**

[X] Do research about UAV landing systems.

[X] Do research about rail type docking system and compatibility

[X] Do research about magnet effect on GPS system

[X] Consider weight, strength, vibration, aerodynamics regarding system

[X] Setup user stories for Jan 2018 (sprint 1801).

[X] Outlines the pros and cons of each fixture system

**Notes**

Create related document to follow up

## 1962 – TRAPIS Payload Familiarization (copy)

**Content**

Copy of user story 1741 – TRAPIS Payload Familiarization.

**Definition of Done**

Copy definition of done from user story 1741 – TRAPIS Payload Familiarization.

**Notes**

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## 1963 – UASIPP Application

**Content**

As flight operations director, I would like to work with the relevant parties to complete the UAS Integration Pilot Program application to the FAA.

**Definition of Done**

[ ] Coordinate with the other groups to complete the UW’s side of the application.

**Notes**

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## 1964 – UASIPP Application (copy)

**Content**

As flight operations director, I would like to work with the relevant parties to complete the UAS Integration Pilot Program application to the FAA.

**Definition of Done**

[ ] Coordinate with the other groups to complete the UW’s side of the application.

**Notes**

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## 1965 – Setup AFSL Server

**Content**

As flight computer tech, I would like to setup a server in AFSL to house our databases.

**Definition of Done**

[ ] Setup computer to act as server

[ ] Configure it with the network so that it is accessible to outside parties

[ ] Store data on it

**Notes**

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## 1966 – ArduPlane Customization for TRAPIS2 – WA\_SMP (copy)

**Content**

Copy of user story 1914.

**Definition of Done**

Copy of user story 1914.

**Notes**

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**1967 – Flight Ops Administration (1801)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other miscellaneous lab administration

**Notes**

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**1968 – Flight Ops Administration (1802)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other miscellaneous lab administration

**Notes**

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**1969 – Flight Ops Administration (1803)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other miscellaneous lab administration

**Notes**

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## 1970 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1971 – Generate custom Mavlink message (copy)

**Content**

Copy of user story 1864 - Generate custom Mavlink message.

**Definition of Done**

Copy of user story 1864 - Generate custom Mavlink message.

**Notes**

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**1972 – UWSDK Unit Testing**

**Content**

As a software quality assurance engineer, I would like to fix currently failing unit tests and investigate test settings.

**Definition of Done**

[ ] Review the document [\\UWSDK\TechnicalDataPackage\UWSDKNotes.docx](file:///\\UWSDK\TechnicalDataPackage\UWSDKNotes.docx)

[ ] Change runsettings to //UWSDK/UWSDK/UW\_UnitTesting.runsettings

[ ] Run all unit tests and take note of failing tests

[ ] Fix all failing tests

[ ] Investigate if we can delete the following two files and still have unit tests executing and passing

1. [\\UWSDK\UWSDK\Local.testsettings](file:///\\UWSDK\UWSDK\Local.testsettings)
2. [\\UWSDK\UWSDK\TraceAndTestImpact.testsettings](file:///\\UWSDK\UWSDK\TraceAndTestImpact.testsettings)

**Notes**

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## 1973 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1974 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1975 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1976 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1977 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1978 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1979 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 1980 – Finwing Roll Characteristics

**Content**

As a flight test engineer, I would like to experimentally determine the roll characteristics of the Finwing Sabres, and model this in software to generate a wing leveler.

**Definition of Done**

[ ] Create a test card to collect the roll characteristics for the Finwings:

* In manual mode in straight and level flight conduct left/right aileron inputs in slow flight, cruise and dash
* Vary the aileron inputs from small to medium to large
* Essentially feed in square wave aileron inputs

[ ] Analyze the roll characteristics and generate a dynamic model for use in the WSTR wing-leveler code

**Notes**

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## 1981 – Sort LiPo Batteries

**Content**

As a lab member, I would like to check all the batteries and remove the old, bad ones.

**Definition of Done**

[ ] Go through all of the LiPo batteries and remove the puffy, or otherwise bad ones

[ ] Update component tracker

[ ] Determine how many good ones of each kind remain

[ ] Order replacement batteries

**Notes**

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## 1982 – Finwing Roll Characteristics (copy)

**Content**

Copy of user story 1980 – Finwing Roll Characteristics.

**Definition of Done**

Copy of user story 1980 – Finwing Roll Characteristics.

**Notes**

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## 1983 – Upgrade Flight Logs (Part 2)

**Content**

As a lab member, I would like to upgrade the flight log formatting across the fleet.

**Definition of Done**

[ ] Ensure all flight logs are upgraded to the standard .xlsx extension

[ ] Follow the instructions [here](https://trumpexcel.com/date-timestamp-excel/) under the Circular References Trick section (about halfway down) to enable iterative calculation

[ ] Add formula from Excelsior flight 004 to all flight logs so that the time stamp occurs automatically

[ ] Hyperlink all of the flight logs (see Anakin’s log) from the summary page to the flight sheets and vice versa

[ ] Add the Create a New flight! hyperlink and TEMPLATE tab to each log, which should include all of the correct formatting and formulas

[ ] Move the total flight time to the top of the page and set it to some at least 300 cells in the flight time column. Ensure the total time in air cell is in the same spot on each log.

[ ] Ensure all logs are formatted the same

[ ] Make a few extra blank flight sheets for each aircraft

[ ] Ensure the little description at the top of the log is for the correct aircraft. Ex. Excelsior’s log says that it is for the Plum system.

**Notes**

* Update the logs for every vehicle in the \FlightOperations\UAS\ folder that has a flight or operation log.
* Use Anakin’s log for a reference as it is mostly complete.
* On the summary page, some aircraft have additional columns: don’t adjust these column headers on any of the logs.

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## 1984 – Investigate Luke’s Receiver Problem

**Content**

As a lab member, I would like to investigate and fix Luke’s receiver connection issue.

**Definition of Done**

[ ] Become familiar with the problem and how the transmitter doesn’t always connect to the plane

[ ] Troubleshoot the problem

[ ] Resolve it so that the transmitter will reliably connect to the transmitter

* This could be making a new flight model or replacing the receiver on the plane

**Notes**

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## 1985 – Swarm Research

**Content**

As a lab member, I would like to investigate existing material on ongoing Swarm projects at other institutions or companies.

**Definition of Done**

[ ] Find at least 3 primary sources on UAV Swarms

[ ] Do a short write-up of what methods/hardware are being used to build swarms

[ ] Make a recommendation on a viable path for the group to pursue

[ ] Share with Swarm lab team on Slack

**Notes**

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## 1986 – Swarm Research (Copy)

**Content**

As a lab member, I would like to investigate existing material on ongoing Swarm projects at other institutions or companies.

**Definition of Done**

[ ] Find at least 3 primary sources on UAV Swarms

[ ] Do a short write-up of what methods/hardware are being used to build swarms

[ ] Make a recommendation on a viable path for the group to pursue

[ ] Share with Swarm lab team on Slack

**Notes**

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## 1987 – Swarm Research (Copy)

**Content**

As a lab member, I would like to investigate existing material on ongoing Swarm projects at other institutions or companies.

**Definition of Done**

[ ] Find at least 3 primary sources on UAV Swarms

[ ] Do a short write-up of what methods/hardware are being used to build swarms

[ ] Make a recommendation on a viable path for the group to pursue

[ ] Share with Swarm lab team on Slack

**Notes**

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## 1988 – Swarm Research (Copy)

**Content**

As a lab member, I would like to investigate existing material on ongoing Swarm projects at other institutions or companies.

**Definition of Done**

[ ] Find at least 3 primary sources on UAV Swarms

[ ] Do a short write-up of what methods/hardware are being used to build swarms

[ ] Make a recommendation on a viable path for the group to pursue

[ ] Share with Swarm lab team on Slack

**Notes**

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## 1989 – Swarm Research (Copy)

**Content**

As a lab member, I would like to investigate existing material on ongoing Swarm projects at other institutions or companies.

**Definition of Done**

[ ] Find at least 3 primary sources on UAV Swarms

[ ] Do a short write-up of what methods/hardware are being used to build swarms

[ ] Make a recommendation on a viable path for the group to pursue

[ ] Share with Swarm lab team on Slack

**Notes**

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## 1990 – Make HIPPO Gantt Chart

**Content**

As a HIPPO member, I will create a Gantt chart as an organizational tool for the success of this project.

**Definition of Done**

[X] Generate Gantt Chart using Gantt Chart RD document

**Notes**

Chart should be placed in HIPPO\Administrative\ProjectPlan\

## 1991 – HIPPO Marketing and Outreach Duties

**Content**

As the HIPPO Marketing and Outreach Coordinator, I will fulfill any relevant duties for the month of January.

**Definition of Done**

[x] Take pictures of work being done by team

[x] Coordinate with the department about responsibilities for sharing pictures/information about HIPPO capstone work

[x] Perform additional marketing duties as discovered

[x] Coordinate with Chris Lum to become an editor on the AFSL Facebook page so you can make posts (these will be picked up by the UW CoE)

**Notes**

Will update this story as needed if new responsibilities are revealed

## 1992 – FAA Daylight Operations Waiver (for flying at night)

**Content**

As a HIPPO Admin lead, I will interface with Hannah and any additional Flight Ops people to generate a new Part 107.29 Daylight Operations Waiver (for flying at night), something which could be important for testing HIPPO systems in the future.

**Definition of Done**

[X] Contact and coordinate with Hannah/AFSL personnel

[X] Research FAA requirements for filing a Part 107.29 Daylight Operations Waiver

[X] Draft application waiver and revise with Chris Lum/AFSL personnel

[X] File Part 107.29 Daylight Operations Waiver

**Notes**

Helpful article <https://www.dronepilotgroundschool.com/night-waiver/>

FAA info <https://www.faa.gov/uas/request_waiver/>

Waiting to see if we can get waiver from Vulcan

**1993 - TEMPEST Unigraphics/NX First Steps**

**Content**

Download and become familiar with Unigraphics/NX to become team’s go to CAD person.

**Definition of Done**

[ ] Download Unigraphics/NX onto lab machine.

[ ] Spend some time familiarizing yourself with the mechanics of the software

[ ] Share anything you feel the rest of the team should know.

**Notes:**

Installation guide found at <https://1drv.ms/w/s!AiTozuZSklGQjJ1-1Z4jw6roTeDmeg>

**1994 - TEMPEST Secretary Lead Duties**

**Content**

Keep minutes for every meeting and upload this into a single document.

**Definition of Done**

[ ] Keep digital notes for every meeting or assign someone to do so.

[ ] Transcribe handwritten notes and upload all relevant notes for every meeting to Perforce.

[ ] Make sure this doc is current.

**Notes:**

Meeting notes document found at TEMPEST\TechnicalDataPackage\PresentationsAndMeetings\MeetingNotes.docx4

**1995 - TEMPEST Communications / Marketing Lead Duties**

**Content**

As the TEMPEST Communications and Marketing Coordinator, I will fulfill any relevant duties for the month of January.

**Definition of Done**

[X] Take pictures of work being done by team

[ ] Coordinate with the department about responsibilities for sharing pictures/information about HIPPO capstone work

[ ] Perform additional marketing duties as discovered

[ ] Periodically post to the AFSL Facebook page <https://www.facebook.com/uwafsl/>

**Notes**

Will update this story as needed if new responsibilities are revealed

**1996 - TEMPEST Administrative Lead Duties**

**Content**

As a TEMPEST member, I will fulfill my duties as the administrative team lead.

**Definition of Done**

[ ] Coordinate scheduling with other team members, Chris Lum and Todd Leighton

[ ] Update User Stories with new projects for team members

[ ] Maintain clear communication with group to ensure everyone has tasks assigned

[ ] Coordinate research efforts

[ ] Identify relevant safety trainings through EH&S for this project and communicate them to the group

**Notes**

Will update as needed as new responsibilities are revealed

**1997 - TEMPEST Block Diagram First Draft**

**Content**

As a TEMPEST member, I will create a block diagram showing all electronics needed for the capstone project.

**Definition of Done**

[ ] Develop list of potential electronics needed for trailing pressure measurement system.

[ ] Using this list, create a block diagram showing how they interact.

[ ] Upload this diagram to Perforce.

[ ] Use PowerPont graphics to create the diagram so that it is editable for future changes.

**Notes** Upload block diagram to \\TEMPEST\TechnicalDataPackage\ProjectVision\TEMPESTProjectVision.pptx

## 1998 – TEMPEST Safety Training

**Content**

As a TEMPEST member, I will take steps to ensure I have adequate safety training.

**Definition of Done**

[] Take Fire Extinguisher Safety training, upload certificate

[] Take Electrical Safety, Basic training, upload certificate

[] Attend AFSL safety meeting 1/25/2018

**Notes**

Trainings courses can be found at:

<https://www.ehs.washington.edu/psotrain/corsdesc.shtm>

Upload certificates to \TEMPEST\Administrative\People\SafetyCertificates

Chris Lum info for faculty advisor

## 1999 – TEMPEST Safety Training

**Content**

As a TEMPEST member, I will take steps to ensure I have adequate safety training.

**Definition of Done**

[] Take Fire Extinguisher Safety training, upload certificate

[] Take Electrical Safety, Basic training, upload certificate

[] Attend AFSL safety meeting 1/25/2018

**Notes**

Trainings courses can be found at:

<https://www.ehs.washington.edu/psotrain/corsdesc.shtm>

Upload certificates to \TEMPEST\Administrative\People\SafetyCertificates

Chris Lum info for faculty advisor

## 2000 – TEMPEST Safety Training

**Content**

As a TEMPEST member, I will take steps to ensure I have adequate safety training.

**Definition of Done**

[] Take Fire Extinguisher Safety training, upload certificate

[] Take Electrical Safety, Basic training, upload certificate

[] Attend AFSL safety meeting 1/25/2018

**Notes**

Trainings courses can be found at:

<https://www.ehs.washington.edu/psotrain/corsdesc.shtm>

Upload certificates to \TEMPEST\Administrative\People\SafetyCertificates

Chris Lum info for faculty advisor

## 2001 – TEMPEST Safety Training

**Content**

As a TEMPEST member, I will take steps to ensure I have adequate safety training.

**Definition of Done**

[] Take Fire Extinguisher Safety training, upload certificate

[] Take Electrical Safety, Basic training, upload certificate

[] Attend AFSL safety meeting 1/25/2018

**Notes**

Trainings courses can be found at:

<https://www.ehs.washington.edu/psotrain/corsdesc.shtm>

Upload certificates to \TEMPEST\Administrative\People\SafetyCertificates

Chris Lum info for faculty advisor

## 2002 – TEMPEST Schedule Update

**Content**

As a TEMPEST team member, I would like to update the schedule for our capstone project based on new information.

**Definition of Done**

[ ] Generate rough schedule in the form of a Gantt chart in Microsoft Project

[ ] Push up department specified milestones to allow for more production and testing time

[ ] Coordinate with UWAL to try to schedule wind tunnel testing time

[ ] Review and edit with teammates

[ ] Review with Lum before sending to AeroTEC

**Notes**

## 2003 – TEMPEST Stability Research

**Content**

As a TEMPEST team member, I would like to research topics involving stability of the trailing pressure measurement system.

**Definition of Done**

[ ] Research relevant topics

[ ] Investigate roll stability

[ ] Design appropriate truck tests to assess stability.

[ ] Discuss during 1/23 and 1/25 meetings

**Notes**

## 2004 – TEMPEST Materials Research

**Content**

As a TEMPEST team member, I would like to research topics involving materials of the trailing pressure measurement system.

**Definition of Done**

[ ] Research relevant topics

[ ] Include fiberglass research

[ ] Discuss during 1/23 and 1/25 meetings

**Notes**

## 2005 – TEMPEST Regulations Research

**Content**

As a TEMPEST team member, I would like to research topics involving flight test regulations of the trailing pressure measurement system.

**Definition of Done**

[ ] Research relevant topics

[ ] Discuss during 1/23 and 1/25 meetings

**Notes**

## 2006 – TEMPEST Electronics Research

**Content**

As a TEMPEST team member, I would like to research topics involving electronics of the trailing pressure measurement system.

**Definition of Done**

[ ] Research relevant topics

[ ] Discuss during 1/23 and 1/25 meetings

**Notes**

## 2007 – TEMPEST Rough First Design Sketch

**Content**

As a TEMPEST team member, I would like contribute to the first rough system design sketch(es).

**Definition of Done**

[ ] Includes specifications for

[ ] Rough dimensions / shape

[ ] Onboard electronics systems

[ ] Rough weight

[ ] Includes discussion of

[ ] Power Requirements

[ ] Stability consideration

[ ] Regulations consideration (FAA)

[ ] Structural integrity

[ ] Materials selection

[ ] Completion by 1/25 meeting

[ ] Scan and upload to Perforce

[ ] Send to Todd on 1/26

**Notes**

TEMPEST\Research\Conceptual\_Design\

## 2008 – TEMPEST Rough First Design Sketch

**Content**

As a TEMPEST team member, I would like contribute to the first rough system design sketch(es).

**Definition of Done**

[X] Includes specifications for

[ ] Rough dimensions / shape

[ ] Onboard electronics systems

[ ] Rough weight

[X] Includes discussion of

[ ] Power Requirements

[ ] Stability consideration

[ ] Regulations consideration (FAA)

[ ] Structural integrity

[ ] Materials selection

[X] Completion by 1/25 meeting

[ ] Scan and upload to Perforce

[ ] Send to Todd on 1/26

**Notes**

TEMPEST\Research\Conceptual\_Design\

## 2009 – TEMPEST Rough First Design Sketch

**Content**

As a TEMPEST team member, I would like contribute to the first rough system design sketch(es).

**Definition of Done**

[ ] Includes specifications for

[ ] Rough dimensions / shape

[ ] Onboard electronics systems

[ ] Rough weight

[ ] Includes discussion of

[ ] Power Requirements

[ ] Stability consideration

[ ] Regulations consideration (FAA)

[ ] Structural integrity

[ ] Materials selection

[ ] Completion by 1/25 meeting

[ ] Scan and upload to Perforce

[ ] Send to Todd on 1/26

**Notes**

TEMPEST\Research\Conceptual\_Design\

## 2010 – TEMPEST Rough First Design Sketch

**Content**

As a TEMPEST team member, I would like contribute to the first rough system design sketch(es).

**Definition of Done**

[ ] Includes specifications for

[ ] Rough dimensions / shape

[ ] Onboard electronics systems

[ ] Rough weight

[ ] Includes discussion of

[ ] Power Requirements

[ ] Stability consideration

[ ] Regulations consideration (FAA)

[ ] Structural integrity

[ ] Materials selection

[ ] Completion by 1/25 meeting

[ ] Scan and upload to Perforce

[ ] Send to Todd on 1/26

**Notes**

TEMPEST\Research\Conceptual\_Design\

## 2011 – Mini-Talon Build (Copy)

**Content**

Copy of user story 1913 – Mini-Talon Build.

**Definition of Done**

Copy of user story 1913 – Mini-Talon Build.

**Notes**

|  |
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## 2012 – Airspace Authorization Rules

**Content**

As a lab member, I would like to look up the rules regarding FAA airspace authorizations, specifically regarding Class E Surface airspace.

**Definition of Done**

[ ] Look around online and on the FAA website to determine if surface Class E airspace requires an FAA authorization for operation.

**Notes**

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## 2013 – Battery Warmer

**Content**

As a lab member, I would like to research and purchase a battery warmer for flight tests.

**Definition of Done**

[ ] Research how cold and damp weather might affect the performance of LiPo batteries.

[ ] Research battery warmers

[ ] For out at the flight line <https://hobbyking.com/en_us/turnigy-programmable-lipo-battery-warmer-bag-12v-dc.html>

[ ] For inside the MFOC – use 120 VAC power instead of LiPo

[ ] Purchase

**Notes**

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## 2014 – Aileron Deflection Measurements for Wing Leveler

**Content**

As a flight test engineer, I would like to collect measurements for developing a wing leveler for the Finwing Sabres.

**Definition of Done**

[ ] Measure aileron, elevator and rudder deflections at predetermined PWM values.

[ ] Record these in the aircraft AFM.

[ ] Repeat with another Finwing.

[ ] Determine which values in the data flash log plots correspond to roll, pitch and yaw rate.

[ ] What are the units of the IMU.GyrX, IMU.GyrY, and IMU.GyrZ

[ ] Determine which axes are the IMU gyros lined up with. Might be X =  p = roll rate, y = q = pitch rate, z = r = yaw rate but this should be verified.

**Notes**

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## 2015 – Aileron Deflection Measurements for Wing Leveler (copy)

**Content**

Copy of user story 2014 – Aileron Deflection Measurements for Wing Leveler

**Definition of Done**

Copy of user story 2014 – Aileron Deflection Measurements for Wing Leveler

**Notes**

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## 2016 – Propeller Lock 3D Print

**Content**

As a rapid prototyping engineer, I would like to 3D print the first prototype of a propeller lock.

**Definition of Done**

[ ] Coordinate with Taehan Kook to get CAD model

[ ] Print model

[ ] Work to print future iterations

**Notes**

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## 2017 – Plywood Cutting for Battery Charging Station

**Content**

As a machinist, I would like to cut the plywood for the battery charging station.

**Definition of Done**

[ ] Coordinate with Taehan Kook to get measurements

[ ] Cut wood

**Notes**

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## 2018 – SDR Database Front End

**Content**

As a software engineer, I would like to make the SDR database more functional.

**Definition of Done**

[ ] Coordinate with Josh Brockschmidt, Abhinav Jadon, and Hannah Rotta to get access to the database.

[ ] Add more functionality to the website

[ ] Add more sorting options

**Notes**

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## 2019 – FAA DroneZone Account Creation

**Content**

As the faculty advisor for AFSL, I will create an FAA DroneZone account for AFSL to submit any future Part 107 waiver requests.

**Definition of Done**

[ ] Create DroneZone account

[ ] Share account login information with Hannah Rotta, Alex Bernard and other AFSL personnel as needed

**Notes**

* FAADroneZone Portal located at the following link: <https://faadronezone.faa.gov/#/>

**2020 – UWSDK Unit Testing Copy**

**Content**

Copy of 1972

As a software quality assurance engineer, I would like to fix currently failing unit tests and investigate test settings.

**Definition of Done**

[ ] Review the document [\\UWSDK\TechnicalDataPackage\UWSDKNotes.docx](file:///\\UWSDK\TechnicalDataPackage\UWSDKNotes.docx)

[ ] Change runsettings to //UWSDK/UWSDK/UW\_UnitTesting.runsettings

[ ] Run all unit tests and take note of failing tests

[ ] Fix all failing tests

[ ] Investigate if we can delete the following two files and still have unit tests executing and passing

1. [\\UWSDK\UWSDK\Local.testsettings](file:///\\UWSDK\UWSDK\Local.testsettings)
2. [\\UWSDK\UWSDK\TraceAndTestImpact.testsettings](file:///\\UWSDK\UWSDK\TraceAndTestImpact.testsettings)

**Notes**

## 2021 – GUI Development

**Content**

As an undergraduate, I would like to create a GUI that will be able to visually analyze the .pcap files collected from the LiDAR sensor.

**Definition of Done**

[ ] See Karine before starting this userstory.

[ ] Develop the GUI as stated.

[ ] Overlap multiple .pcap files of the same locations.

[ ] Side by side projection of different .pcap files.

[ ] Scrollable bar for change in time.

[ ] Document the GUI

[ ] Code used to create the GUI

[ ] How to use it

[ ] Troubleshooting errors.

**Notes**

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## 2022 – HIPPO DRR Preparation

As a HIPPO Team member, I will prepare for the Design Requirements Review (DRR) on Friday, February 2nd.

**Definition of Done**

[X] Review DRR requirements document on Canvas

[X] Create slides for PowerPoint presentation

[ ] Prepare to present at DRR, keeping in mind team limit of a 15 minute max presentation

[ ] Attend DRR and contribute to team presentation

**Notes**

- DRR will be Feb. 2, 2018, 12:30-5:30pm, Johnson 075

- Vulcan Presentation scheduled for 3:10 PM

- Per Capstone requirements, attendance is required: “All students are expected to attend and submit assessments for at least half of the presentations.”

## 2023 – HIPPO DRR Preparation

As a HIPPO Team member, I will prepare for the Design Requirements Review (DRR) on Friday, February 2nd.

**Definition of Done**

[ ] Review DRR requirements document on Canvas

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at DRR, keeping in mind team limit of a 15 minute max presentation

[ ] Attend DRR and contribute to team presentation

**Notes**

- DRR will be Feb. 2, 2018, 12:30-5:30pm, Johnson 075

- Vulcan Presentation scheduled for 3:10 PM

- Per Capstone requirements, attendance is required: “All students are expected to attend and submit assessments for at least half of the presentations.”

## 2024 – HIPPO DRR Preparation

As a HIPPO Team member, I will prepare for the Design Requirements Review (DRR) on Friday, February 2nd.

**Definition of Done**

[ ] Review DRR requirements document on Canvas

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at DRR, keeping in mind team limit of a 15 minute max presentation

[ ] Attend DRR and contribute to team presentation

**Notes**

- DRR will be Feb. 2, 2018, 12:30-5:30pm, Johnson 075

- Vulcan Presentation scheduled for 3:10 PM

- Per Capstone requirements, attendance is required: “All students are expected to attend and submit assessments for at least half of the presentations.”

## 2025 – HIPPO DRR Preparation

As a HIPPO Team member, I will prepare for the Design Requirements Review (DRR) on Friday, February 2nd.

**Definition of Done**

[ ] Review DRR requirements document on Canvas

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at DRR, keeping in mind team limit of a 15 minute max presentation

[ ] Attend DRR and contribute to team presentation

**Notes**

- DRR will be Feb. 2, 2018, 12:30-5:30pm, Johnson 075

- Vulcan Presentation scheduled for 3:10 PM

- Per Capstone requirements, attendance is required: “All students are expected to attend and submit assessments for at least half of the presentations.”

## 2026 – TEMPEST DRR Preparation

As a TEMPEST Team member, I will prepare for the Design Requirements Review (DRR) on Friday, February 2nd.

**Definition of Done**

[ ] Review DRR requirements document on Canvas

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at DRR, keeping in mind team limit of a 15 minute max presentation

[ ] Attend DRR and contribute to team presentation

**Notes**

- DRR will be Feb. 2, 2018, 12:30-5:30pm, Johnson 075

- AeroTEC Presentation scheduled for 12:50 PM

- Per Capstone requirements, attendance is required: “All students are expected to attend and submit assessments for at least half of the presentations.”

## 2027 – TEMPEST DRR Preparation

As a TEMPEST Team member, I will prepare for the Design Requirements Review (DRR) on Friday, February 2nd.

**Definition of Done**

[ ] Review DRR requirements document on Canvas

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at DRR, keeping in mind team limit of a 15 minute max presentation

[ ] Attend DRR and contribute to team presentation

**Notes**

- DRR will be Feb. 2, 2018, 12:30-5:30pm, Johnson 075

- AeroTEC Presentation scheduled for 12:50 PM

- Per Capstone requirements, attendance is required: “All students are expected to attend and submit assessments for at least half of the presentations.”

## 2028 – TEMPEST DRR Preparation

As a TEMPEST Team member, I will prepare for the Design Requirements Review (DRR) on Friday, February 2nd.

**Definition of Done**

[ ] Review DRR requirements document on Canvas

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at DRR, keeping in mind team limit of a 15 minute max presentation

[ ] Attend DRR and contribute to team presentation

**Notes**

- DRR will be Feb. 2, 2018, 12:30-5:30pm, Johnson 075

- AeroTEC Presentation scheduled for 12:50 PM

- Per Capstone requirements, attendance is required: “All students are expected to attend and submit assessments for at least half of the presentations.”

## 2029 – TEMPEST DRR Preparation

As a TEMPEST Team member, I will prepare for the Design Requirements Review (DRR) on Friday, February 2nd.

**Definition of Done**

[ ] Review DRR requirements document on Canvas

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at DRR, keeping in mind team limit of a 15 minute max presentation

[ ] Attend DRR and contribute to team presentation

**Notes**

- DRR will be Feb. 2, 2018, 12:30-5:30pm, Johnson 075

- AeroTEC Presentation scheduled for 12:50 PM

- Per Capstone requirements, attendance is required: “All students are expected to attend and submit assessments for at least half of the presentations.”

## 2030 – TEMPEST January Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of January.

**Definition of Done**

[ ] Participation in Tuesday weekly internal meetings (3 this month)

[ ] Participation in Thursday weekly internal meetings (4 this month)

[ ] Participation of Friday weekly meetings with Todd (2 this month)

**Notes**

## 2031 – TEMPEST January Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of January.

**Definition of Done**

[ ] Participation in Tuesday weekly internal meetings (3 this month)

[ ] Participation in Thursday weekly internal meetings (4 this month)

[ ] Participation of Friday weekly meetings with Todd (2 this month)

**Notes**

## 2032 – TEMPEST January Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of January.

**Definition of Done**

[ ] Participation in Tuesday weekly internal meetings (3 this month)

[ ] Participation in Thursday weekly internal meetings (4 this month)

[ ] Participation of Friday weekly meetings with Todd (2 this month)

**Notes**

## 2033 – TEMPEST January Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of January.

**Definition of Done**

[ ] Participation in Tuesday weekly internal meetings (3 this month)

[ ] Participation in Thursday weekly internal meetings (4 this month)

[ ] Participation of Friday weekly meetings with Todd (2 this month)

**Notes**

## 2034 – TEMPEST Fiberglass Research

As a TEMPEST Team member, I will research the potential of using sailing grade fiberglass for the structure of the AeroTEC drogue.

**Definition of Done**

[ ] Research different fibers and epoxies

[ ] Research manufacturing processes

[ ] Report to team

**Notes**

## 2035 – TEMPEST Simple CAD Model

As a TEMPEST Team member, I will build a simple first model of the drogue structure.

**Definition of Done**

[ ] Build a drogue in a CAD software

[ ] Take screenshots and upload to Perforce

**Notes**

## 2036 – TEMPEST Simple CFD Study

As a TEMPEST Team member, I will conduct a small CFD study to help decide what type of cross-sectional shape to use for the drogue.

**Definition of Done**

[ ] Build a few different 2D cross sectional areas

[ ] Run these areas through a CFD simulation to determine relative drags and lifts

[ ] Create a design matrix with pros and cons of each area

**Notes**

## 2037 - TEMPEST Reel System Research

As a TEMPEST Team member, I will research potential reel systems for the trailing pressure measurement system.

**Definition of Done**

[ ] Estimate power need to reel in and reel out drogue

[X] Research different motors and gear ratios

[ ] Research different potential cables (ie Kevlar cords)

[ ] Develop design matrix with pros and cons for each

[ ] Present results to group (both internal and AeroTEC)

**Notes**

## 2038 - TEMPEST Centralized System Design Matrix

As a TEMPEST Team member, I will construct a file that shows pros and cons of many different potential aspects of the system.

**Definition of Done**

[ ] Aspects to analyze

[ ] Cross sectional shape

[ ] Battery

[ ] Communication system

[ ] Structural material

[ ] Reel system

[ ] Cable

[ ] Heating

[ ] Insulation

**Notes**

## 2039 - TEMPEST LaTex Paper Infrastructure

As a TEMPEST Team member, I will create the infrastructure for both paper submission requirements

**Definition of Done**

[ ] Create functional paper infrastructure files

[ ] Create nomenclature section

[ ] Fill in concepts we’ve already agreed on

**Notes**

## 2040 - Planning for TEMPEST Prototype Truck Test

As a TEMPEST Team member, I will design a test that determines the stability of prototypes of our drogue system

**Definition of Done**

[ ] Determine what measurable data needs to be recorded and analyzed

[ ] Design and document (plan that can be brought along) an experiment that measures these characteristics

[ ] Schedule runway and truck

[ ] Determine what materials need to be purchased for testing

[ ] Investigate size vs. speed vs. Re effects

[ ] Determine what supplies are necessary for test and purchase early if we can.

**Notes**

* Moses Lake airport should be an option, give them at least a week of lead time
* Dr. Lum has a truck (1992 Dodge Dakota Extended Cab)

## 2041 - TEMPEST Full Model Truck Test Planning

As a TEMPEST Team member, I will design a test that determines the stability of our drogue system

**Definition of Done**

[ ] Determine what measurable data needs to be recorded and analyzed

[ ] Design and document (plan that can be brought along) an experiment that measures these characteristics

[ ] Schedule runway and truck

[ ] Determine what materials need to be purchased for testing

**Notes**

Moses Lake airport should be an option, give them at least a week of lead time

Dr. Lum has a truck

## 2042 - TEMPEST Wind Tunnel Test Planning

As a TEMPEST Team member, I will design a test that utilizes the UWAL wind tunnel that determines the stability of our drogue system

**Definition of Done**

[ ] Determine what measurable data needs to be recorded and analyzed

[ ] Design and document (plan that can be brought along) an experiment that measures these characteristics

[ ] Schedule UWAL

[ ] Determine what materials need to be purchased for testing

**Notes**

Give UWAL A LOT of lead time – they get very busy

## 2043 - TEMPEST SciTech Conference Registration

As a TEMPEST Team member, I will register us for SciTech 2019

**Definition of Done**

[ ] Determine milestones for AIAA publication

[ ] Take action to get team registered for SciTech 2019

**Notes**

## 2044 - TEMPEST Component CAD Modeling

As a TEMPEST Team member, I will model components of the pressure measurement system as assigned

**Definition of Done**

[ ] Search for existing models of purchased components

[ ] If no model exists, make a rough model of the component

[ ] Model all built components as assigned

**Notes**

Resource for existing CAD models: <https://grabcad.com/library>

## 2045 - TEMPEST Component CAD Modeling

As a TEMPEST Team member, I will model components of the pressure measurement system as assigned

**Definition of Done**

[ ] Search for existing models of purchased components

[ ] If no model exists, make a rough model of the component

[ ] Model all built components as assigned

**Notes**

Resource for existing CAD models: https://grabcad.com/library

## 2046 - TEMPEST CAD Modeling Integration

As a TEMPEST Team member, I will

**Definition of Done**

[X] Perform an initial, rough, round body CAD design.

[ ] Integrate models of components into several iterations of drogue designs

[] Drogue iterations vary in

[] length

[] fin size

[] weight distribution

[] other necessary characteristics

**Notes**

## 2047 – TEMPEST Internal PDR Preparation

As a TEMPEST Team member, I will prepare for our internal Preliminary Design Review (PDR) on Friday, February 23rd.

**Definition of Done**

[ ] Review PDR requirements document on Canvas

[ ] Agree on revised internal PDR requirements to present to AeroTEC

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at PDR

[ ] Attend PDR and contribute to team presentation

[ ] Invite Kent in addition to Todd

**Notes**

- PDR will be Feb. 23rd, 2018, 8:30-9:30am at AeroTEC offices

## 2048 – TEMPEST Internal PDR Preparation

As a TEMPEST Team member, I will prepare for our internal Preliminary Design Review (PDR) on Friday, February 23rd.

**Definition of Done**

[ ] Review PDR requirements document on Canvas

[ ] Agree on revised internal PDR requirements to present to AeroTEC

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at PDR

[ ] Attend PDR and contribute to team presentation

**Notes**

- PDR will be Feb. 23rd, 2018, 8:30-9:30am at AeroTEC offices

## 2049 – TEMPEST Internal PDR Preparation

As a TEMPEST Team member, I will prepare for our internal Preliminary Design Review (PDR) on Friday, February 23rd.

**Definition of Done**

[ ] Review PDR requirements document on Canvas

[ ] Agree on revised internal PDR requirements to present to AeroTEC

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at PDR

[ ] Attend PDR and contribute to team presentation

**Notes**

- PDR will be Feb. 23rd, 2018, 8:30-9:30am at AeroTEC offices

## 2050 – TEMPEST Internal PDR Preparation

As a TEMPEST Team member, I will prepare for our internal Preliminary Design Review (PDR) on Friday, February 23rd.

**Definition of Done**

[ ] Review PDR requirements document on Canvas

[ ] Agree on revised internal PDR requirements to present to AeroTEC

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at PDR

[ ] Attend PDR and contribute to team presentation

**Notes**

- PDR will be Feb. 23rd, 2018, 8:30-9:30am at AeroTEC offices

## 2051 – Package and Migrate Project Code to Perforce

As the primary developer of the new mapping project, I will package and migrate code used for this project to Perforce.

**Definition of Done**

[ ] Coordinate file upload location with C. Lum

[ ] Properly comment the code for further use by other developers

[ ] Upload the code in sln format

[ ] Test the function of the code on a clean lab computer

**Notes**

- Fixed file I/O incompatibility between different parts of code.

## 2052 – Point Cloud Library (PCL) User Tutorial

As a AFSL member who has experience with Point Cloud Library (PCL), I will construct a solution structure and write a user tutorial for other lab members to easily use PCL in the future.

**Definition of Done**

[ ] Construct a solution structure for future usage of PCL for a lab project

[ ] Upload file structure to Perforce

[ ] Write a user tutorial for further PCL use

[ ] Upload user tutorial to Perforce

**Notes**

Ask another lab member to follow the tutorial on a clean lab machine

## 2053 – Correlation Study of UAV Data and Ground Truth Data

As a member participated in the AMFAV project, I would like to revisit the data collected for the project last summer and find if there exists any correlation between UAV data and ground truth data to determine if the data collection method used in the project could produce data which could be regarded as a relevantly reliable predictor of the variables the sponsors of the project obtained through laboratory analysis.

**Definition of Done**

[ ] Perform correlation study on UAV data and ground truth data for datasets collected for AMFAV project

[ ] Produce a report of findings.

**Notes**

## 2054 – Finwing Sabre Build (Pear)

**Content**

As a test engineer, I would like to build the two Finwing Sabre aircraft so I can use it for the TRAPIS2 project.

**Definition of Done**

[ ] Coordinate with Hannah, Selina, and Karine to discuss the TRAPIS payload.

[ ] Build the two Finwing Sabre aircraft.

[ ] Name both systems.

[ ] Update \FlightOperations\UAS\ComponentTracker.xlsx

[ ] Flight test these aircraft, and ensure they are tuned appropriately for safe and reliable flight.

[ ] Preliminary tuning can be done with the Plum aircraft.

[ ] Create necessary documentation/paperwork for these aircraft

[ ] Ensure they are airworthy.

[ ] Present/demo to lab group.

**Notes**

* The TRAPIS payload should be the primary responsibility/priority of the aircraft. Other components should be built around the payload.
* Check in with Chris and Hannah before you glue or permanently affix components.

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## 2055 – Finwing Sabre Build (Pear) (copy)

**Content**

Copy of user story 2054.

**Definition of Done**

Copy definition of done from user story 2054.

**Notes**

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## 2056 – Finwing Sabre Build (Pear) (copy)

**Content**

Copy of user story 2054.

**Definition of Done**

Copy definition of done from user story 2054.

**Notes**

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## 2057 – Finwing Ballast

**Content**

As a test engineer, I would like to design a reusable ballast for the Finwing Sabres.

**Definition of Done**

[ ] Coordinate with Hannah before beginning

[ ] Design and manufacture something that can ballast the Finwings so that they will reliably have a constant center of gravity.

[ ] If 3D printing, save model to perforce under \FlightOperations\UAS\Plum\SubSystems\, or whichever aircraft it is for (Plum, Peach or Pear)

**Notes**

* This could be a box, or a number of small boxes to hold metal BB’s, or something else. Feel free to get creative.
* Must be reusable and somewhat permanent (velcroed into place, perhaps?)
* Must be adjustable or replaceable to account for different payload configurations.
* The smaller the better
* As far forward as possible is best, so that it will require less overall additional weight to place the CG in the correct location
* Duct taping it in place = bad

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## 2058 – Plum Maintenance

**Content**

As a test engineer, I would like to modify Plum to make its design more efficient.

**Definition of Done**

[ ] Reorganize wiring to free up space for the battery, ballast and payloads.

[ ] Complete To-Do items here: \FlightOperations\UAS\Plum\ConstructionAndMaintenenceLog.docx

[ ] Update maintenance log with modifications

**Notes**

* As it is it is really easy to knock a wire loose when installing the batteries

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**2059 – ArduPilot Software Development Setup (Copy)**

**Content**

* Copy of user story 1856 ArduPilot Software Development Setup Copy
* Copy of user story [1711 – MissionPlanner Simulation Setup](#_1711_–_MissionPlanner)
* As a software developer, I want to setup my personal computer so that I can modify code and test those modifications.

**Definition of Done**

[ ] Copy definition of done from user story [1711 – MissionPlanner Simulator Setup](#_1711_–_MissionPlanner).

[ ] Download [Visual Studio Community 2017](https://www.visualstudio.com/downloads/)

[ ] Follow the documentation here: [ArduPlane Build Notes](https://paper.dropbox.com/doc/ArudPilot-Windows-10-Build-Notes-ZFehgvzSE9jHJru2Pv4ww)

* Make sure to look at the notes at the bottom of the page to clone our **custom** firmware, not just default ardupilot.
* Don’t need to do Upload Firmware section just yet

[ ] Test the custom firmware through the simulation that was set up in US\_1711

* Test UW\_Mode\_2. You will not be able to select that mode unless you full complete US\_1711. See *Notes* below.

[ ] Build the custom firmware and upload (look at upload firmware section in build notes) to the HiL (the test HiL, please don’t do your first test on an actual plane)

[ ] See if the UW\_M\_X (X can be any number) does actually switch on Mission Planner.

See *Notes* below. You should test this by switching modes and looking at the HUD. You can also check the Parameter Tree for uw parameters if you are having trouble setting up Mission Planner.

**Notes**

* If you could not accurately setup Mission Planner to show the custom flight modes from User Story 1711, just try testing the parameters for the last step (see if they are there).
* Prepare a lot of space to download all these programs! (Hopefully no more than 10 Gb)

## 2060 – HIPPO Budgeting Duties

**Content**

As the HIPPO Budgeting Coordinator, I would like to fulfill whatever duties are necessary relating to budgeting and purchasing for the team.

**Definition of Done**

[ ] Finish research into international calling as part of the budget.

[ ] Upload and update a budgeting spreadsheet as needed, located here: HIPPO\Administrative\Budget\

[ ] Order/purchase necessary equipment when the team decides a new item is needed and add to budget

**Notes**

## 2061 – HIPPO Admin Duties

**Content**

As the HIPPO Admin Lead, I would like to fulfill whatever duties are necessary relating to administrative leadership for the team.

**Definition of Done**

[ ] Update and add user stories as needed

[ ] See User Story 1955 for more details

**Notes**

## 2062 – HIPPO Marketing and Outreach Duties

**Content**

As the HIPPO Marketing and Outreach coordinator, I would like to fulfill whatever duties that are necessary relating to marketing and outreach for the team.

**Definition of Done**

[x] Contact AFSL personnel to get access to the AFSL Facebook page for posting updates about the HIPPO team.

[x] See User Story 1991 for more duties

**Notes**

## 2063 – Communication with Microflown, Sensing Clues

**Content**

As a HIPPO team member, I would like to communicate with potential sensor vendors to obtain more valuable information.

**Definition of Done**

[X] Maintain persistent emails until they respond

[x] Call when possible (before 8 am Pacific Time)

[x] Update team members on findings when contact is made

**Notes**

## 2064 – Sensor Choice

**Content**

As a HIPPO team member, I would like to participate in a finalization of 3-4 sensors to present at the industry meeting on 2/6.

**Definition of Done**

[x] Communicate with other team members about sensor viability

[x] Contribute to presentation located at: HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_02\_06\_VulcanMeeting\

**Notes**

## 2065 – Sensor Choice

**Content**

As a HIPPO team member, I would like to participate in a finalization of 3-4 sensors to present at the industry meeting on 2/6.

**Definition of Done**

[x] Communicate with other team members about sensor viability

[x] Contribute to presentation located at: HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_02\_06\_VulcanMeeting\

**Notes**

## 2066 – Sensor Choice

**Content**

As a HIPPO team member, I would like to participate in a finalization of 3-4 sensors to present at the industry meeting on 2/6.

**Definition of Done**

[x] Communicate with other team members about sensor viability

[x] Contribute to presentation located at: HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_02\_06\_VulcanMeeting\

**Notes**

## 2067 – Sensor Choice

**Content**

As a HIPPO team member, I would like to participate in a finalization of 3-4 sensors to present at the industry meeting on 2/6.

**Definition of Done**

[x] Communicate with other team members about sensor viability

[x] Contribute to presentation located at: HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_02\_06\_VulcanMeeting\

**Notes**

## 2068 – V2 Model From Vulcan

**Content**

As a HIPPO team member, I would like to look in to obtaining a CAD model of Vulcan’s V2 craft for use in determining physical integration of sensors into the craft.

**Definition of Done**

[x] Contact Vulcan and ask if it’s possible to obtain a CAD file for their V2 UAS

[x] Upload file to Perforce if possible

[x] Obtain fuselage if not possible

**Notes**

If Vulcan does not use Solidworks then potentially we could see about just getting a .obj file

## 2069 – LiDAR Specifications

**Content**

As a HIPPO team member, I would like to further investigate the LiDAR sensor possessed by the AFSL.

**Definition of Done**

[ ] Obtain information about integration of LiDAR into UAS from AFSL documents and/or personnel

[ ] See if it’s possible to get a 3D model of the physical LiDAR sensor for possible modeling use

[ ] Determine necessary processing requirements for LiDAR data output

**Notes**

## 2070 – Artificial Light Sensor Research

**Content**

As a HIPPO team member, I would like to continue investigation and experimentation with artificial light sensor research.

**Definition of Done**

[x] Continue research into sensing artificial light

[x] Continue iterative experimentation with detecting artificial light using a highly sensitive photo diode or other camera

[x] Communicate with team about tests and results

**Notes**

## 2071 – Capstone Safety Matrix

**Content**

As HIPPO Admin Lead, I will fill out and submit the safety matrix that is required for Capstone.

**Definition of Done**

[X] Complete and submit the Capstone Safety matrix document located on Canvas by 2/9

[X] Communicate with team about any potential new requirements/information

**Notes**

## 2072 – Sensor Support Research

**Content**

As a HIPPO team member, I would like to participate in determining additional information about sensors.

**Definition of Done**

[x] Communicate with HIPPO, Chris Lum and AFSL personnel about testing and sensor parameters

[x] Coordinate with team members about necessary support research for determining sensor parameters

**Notes**

## 2073 – Sensor Support Research

**Content**

As a HIPPO team member, I would like to participate in determining additional information about sensors.

**Definition of Done**

[x] Communicate with HIPPO, Chris Lum and AFSL personnel about testing and sensor parameters

[x] Coordinate with team members about necessary support research for determining sensor parameters

**Notes**

## 2074 – Sensor Support Research

**Content**

As a HIPPO team member, I would like to participate in determining additional information about sensors.

**Definition of Done**

[x] Communicate with HIPPO, Chris Lum and AFSL personnel about testing and sensor parameters

[x] Coordinate with team members about necessary support research for determining sensor parameters

**Notes**

## 2075 – Sensor Support Research

**Content**

As a HIPPO team member, I would like to participate in determining additional information about sensors.

**Definition of Done**

[x] Communicate with HIPPO, Chris Lum and AFSL personnel about testing and sensor parameters

[x] Coordinate with team members about necessary support research for determining sensor parameters

**Notes**

## 2076 – Paper Introduction

**Content**

As a HIPPO team member, I would like to begin writing introductory and background sections for our paper.

**Definition of Done**

[ ] Familiarize self with LaTeX and conference paper skeleton

[ ] Write introductory and background sections of the paper

[ ] Include a literature review and discussion on other people’s work in this area.

[ ] Fix footnotes (change these to full citations/references)

[ ] Communicate with group about progress and content

**Notes**

Paper located at: \HIPPO\TechnicalDataPackage\ConferencePaper\

## 2077 – Electromagnet Interference on UAV compass

**Content**

As a LARAMID team member, I would like to test EM interference on UAV compass

**Definition of Done**

[X] Do ground test with EM and White Bird

[X] Write report about the interference

**Notes**

Paper located at: \LARAMID\Research\Electromagnetic interference on GPS receiver

## 2078 – Electromagnet holding test on Styrofoam

**Content**

As a LARAMID team member, I would like to test EM stability mounted on Styrofoam.

**Definition of Done**

[ ] Mount iron on the Styrofoam with screw and turn on EM and see stability of iron

[ ] Write report about iron stability based on different situations

**Notes**

Paper located at: \LARAMID\SubSystems

## 2079 – Accelerometer Research

**Content**

As a LARAMID team member, I would like do research on accelerometer so that we can design the docking frame which make the aircraft stable while flying.

**Definition of Done**

[ ] Find the an Arduino based accelerometer and make a manual.

[ ] Do research about Arduino and decide the type needed for LARAMID project.

**Notes**

Paper located at: \LARAMID\SubSystems

## 2080 – Research Proposal

**Content**

As a LARAMID team member, I would like to write research proposal for thesis program.

**Definition of Done**

[ ] Write research proposal for LARAMID project.

[ ] Ask two ME faculty members becoming committee

**Notes**

Consult with Dr. Lum

Paper located at: \LARAMID\SubSystems

## 2081 – Fix Anakin’s rudder

**Content**

As a lab member, I would like to fix Anakin’s rudder for the further flight test.

**Definition of Done**

[ ] Retape the rudder so that it does not slip one side.

[ ] Test Anakin if the rudder moves well.

**Notes**

## 2082 – Component Description Document

**Content**

As a lab member, I would like to update the Component Description Document, \FlightOperations\UAS\ComponentDescriptions.docx, for new members, who can easily learn about the functions of UAV components and connections with other parts.

**Definition of Done**

[ ] Update photos if need.

[ ] Describe functions of each component.

[ ] Describe connections of each component.

**Notes**

## 2083 – Reinstall Pixhawk on Cera

**Content**

As a lab member, I would like to work on Cera to be ready for the further test.

**Definition of Done**

[ ] Reinstall Pixhawk on Cera

[ ] Load proper firmware

[ ] Load parameters

[ ] Calibrations (compass, accelerometer)

[ ] Test the system

**Notes**

## 2084 – Stepper Motor Docking Design

**Content**

As a LARAMID team member, I would like to make CAD model for the docking system with stepper motors.

**Definition of Done**

[ ] Finish CAD design for stepper motor docking system

[ ] Present the model to the team

**Notes**

## 2085 – Sled Research

**Content**

As a LARAMID team member, I would like to do research for finding appropriate multi-rotors as a sled with necessary components.

**Definition of Done**

[X] Make a document with capacity and specification of multi-rotor and order necessary parts

**Notes**

Save document in LARAMID\Research\LARAMID Sled Components.doc

## 2086 – Paper Formatting and Intro

**Content**

As a HIPPO team member, I would like to create the outline for formatting the Conference Paper and contribute writing the introductory section of the paper.

**Definition of Done**

[X] Create conference style format for paper

[X] Develop introduction section of paper

**Notes**

Paper located at: \HIPPO\TechnicalDataPackage\ConferencePaper\

## 2087 – HIPPO February Meeting Preparation

**Content**

As a HIPPO team member, I would like to contribute to preparation prior to weekly meetings.

**Definition of Done**

[ ] Assist in the creation of PowerPoints to use for weekly team meetings

[ ] Coordinate and communicate with other team members to ensure everyone is on the same page prior to meetings (particularly industry meetings)

[ ] Attend all meetings

**Notes**

## 2088 – HIPPO February Meeting Preparation

**Content**

As a HIPPO team member, I would like to contribute to preparation prior to weekly meetings.

**Definition of Done**

[ ] Assist in the creation of PowerPoints to use for weekly team meetings

[ ] Coordinate and communicate with other team members to ensure everyone is on the same page prior to meetings (particularly industry meetings)

[ ] Attend all meetings

**Notes**

## 2089 – HIPPO February Meeting Preparation

**Content**

As a HIPPO team member, I would like to contribute to preparation prior to weekly meetings.

**Definition of Done**

[ ] Assist in the creation of PowerPoints to use for weekly team meetings

[ ] Coordinate and communicate with other team members to ensure everyone is on the same page prior to meetings (particularly industry meetings)

[ ] Attend all meetings

**Notes**

## 2090 – HIPPO February Meeting Preparation

**Content**

As a HIPPO team member, I would like to contribute to preparation prior to weekly meetings.

**Definition of Done**

[ ] Assist in the creation of PowerPoints to use for weekly team meetings

[ ] Coordinate and communicate with other team members to ensure everyone is on the same page prior to meetings (particularly industry meetings)

[ ] Attend all meetings

**Notes**

## 2091 – HIPPO AERB 120 Workstation

**Content**

As a HIPPO team member, I would like to prepare a workspace in AERB 120 for the team’s use in the future.

**Definition of Done**

[ ] Claim table in AERB 120 for Vulcan team

[ ] Move equipment into AERB 120

[ ] Familiarize self with room policies

**Notes**

Door code to AERB 120 is ‘20361’

## 2092 – HIPPO Flight Test Participation

**Content**

As a HIPPO team member, I would like to prepare myself for conducting flight tests in the future by becoming familiar with AFSL flight testing procedures and attending an AFSL flight test.

**Definition of Done**

[ ] Coordinate with team and with AFSL personnel about attending and contributing to a flight test

[ ] Read and familiarize yourself with AFSL flight testing policies and procedures, located in the following folder: FlightOperations\Operations\AFSLFlightOperations\AFSLFlightOperationsManual.docx

[ ] Familiarize self with AFSL testing location, UW Carnation UAS Test Site (UWCUTS)

[ ] Attend and contribute to an AFSL flight test

[ ] Report back to the HIPPO team after attending a test

**Notes**

## 2093 – HIPPO Flight Test Participation

**Content**

As a HIPPO team member, I would like to prepare myself for conducting flight tests in the future by becoming familiar with AFSL flight testing procedures and attending an AFSL flight test.

**Definition of Done**

[ ] Coordinate with team and with AFSL personnel about attending and contributing to a flight test

[ ] Read and familiarize yourself with AFSL flight testing policies and procedures, located in the following folder: FlightOperations\Operations\AFSLFlightOperations\AFSLFlightOperationsManual.docx

[ ] Familiarize self with AFSL testing location, UW Carnation UAS Test Site (UWCUTS)

[ ] Attend and contribute to an AFSL flight test

[ ] Report back to the HIPPO team after attending a test

**Notes**

## 2094 – HIPPO Flight Test Participation

**Content**

As a HIPPO team member, I would like to prepare myself for conducting flight tests in the future by becoming familiar with AFSL flight testing procedures and attending an AFSL flight test.

**Definition of Done**

[ ] Coordinate with team and with AFSL personnel about attending and contributing to a flight test

[ ] Read and familiarize yourself with AFSL flight testing policies and procedures, located in the following folder: FlightOperations\Operations\AFSLFlightOperations\AFSLFlightOperationsManual.docx

[ ] Familiarize self with AFSL testing location, UW Carnation UAS Test Site (UWCUTS)

[ ] Attend and contribute to an AFSL flight test

[ ] Report back to the HIPPO team after attending a test

**Notes**

## 2095 – HIPPO Flight Test Participation

**Content**

As a HIPPO team member, I would like to prepare myself for conducting flight tests in the future by becoming familiar with AFSL flight testing procedures and attending an AFSL flight test.

**Definition of Done**

[ ] Coordinate with team and with AFSL personnel about attending and contributing to a flight test

[ ] Read and familiarize yourself with AFSL flight testing policies and procedures, located in the following folder: FlightOperations\Operations\AFSLFlightOperations\AFSLFlightOperationsManual.docx

[ ] Familiarize self with AFSL testing location, UW Carnation UAS Test Site (UWCUTS)

[ ] Attend and contribute to an AFSL flight test

[ ] Report back to the HIPPO team after attending a test

**Notes**

## 2096 – Plan HIPPO Flight Test Campaign

**Content**

As a HIPPO team member, I would like to prepare myself for conducting flight tests in the future by preparing a test campaign.

**Definition of Done**

[x] Determine necessary data to acquire for delivery to Vulcan

[x] Determine test matrix of minimum required tests to gather data

[x] Determine preliminary timeline for conducting tests

[x] Determine what resources will be needed for conducting tests (will we need trucks, jeeps, bright flashlights, guns, etc)

[x] Coordinate with AFSL personnel, in particular Hannah Rotta, about which UAS will be used and about desired tests

[x] Determine what, if any, modifications need to be made to the UAS for tests, apart from sensor integration (ie. will it need bright navigation lights for night tests)

**Notes**

## 2097 – Microphone Investigation

**Content**

As a HIPPO team member, I would like to follow Vulcan’s wishes and conduct further investigation into using microphones to detect gunshots from the UAS.

**Definition of Done**

[x] Research general microphone information

[x] Research strategies to mitigate wind noise in microphones

[x] Contact Sensing Clues about their use of microphone technology for gunshot detection

[x] Identify viability of using microphones for sound recognition/gunshot detection on UAS

[x] Share results and present summary of findings to Joel/Vulcan

**Notes**

## 2098 – HIPPO January Meetings

As a HIPPO Team member, I will be prepare for and make contributions to all scheduled meetings through the month of January.

**Definition of Done**

[x] Participation in Tuesday weekly internal meetings (4 this month)

[x] Participation in Tuesday weekly internal student meetings (3 this month)

[x] Participation of Tuesday weekly meetings with Joel (3 this month)

**Notes**

## 2099 – HIPPO January Meetings

As a HIPPO Team member, I will be prepare for and make contributions to all scheduled meetings through the month of January.

**Definition of Done**

[x] Participation in Tuesday weekly internal meetings (4 this month)

[x] Participation in Tuesday weekly internal student meetings (3 this month)

[x] Participation of Tuesday weekly meetings with Joel (3 this month)

**Notes**

## 2100 – HIPPO January Meetings

As a HIPPO Team member, I will be prepare for and make contributions to all scheduled meetings through the month of January.

**Definition of Done**

[x] Participation in Tuesday weekly internal meetings (4 this month)

[x] Participation in Tuesday weekly internal student meetings (3 this month)

[x] Participation of Tuesday weekly meetings with Joel (3 this month)

**Notes**

## 2101 – HIPPO January Meetings

As a HIPPO Team member, I will be prepare for and make contributions to all scheduled meetings through the month of January.

**Definition of Done**

[x] Participation in Tuesday weekly internal meetings (4 this month)

[x] Participation in Tuesday weekly internal student meetings (3 this month)

[x] Participation of Tuesday weekly meetings with Joel (3 this month)

**Notes**

## 2102 – Purchase iPad

**Content**

As a flight test engineer, I would like to research and purchase a new iPad for AFSL.

**Definition of Done**

[ ] Research a new iPad that we can use for research

* A recent model
* Decent storage
* Economical
* I believe we were using a mini iPad before, but we could switch it up if the normal size is a better deal

[ ] Work with Hannah or Chris Lum to purchase the iPad as well as a protective case for it

**Notes**

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## 2103 – Finwing Decals

**Content**

As a graphic designer, I would like to make some sort of graphic or logo that can be attached to each of the Finwing’s body and wings for identification purposes.

**Definition of Done**

[ ] Design a logo or graphic which can include a picture and/or aircraft name for new airplane.

[ ] Print the graphic to be attached to the aircraft body and wings either with tape or on sticker paper

[ ] Stick some UW logos on each too (Hannah might have extras available)

**Notes**

* The purpose of this is to aid in aircraft identification.
* See CONDOR’s logo (on its wings) or CERES for an example
* This should look nice/professional as the aircraft will be used in demo flights

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## 2104 – Botswana Familiarization

**Content**

As a HIPPO team member, I would like to research environmental and light conditions in Botswana.

**Definition of Done**

[ ] Research terrain types in Botswana

[ ] Determine sky brightness on an average night in Botswana

[ ] Determine brightness of full moon

[ ] Determine albedo of common terrain types in Botswana

[ ] Theorize how this can impact camera and data results

[ ] Share results and present summary of findings to team/Vulcan

**Notes**

## 2105 – Camera Research

**Content**

As a HIPPO team member, I would like to research ideal camera types for use in an artificial light sensor and begin the process of determining necessary image processing.

**Definition of Done**

[x] Research camera types

[x] Recommend type of camera

[x] Coordinate with team members to determine viability and performance of camera under expected conditions

[x] Conduct necessary tests to inform camera selection decision making process

[x] Work with team to finalize camera selection

**Notes**

## 2106 – Resolution Calculations

**Content**

As a HIPPO team member, I would like to determine how to calculate resolution requirement for mission operating parameters of NOCTURN XL camera.

**Definition of Done**

[X] Determine how to calculate the physical distance one pixel will correspond to for various camera types

[X] Work with group members to find area that will be covered by camera images

[X] Coordinate with team to determine camera viability

**Notes**

## 2107 – Shutter Speed and Camera Research

**Content**

As a HIPPO team member, I would like to determine how to calculate necessary shutter speeds for mission operating parameters.

**Definition of Done**

[ x] Determine how to calculate the shutter speed requirements for various camera types, based on cruise speed of 25 kts and estimated camera settings

[x ] Work with group members to determine acceptable clarity in camera images

[x ] Coordinate with team to determine camera viability

**Notes**

## 2108 – Battery Warmer Bag Documentation

**Content**

As a lab member, I would like to document the manual for the use of Battery Warmer Bag.

**Definition of Done**

[ ] Document the user manual for Battery Warmer Bag.

[ ] include precaution

[ ] include instructions

[ ] include precaution

**Notes**

## 2109 – New Battery Soldering

**Content**

As a lab member, I would like to solder new battery connectors.

**Definition of Done**

[ ] Solder new 3-cell LiPo batteries.

**Notes**

## 2110 – Mini-Talon Build (Copy)

**Content**

Copy of user story 1913 – Mini-Talon Build.

**Definition of Done**

Copy of user story 1913 – Mini-Talon Build.

**Notes**

## 2110 – TRAPIS Payload Familiarization (copy)

**Content**

Copy of user story 1741 – TRAPIS Payload Familiarization.

**Definition of Done**

Copy definition of done from user story 1741 – TRAPIS Payload Familiarization .

**Notes**

## 2111 – TRAPIS Payload Familiarization (copy)

**Content**

Copy of user story 1741 – TRAPIS Payload Familiarization.

**Definition of Done**

Copy definition of done from user story 1741 – TRAPIS Payload Familiarization .

**Notes**

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## 2112 – STF 2017-39 Annual Report

**Content**

As a member, I would like to finalize and submit the annual report for the STF 2017-39, LiDAR.

**Definition of Done**

[ ] Answer all the questions to the annual report.

[ ] Double check it with either Hannah and/or Chris Lum.

[ ] Submit the report online.

**Notes**

* Located under //FlightOperations/UAS/CommonDocuments/VelodynePuckLite/ stfproposal201739\_lidar\_annualreport.docx

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## 2113 – Stepper Motor Docking Documentation

**Content**

As a LARAMID team member, I would like to make an documentation for stepper motor design so that I can present the idea to other team members.

**Definition of Done**

[X] Document the stepper motor CAD design. A few aspects to notice

[X] shaft design

[X] motion design

[X] gear ratio

[X] A few notes

[ ] Present to Chung for revision

**Notes**

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## 2114 – Plan HIPPO Flight Test Campaign

**Content**

As a HIPPO team member, I would like to prepare myself for conducting flight tests in the future by preparing a test campaign.

**Definition of Done**

[x] Determine necessary data to acquire for delivery to Vulcan

[X] Determine test matrix of minimum required tests to gather data

[X] Determine preliminary timeline for conducting tests

[x] Determine what resources will be needed for conducting tests (will we need trucks, jeeps, bright flashlights, guns, etc)

[x] Coordinate with AFSL personnel, in particular Hannah Rotta, about which UAS will be used and about desired tests

[x] Determine what, if any, modifications need to be made to the UAS for tests, apart from sensor integration (ie. will it need bright navigation lights for night tests)

**Notes**

## 2115 – HIPPO Project Vision Poster

**Content**

As a HIPPO team member, I would like to begin preparation of the HIPPO project vision poster.

**Definition of Done**

[ ] Use TRAPIS template located at the following location to develop poster: \\TRAPIS2\TechnicalDataPackage\ProjectVision\TRAPIS2ProjectVision.pptx

[ ] Coordinate with team members about content to include on poster

[ ] Use/copy and paste information from the DRR presentation to the project vision document. DRR presentation located at: HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_02\_02\_DRR\18\_02\_02\_VulcanDRR.pptx

**Notes**

Project vision document located at: HIPPO\TechnicalDataPackage\ProjectVision\HIPPOProjectVision.pptx

## 2116 – Continue Investigation into Artificial Light Detection

**Content**

As a HIPPO team member, I would like to continue initial testing and development of an artificial light sensor.

**Definition of Done**

[X] Communicate with NOCTURN about camera price and functionality

[X] Coordinate team preliminary ground tests

[X] Conduct preliminary ground tests

[X] Work with team members for developing testing procedures and strategies

[X] Assist in developing necessary data processing tools for data outputs

**Notes**

## 2117 – Create Database of Test Images for Software Development

**Content**

As a HIPPO team member, I would like to continue initial testing and development of an artificial light sensor by working to establish a preliminary database of test images and begin developing code infrastructure for processing data/images.

**Definition of Done**

[ ] Communicate with team members about image output

[x] Conduct preliminary ground tests

[ ] Work with team members for developing testing procedures and strategies

[x] Examine and collect data output from test events

[x] Coordinate development of necessary data processing tools for data outputs

[x] Begin development of code infrastructure for image processing

[x] Begin development of code infrastructure for light source recognition

**Notes**

## 2118 – Initiate Sensor Integration into AFSL UAS

**Content**

As a HIPPO team member, I would like to participate in determining how to physically integrate desired sensors into our UAS testbed.

**Definition of Done**

[x] Communicate with HIPPO team, Chris Lum and AFSL personnel about which UAS HIPPO will use in testing

[x] See if it is possible to make/obtain CAD files for UAS testbed

[x] Determine location and process of integration for artificial light sensor into UAS testbed

[x] Coordinate with team to determine electrical connections required for powering sensor package

[x] Generate 3D models for sensor package and mount system to create dummy sensor for 3D printing and test integration into UAS

**Notes**

Joel suggested we can just use a quad rotor if we can simulate fixed wing flight path, since a quad rotor may be simpler for setting specific angles to test.

## 2119 – Incorporate Completed Work into SciTech Paper

**Content**

As a HIPPO team member, I would like to continue work on the SciTech paper.

**Definition of Done**

[ ] Continue developing formatting and structure for paper

[ ] Add relevant nomenclature

[ ] Update introduction, experimental methods and other relevant sections with currently completed work

[ ] Coordinate with team to ensure members contribute where necessary to the paper

**Notes**

## 2120 – Sensor Integration and Camera Calculations

**Content**

As a HIPPO team member, I would like to assist with sensor integration and conduct the necessary calculations for various camera parameters.

**Definition of Done**

[ ] Coordinate with team to determine electrical connections required for powering sensor package

[ ] Coordinate with team to determine necessary data connections for sensor data output

[ ] Conduct pixel density, resolution, range calculations of chosen camera.

[ ] Coordinate with team about artificial light sensor development to ensure necessary calculations are conducted to simulate image output details

[ ] Assist with 3D printing parts for sensor integration

**Notes**

## 2121 – Compile a Procurement List

**Content**

As the HIPPO budgeting manager, I would like to compile a detailed list of equipment that will be needed for future testing.

**Definition of Done**

[x] Coordinate with team to determine necessary equipment for testing

[x ] Create a procurement list document and upload to Perforce detailing required equipment

[x] Determine a basic timeline for when equipment will be needed, so that it can be ordered and delivered before it is needed

[x ] Ensure equipment needs fit within team budget

[x ] Track expenses

[x ] Finalize procurement list with team

[ x] Order necessary equipment

**Notes**

## 2122 – TRAPIS-MAVLINK-ARDUPILOT Loop Verification

**Content**

As a TRAPIS2 member, I would like to verify that TRAPIS is getting GPS information from the TRAPIS payload and python script is able to receive that UDP packet and send correct data to Ardupilot firmware.

**Definition of Done**

[ ] Successfully establish stable connection between clarity and TRAPIS payload

[ ] Successfully send GPS coordinates (lat, lon, alt) to the HIL with custom firmware

[ ] Successfully verify that firmware responds to GPS coordinates (Fountain Test)

**Notes**

## 2123 – WSTR Development (copy)

**Content**

Copy of 1910 – WSTR Development

**Definition of Done**

Copy of 1910 – WSTR Development

**Notes**

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## 2124 – WSTR Development (copy)

**Content**

Copy of 1910 – WSTR Development

**Definition of Done**

Copy of 1910 – WSTR Development

**Notes**

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## 2125 – Clean Soldering Iron

**Content**

As a soldering technician, I would like to either clean or replace the soldering iron.

**Definition of Done**

[ ] Look into how to clean soldering iron

[ ] Clean or find a url to buy a new iron or tip

**Notes**

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## 2126 – Infrared Testing

**Content**

Copy of user story 1844 – Infrared Testing

**Definition of Done**

Copy of user story 1844 – Infrared Testing

**Notes**

* Do not focus any light at the sensor!

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## 2127 – Checklist Updates

**Content**

As a lab member, I would like to make updates to the checklist spreadsheet document.

**Definition of Done**

[x] Add the following updates/modifications:

[x] For fixed wings, throttle is armed via the GCS.

[x] Only save parameters when changes have been made.

[x] Remove propeller after a plane’s last flight of the day

**Notes**

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## 2128 – Anakin Servo Replacement

**Content**

As a lab member, I would like to replace Anakin’s elevator servo.

**Definition of Done**

[x] Remove old elevator servo

[x] Replace with new servo

[x] Perform ground test to verify servo functionality

[x] Update component tracker

**Notes**

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## 2129 – LARAMID Docking Frame Design

**Content**

As a LARAMID member, I’d like to design a docking frame where electromagnets are mounted and Arduino Mega is kept inside.

**Definition of Done**

[X] 3D CAD model of docking frame is made

[X] Make prototype with 3D printer

[] Order necessary screws and bolts for connection

**Notes**

* Actual size will be determined after sled building

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## 2130 – LARAMID Arduino Mega Installation

**Content**

As a LARAMID member, I’d like to find a way to install Arduino Mega into the docking system while safely connected to the two electromagnets.

**Definition of Done**

[X] Make a documentation of Arduino connections

[X] Introduce stable connection with electromagnets and Arduino

[X] Make a Pixhawk map

[X] Order Arudino shield for stable connection

**Notes**

* Lines connected to Arduino are easily disconnected

## 2131 – LARAMID Electromagnets Mounting System

**Content**

As a LARAMID member, I’d like to design electromagnet mounting system to the docking frame and design electromagnet receiver in the White-Bird.

**Definition of Done**

[X] Design White-Bird electromagnet receiver

[X] Choose the material for the EM receiver based on weight

[X] Design Electromagnet mounting system in docking frame

[X] Order metal plates and necessary parts

[X] Make a well illustrative document

**Notes**

* The total White-Bird weight should not exceed 1.5kg
* LARAMID\Research\ElectromagnetReceiver.pdf

## 2132 – LARAMID Sled Build

**Content**

As a LARAMID member, I’d like to order necessary parts of a Sled and build it.

**Definition of Done**

[X] Make a documentation of a sled manual

[X] Build the sled.

[X] Update \FlightOperations\UAS\ComponentTracker.xlsx

[X] Flight test these aircraft, and ensure they are tuned appropriately for safe and reliable flight.

[X] Ensure they are airworthy.

[X] Present/demo to lab group.

**Notes**

## 2134 – Compile a Procurement List

**Content**

As a HIPPO member, I would like to help compile a detailed list of equipment that will be needed for future testing.

**Definition of Done**

[x] Coordinate with team to determine necessary equipment for testing

[x ] Create a procurement list document and upload to Perforce detailing required equipment

[x] Determine a basic timeline for when equipment will be needed, so that it can be ordered and delivered before it is needed

[x ] Ensure equipment needs fit within team budget

[x ] Track expenses

[x ] Finalize procurement list with team

**Notes**

## 2135 – TEMPEST LaTeX Software Installation

**Content**

As a TEMPEST member, I would like to be able to contribute to the team’s report by having full access LaTeX software.

**Definition of Done**

[] Download and install TexMaker

[] Download and install MiKTeX

[] Create a route within TexMaker to compile code using MiKTeX as a typesetter

**Notes**

Install MiKTeX using default settings. Add the following location to Texmaker’s path: C:/Program Files (x86)/MiKTeX 2.9/miktex/bin

## 2136 – TEMPEST LaTeX Software Installation

**Content**

As a TEMPEST member, I would like to be able to contribute to the team’s report by having full access LaTeX software.

**Definition of Done**

[] Download and install TexMaker

[] Download and install MiKTeX

[] Create a route within TexMaker to compile code using MiKTeX as a typesetter

**Notes**

Install MiKTeX using default settings. Add the following location to Texmaker’s path: C:/Program Files (x86)/MiKTeX 2.9/miktex/bin

## 2137 – TEMPEST LaTeX Software Installation

**Content**

As a TEMPEST member, I would like to be able to contribute to the team’s report by having full access LaTeX software.

**Definition of Done**

[] Download and install TexMaker

[] Download and install MiKTeX

[] Create a route within TexMaker to compile code using MiKTeX as a typesetter

**Notes**

Install MiKTeX using default settings. Add the following location to Texmaker’s path: C:/Program Files (x86)/MiKTeX 2.9/miktex/bin

## 2138 – TEMPEST LaTeX Software Installation

**Content**

As a TEMPEST member, I would like to be able to contribute to the team’s report by having full access LaTeX software.

**Definition of Done**

[] Download and install TexMaker

[] Download and install MiKTeX

[] Create a route within TexMaker to compile code using MiKTeX as a typesetter

**Notes**

Install MiKTeX using default settings. Add the following location to Texmaker’s path: C:/Program Files (x86)/MiKTeX 2.9/miktex/bin

## 2139 - TEMPEST CAD Modeling Integration

As a TEMPEST Team member, I will bring together models of components into more complete drogue designs.

**Definition of Done**

[ ] Integrate models of components into several iterations of drogue designs

[] Drogue iterations vary in

[] length

[] fin size

[] weight distribution

[] other necessary characteristics

**Notes**

## 2140 - TEMPEST February Purchasing

As a TEMPEST Team member, I will

**Definition of Done**

[ ] Send purchase orders to Nancy Lou

[] Update budget spreadsheet as necessary

**Notes**

## 2141 - TEMPEST February Meetings

As a TEMPEST Team member, I will attend all meetings for the project

**Definition of Done**

[ ] Participation in Tuesday weekly internal meetings

[ ] Participation in Thursday weekly internal meetings

[ ] Participation of Friday weekly meetings with Todd and Kent

**Notes**

## 2142 - TEMPEST February Meetings

As a TEMPEST Team member, I will attend all meetings for the project

**Definition of Done**

[ ] Participation in Tuesday weekly internal meetings

[ ] Participation in Thursday weekly internal meetings

[ ] Participation of Friday weekly meetings with Todd and Kent

**Notes**

## 2143 - TEMPEST February Meetings

As a TEMPEST Team member, I will attend all meetings for the project

**Definition of Done**

[ ] Participation in Tuesday weekly internal meetings

[ ] Participation in Thursday weekly internal meetings

[ ] Participation of Friday weekly meetings with Todd and Kent

**Notes**

## 2144 - TEMPEST February Meetings

As a TEMPEST Team member, I will attend all meetings for the project

**Definition of Done**

[ ] Participation in Tuesday weekly internal meetings

[ ] Participation in Thursday weekly internal meetings

[ ] Participation of Friday weekly meetings with Todd and Kent

**Notes**

## 2145 - TEMPEST Contact with Runway for Testing

As a TEMPEST Team member, I would like to get in contact with an airport runway for truck testing

**Definition of Done**

[ ] Draft email

[] Goals for testing

[] Rough plan for testing

[] Expected testing dates

[ ] Approve with team

[ ] Send email

**Notes**

**2146 - TEMPEST Administrative Lead Duties**

**Content**

As a TEMPEST member, I will fulfill my duties as the administrative team lead.

**Definition of Done**

[ ] Coordinate scheduling with other team members, Chris Lum and Todd Leighton

[ ] Update User Stories with new projects for team members

[ ] Maintain clear communication with group to ensure everyone has tasks assigned

[ ] Coordinate research efforts

**2147 - TEMPEST STAR CCM+ Tutorials**

**Content**

As a TEMPEST member, I will become comfortable with Star CCM+ for later use in the project

**Definition of Done**

[ ] Meet with Todd

[ ] Meet with Navi

**2148 - TEMPEST NX Tutorials**

**Content**

As a TEMPEST member, I will become comfortable with NX for later use in the project

**Definition of Done**

[ ] Meet with Todd on Feb 20th

**2149 – Make Vision Board**

**Content**

As a TEMPEST member, I will complete the vision board for our project

**Definition of Done**

[ ]

## 2150 – Soldering GPS unit

**Content**

As a soldering technician, I would like to solder the wire connecting the GPS.

**Definition of Done**

[ ] Solder wires

[ ] Test to make sure GPS unit work

**Notes**

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## 2151 – TRAPIS Payload Familiarization (copy)

**Content**

Copy of user story 1741 – TRAPIS Payload Familiarization.

**Definition of Done**

Copy definition of done from user story 1741 – TRAPIS Payload Familiarization .

**Notes**

## 2152 – HIPPO March Admin Duties

**Content**

As the HIPPO Admin Lead, I would like to fulfill whatever duties are necessary relating to administrative leadership for the team.

**Definition of Done**

[ ] Update and add user stories as needed

[ ] See User Story 1955 for more details

**Notes**

## 2153 – HIPPO March Budgeting Duties

**Content**

As the HIPPO Budgeting Coordinator, I would like to fulfill whatever duties are necessary relating to budgeting and purchasing for the team.

**Definition of Done**

[ ] Keep purchasing list up to date

[ ] Upload and update a budgeting spreadsheet as needed, located here: HIPPO\Administrative\Budget\

[ ] Order/purchase necessary equipment when the team decides a new item is needed and add to budget

**Notes**

## 2154 – HIPPO PDR Preparation and Sensitivity Calculations

**Content**

As a HIPPO team member, I would like to prepare for a successful PDR.

**Definition of Done**

[ ] Contribute to and update the PDR ppt located at HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_03\_06\_PDR\18\_03\_06\_PDR.pptx

[ ] Coordinate with team to determine relevant content for PDR

[ ] Familiarize self with entire ppt

[ ] Review and revise ppt with advisors, team

[ ] Practice to present PDR

[ ] Attend and participate in the in-depth PDR presentation at Vulcan on 3/6

[ ] Attend and participate in the full class PDR presentations on 3/13

[ ] Calculate expected signal measured by camera

[ ] Develop Matlab code for signal prediction

[ ] Create annotated image for describing process of calculations

[ ] Revise CAD models for camera integration as needed

[ ] Revise PDR in response to internal PDR feedback

[ ] Support group efforts as needed

**Notes**

## 2155 – HIPPO PDR Preparation and Code Development

**Content**

As a HIPPO team member, I would like to prepare for a successful PDR.

**Definition of Done**

[ ] Contribute to and update the PDR ppt located at HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_03\_06\_PDR\18\_03\_06\_PDR.pptx

[ ] Coordinate with team to determine relevant content for PDR

[ ] Familiarize self with entire ppt

[ ] Review and revise ppt with advisors, team

[ ] Practice to present PDR

[ ] Attend and participate in the in-depth PDR presentation at Vulcan on 3/6

[ ] Attend and participate in the full class PDR presentations on 3/13

[ ] Continue development of image processing code to bring it to a presentable beta state for the PDR

[ ] Revise PDR in response to internal PDR feedback

[ ] Support group efforts as needed

**Notes**

## 2156 – HIPPO PDR Preparation and Code Development

**Content**

As a HIPPO team member, I would like to prepare for a successful PDR.

**Definition of Done**

[ ] Contribute to and update the PDR ppt located at HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_03\_06\_PDR\18\_03\_06\_PDR.pptx

[ ] Coordinate with team to determine relevant content for PDR

[ ] Familiarize self with entire ppt

[ ] Review and revise ppt with advisors, team

[ ] Practice to present PDR

[ ] Attend and participate in the in-depth PDR presentation at Vulcan on 3/6

[ ] Attend and participate in the full class PDR presentations on 3/13

[ ] Continue development of image processing code to bring it to a presentable beta state for the PDR

[ ] Revise PDR in response to internal PDR feedback

[ ] Support group efforts as needed

**Notes**

## 2157 – HIPPO PDR Preparation and 3D Printing Support

**Content**

As a HIPPO team member, I would like to prepare for a successful PDR.

**Definition of Done**

[ ] Contribute to and update the PDR ppt located at HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_03\_06\_PDR\18\_03\_06\_PDR.pptx

[ ] Coordinate with team to determine relevant content for PDR

[ ] Familiarize self with entire ppt

[ ] Review and revise ppt with advisors, team

[ ] Practice to present PDR

[ ] Attend and participate in the in-depth PDR presentation at Vulcan on 3/6

[ ] Attend and participate in the full class PDR presentations on 3/13

[ ] Re-print CAD models as necessary

[ ] Conduct necessary camera calculations prior to PDR

[ ] Revise PDR in response to internal PDR feedback

[ ] Support group efforts as needed

**Notes**

## 2158 – Revise and Resubmit Night Waiver

**Content**

As a HIPPO team member, I would like to revise and resubmit the night waiver in order to enable future night tests by AFSL.

**Definition of Done**

[ ] Study FAA response located at \\FlightOperations\Operations\COWs\NightWaiver\18\_03\_02\_FAARequestForAdditionalInfo.pdf

[ ] Prepare ideas for a strategy to improve waiver application given FAA feedback

[ ] Meet with Hannah and Professor Lum to develop a strategy for revisions

[ ] Coordinate with Hannah to revise application

[ ] Coordinate with Hannah and Professor Lum to resubmit application

**Notes**

## 2159 – Lab Members Status Check

**Content**

As a project manager, I would like to generate an automatic lab member analysis, so I can use it to analyze lab members who are active within past two sprints.

**Definition of Done**

[ ] Create a system to automatically import MemberInfo.xlsx into Matlab

c:\dev\AFSL\LabInfo\MemberInfo.xlsx

[ ] Write a Matlab software module to automatically analyze user stories, MeberInfo. and generate summaries.

Information included in the summary:

[ ] Active members

[ ] Inactive members

[ ]

**Notes**

* See c:\dev\AFSL\UserStories\Analysis\. All Matlab Script generate user\_stories summary.
* The goal of this Matlab software is to modify existing Matlab m files or generate a new one as needed. The output should be automatically changing active status in “MemberInfo.xlsx” according to the members’ activities.

## 2160 – Mini-Talon Build (Copy)

**Content**

Copy of user story 1913 – Mini-Talon Build.

**Definition of Done**

Copy of user story 1913 – Mini-Talon Build.

**Notes**

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## 2161 – Mission Planner Familiarization (Copy)

**Content**

Copy of user story 638 – Mission Planner Familiarization (Position 1)

**Definition of Done**

Copy definition of done from user story 638 – Mission Planner Familiarization (Position 1).

**Notes**

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## 2162 – 3D Printing Course (copy)

**Content**

As an undergraduate researcher, I would like to learn from others in the lab about how to 3D print items used on the sUAS.

**Definition of Done**

[X] Understand Makerbot settings

[X] CoMotion Makerspace Safety Training

[X] Understand how to place filament into on-campus Flashforges/Makerbot machines (FDM printers)

[X] Set up the machine and understand other various printing tips

[X] Test the part if they fit into the sUAS.

**Notes**

* This is the trainee version of 1609

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## 2163 – HIPPO GigE/Pi Interface

**Content**

As a HIPPO team member, I would like to help prepare for camera integration.

**Definition of Done**

[ ] Develop the necessary infrastructure/code to interface between the camera GigE interface and a Raspberry Pi

[ ] Develop the necessary code to ensure the camera will take images as planned (coordinated to avoid interference from the strobe light)

[ ] Investigate pulling GPS data from a PixHawk unit into the Raspberry Pi to combine with image data, so we will have a location and a time stamp for our images

[ ] Investigate interfacing our own GPS into the Raspberry Pi for connecting location data with images

[ ] At minimum, develop some system to identify which pictures are which, such as a reliable way of having timestamp data on images that can be matched with separate location data that has its own time stamps.

[ ] Coordinate with team members and AFSL personnel as necessary

**Notes**

## 2164 – HIPPO GigE/Pi Interface

**Content**

As a HIPPO team member, I would like to help prepare for camera integration.

**Definition of Done**

[ ] Develop the necessary infrastructure/code to interface between the camera GigE interface and a Raspberry Pi

[ ] Develop the necessary code to ensure the camera will take images as planned (coordinated to avoid interference from the strobe light)

[ ] Investigate pulling GPS data from a PixHawk unit into the Raspberry Pi to combine with image data, so we will have a location and a time stamp for our images

[ ] Investigate interfacing our own GPS into the Raspberry Pi for connecting location data with images

[ ] At minimum, develop some system to identify which pictures are which, such as a reliable way of having timestamp data on images that can be matched with separate location data that has its own time stamps.

[ ] Coordinate with team members and AFSL personnel as necessary

**Notes**

## 2165 – Create Mission Document for HIPPO Test Plan

**Content**

As a HIPPO team member, I would like to create a mission document for the HIPPO test plans.

**Definition of Done**

[ ] Create a mission document using the TRAPIS document as a model outlining HIPPO’s plan for conducting tests in Spring quarter

[ ] Document should include a plan for testing, all relevant tests the team wishes to conduct, preliminary dates for completing tests, and more

[ ] Coordinate with team to plan tests

[ ] Coordinate with Hannah Rotta/AFSL personnel to verify test plans

[ ] Upload document to Perforce

**Notes**

## 2166 – Fix the destroyed part on Anakin

**Content**

As a lab member, I would like to fix destroyed part of Anakin.

**Definition of Done**

Fix destroyed part of Anakin by using sticks

**Notes**

## 2167 – LARAMID Electromagnets Mounting System (Copy)

**Content**

Copy of user story 2131 – Electromagnets Mounting System

**Definition of Done**

Copy of user story 2131 – Electromagnets Mounting System

**Notes**

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## 2168 – Sled CAD Design

**Content**

As a LARAMID team member I will design Sled CAD design model.

**Definition of Done**

[X] Make Sled CAD model with SolidWorks.

**Notes**

* LARAMID\Research\LARAMIDSledComponents

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## 2169 – LARAMID Docking Frame Design (Copy)

**Content**

Copy of user story 2129 – Docking Frame Design

**Definition of Done**

Copy of user story 2129 – Docking Frame Design

**Notes**

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## 2170 – LARAMID Arduino Mega Installation (Copy)

**Content**

Copy of user story 2130 – Arduino Mega Installation

**Definition of Done**

Copy of user story 2130 – Arduino Mega Installation

**Notes**

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## 2171 – Aircraft Construction Standards Manual

**Content**

As a lab member, I would like to write a manual containing guidelines for building fixed-wing aircraft.

**Definition of Done**

[] Write a manual containing guidelines, dos and don'ts, tips, and warnings for the construction and maintenance of fixed wing aircraft

[] Include a schematic of how these aircraft are wired

[] Upload the manual to perforce

**Notes**

## 2172 – LARAMID Electromagnets Mounting System (Copy)

**Content**

Copy of user story 2131 – Electromagnets Mounting System

**Definition of Done**

Copy of user story 2131 – Electromagnets Mounting System

**Notes**

## 2173 – Update Conference Paper with Feasibility Information

**Content**

As a HIPPO team member, I would like to keep the paper updated with information as the project progresses.

**Definition of Done**

[ ] Update paper with relevant information relating to feasibility calculations

[ ] Update other relevant sections of the paper with material relating to the Trade Study (for sensors that were researched by me).

[ ] Update paper with work done on sensor integration and interface

[ ] Update paper with any tasks that I have worked on and completed as the project progresses

**Notes**

Update the paper after a task has been completed so we don’t have to spend too much time changing things that were put in the paper before they were finalized.

## 2174 – Update Conference Paper with Analytical Information

**Content**

As a HIPPO team member, I would like to keep the paper updated with information as the project progresses.

**Definition of Done**

[ ] Update paper with relevant information relating to analytical code

[ ] Update other relevant sections of the paper with material relating to the Trade Study (for sensors that were researched by me).

[ ] Update paper with work done on sensor integration and interface

[ ] Update paper with any tasks that I have worked on and completed as the project progresses

**Notes**

Update the paper after a task has been completed so we don’t have to spend too much time changing things that were put in the paper before they were finalized.

## 2175 – Update Conference Paper with Analytical Information

**Content**

As a HIPPO team member, I would like to keep the paper updated with information as the project progresses.

**Definition of Done**

[ ] Update paper with relevant information relating to analytical code

[ ] Update other relevant sections of the paper with material relating to the Trade Study (for sensors that were researched by me).

[ ] Update paper with work done on sensor integration and interface

[ ] Update paper with any tasks that I have worked on and completed as the project progresses

**Notes**

Update the paper after a task has been completed so we don’t have to spend too much time changing things that were put in the paper before they were finalized.

## 2176 – Update Conference Paper with Electrical Information

**Content**

As a HIPPO team member, I would like to keep the paper updated with information as the project progresses.

**Definition of Done**

[ ] Update paper with relevant information relating to electrical specification calculations

[ ] Update other relevant sections of the paper with material relating to the Trade Study (for sensors that were researched by me).

[ ] Update paper with work done on sensor integration and interface

[ ] Update paper with any tasks that I have worked on and completed as the project progresses

**Notes**

Update the paper after a task has been completed so we don’t have to spend too much time changing things that were put in the paper before they were finalized.

## 2177 – FUNRA and CERA Flight Testing

**Content**

As a lab member, I would like to flight test FUNRA to ensure that it is ready for flight.

**Definition of Done**

[ ] Perform a flight test at 60 acres to determine if FUNRA is stable

[ ] Perform a flight test at 60 acres to tune the PID setting on FUNRA

[ ] Flight test CERA at 60 acres to make ensure that it is flight ready

[ ] Flight test FUNRA at 60 acres to further tune the PID settings with Ryan present

**Notes**

This well be finished Spring quarter. The PID values need to be further investigated in order to ensure stable takeoff for FURNA.

## 2178 – FUNRA and CERA Flight Testing (copy)

**Content**

As a lab member, I would like to flight test FUNRA to ensure that it is ready for flight.

**Definition of Done**

[ ] Perform a flight test at 60 acres to determine if FUNRA is stable

[ ] Perform a flight test at 60 acres to tune the PID setting on FUNRA

[ ] Flight test CERA at 60 acres to make ensure that it is flight ready

[ ] Flight test FUNRA at 60 acres to further tune the PID settings with Ryan present

**Notes**

This well be finished Spring quarter. The PID values need to be further investigated in order to ensure stable takeoff for FURNA.

## 2179 – AeroStand

**Content**

As a lab member, I would like to create a new stand design for the planes, and build the design model.

**Definition of Done**

[x] Compose a good design.

[x] Purchase materials needed.

[x] Build the design.

[x] Test the design and modify if necessary.

**Notes**

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## 2180 – Perforce Visual Client (copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

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## 2181 – Skywalker Fleet Maintenance

**Content**

As a lab member, I would like to complete the current maintenance to-do items for Anakin and Luke.

**Definition of Done**

[x] Replace Luke's malfunctioning rudder servo

[x] Repair the flaps on Condor's wings to make them fully functional

[x] Re-secure Anakin's left horizontal stabilizer support

[x] Update all construction and maintenance logs and the component tracker

[x] Verify all newly installed parts are fully functional through ground testing

**Notes**

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## 2182 – Geofence Familiarization

**Content**

As a lab member, I would like to familiarize myself with the Geofence feature on Mission Planner and test it on an actual fixed wing aircraft.

**Definition of Done**

[ ] Become familiar with how geofencing works in Mission Planner including:

* How do we use it? What procedure do we follow to implement it?
* What does it do? What will the aircraft do if it infringes on the Geofence boundary?
* Does it work in any mode?
* How reliable is it?

[ ] Create a test card so that it can be flight tested in one of the stock ArduPlane modes.

[ ] Determine how to make it work in our custom, WSTR mode.

[ ] Create a test card so that it can be flight tested in WSTR.

[ ] Write up notes for how to use it and what you learned and stick them on Perforce somewhere. Perhaps: \FlightOperations\Operations\AFSLFlightOperations\AFSLFlightOperationsManual.docx unless you have a better idea.

**Notes**

* In order to operate at KDLS, they want us to ensure the geofencing feature with our aircraft is functional to prevent accidental runway incursions (crossing over into airspace that would interfere with manned aircraft taking off and landing at the airport).

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## 2183 – Update Aircraft AFMs

**Content**

As a lab member, I would like to update the aircraft AFMs, by combining all of the Finwings and updating the MP and Plane versions.

**Definition of Done**

[ ] Create a general Finwing flight manual per Dr. Lum’s email

[ ] Go through the AFMs for all of our aircraft and update the Mission Planner and ArduPlane versions on each to accurately reflect what we are flying on each.

**Notes**

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**2184 – Flight Ops Administration (1804)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other miscellaneous lab administration

**Notes**

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**2185 – Flight Ops Administration (1805)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other miscellaneous lab administration

**Notes**

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## 2186 – TRAPIS2 Box CAD Drawings

**Content**

As a lab member, I would like to create CAD drawings for the TRAPIS2 box.

**Definition of Done**

[X] Create CAD drawings with the final CAD.

[X] Upload the files onto Perforce.

**Notes**

* \FlightOperations\UAS\CommonDocuments\ADSBPayload\TRAPIS2Box\

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## 2187 – Raspberry Pi Box CAD Drawings

**Content**

As a lab member, I would like to create CAD drawings for the raspberry pi box.

**Definition of Done**

[X] Create CAD drawings with the final CAD.

[X] Upload the files onto Perforce.

**Notes**

* \FlightOperations\UAS\CommonDocuments\VelodynePuckLite\Raspberry Pi Box

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## 2188 – LARAMID EM receiver part2

**Content**

As a LARAMID team member, I would like to improve electromagnet receiver design by mounting permanent magnets.

**Definition of Done**

[X] Create CAD drawings for improved EM receiver.

[X] Upload the files onto Perforce.

[X] Build the EM receiver

**Notes**

* LARAMID\Research\Electromagnet Receiver.pdf

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## 2189 – LARAMID EM Polarity Control

**Content**

As a LARAMID team member, I would like to control polarity of electromagnet using Arduino Mega.

**Definition of Done**

[X] Develop Arduino programming code for polarity control

[X] Do electromagnet polarity test with permanent magnets

[X] Make a document and upload in perforce

**Notes**

* LARAMID\Research\Electromagnetic Power and Lifting Force Testing

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## 2190 – LARAMID Magnetic Interference on UAV compass

**Content**

As a LARAMID team member, I would like to choose the right permanent magnet for the EM receiver and test magnetic interference on GPS.

**Definition of Done**

[ ] Choose the right permanent magnet and finish ordering

[ ] Do ground test with permanent magnet and White Bird GPS

[ ] Write report about the interference

**Notes**

Paper located at: \LARAMID\Research\Magnetic interference on GPS receiver

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## 2191 – LARAMID EM receiver part2 (Copy)

**Content**

Copy of user story 2188 – LARAMID Electromagnet receiver part2

**Definition of Done**

Copy of user story 2188 – LARAMID Electromagnet receiver part2

**Notes**

## 2192 – LARAMID EM Polarity Control (Copy)

**Content**

Copy of user story 2189 – LARAMID Electromagnet Polarity Control

**Definition of Done**

Copy of user story 2189 – LARAMID Electromagnet Polarity Control

**Notes**

## 2193 – LARAMID Magnetic Interference on UAV compass (Copy)

**Content**

Copy of user story 2190 – LARAMID Electromagnet Polarity Control

**Definition of Done**

Copy of user story 2190 – LARAMID Electromagnet Polarity Control

**Notes**

## 2194 – HIPPO Mission Document and Planning

**Content**

As a HIPPO team member, I would like to prepare for HIPPO testing missions by creating the necessary documentation for supporting HIPPO testing efforts.

**Definition of Done**

[ ] Create a mostly finalized plan for conducting ground and flight testing

[ ] Review details of the plan with team

[ ] Write a mission summary and a mission document for this plan and revise the Mission Document located here: \FlightOperations\Operations\Missions\18\_XX\_XX\_HIPPO\_test01\MissionDocument.docx

[ ] Coordinate with team members and AFSL personnel as necessary

**Notes**

## 2195 – Build electrical equipment for HIPPO

**Content**

As a HIPPO team member, I would like to prepare hardware for HIPPO testing missions.

**Definition of Done**

[X] Identify hardware necessary for powering and connecting HIPPO sensor equipment

[X] Assemble equipment and wiring so that payload is ready for integration

[X] Coordinate with team members and AFSL personnel as necessary

[X] Prototype - Built circuit that power multiple devices using two batteries to check the capacity of the sensor, and other devices.

[X] Finally, build the final circuit that powers multiple devices using a single battery.

[X] Prototype – a 3D printing mold of a box that encloses the circuit.

[X] Final 3D printing mold that encloses the circuit and its wires.

[X] After each flight testing, inspect the circuit to ensure no faulty wiring, no broken components; especially make sure that the device is functioning well.

[X] Upload PowerPoint explaining analysis on any circuit failure.

**Notes**

## 2196 – HIPPO Ground Testing

**Content**

As a HIPPO team member, I would like to participate in and support the HIPPO team’s ground testing missions.

**Definition of Done**

[ ] Review test matrices located here: \HIPPO\Administrative\ProjectPlan\PreliminaryTestMatrix.xlsx

[ ] Review mission document located here:

\FlightOperations\Operations\Missions\18\_XX\_XX\_HIPPO\_test01\MissionDocument.docx

[ ] Contribute to team readiness prior to ground tests, so tests can be conducted on schedule

[ ] Participate in scheduled HIPPO ground tests

[ ] Coordinate with team members as necessary

**Notes**

## 2197 – HIPPO Ground Testing

**Content**

As a HIPPO team member, I would like to participate in and support the HIPPO team’s ground testing missions.

**Definition of Done**

[ ] Review test matrices located here: \HIPPO\Administrative\ProjectPlan\PreliminaryTestMatrix.xlsx

[ ] Review mission document located here:

\FlightOperations\Operations\Missions\18\_XX\_XX\_HIPPO\_test01\MissionDocument.docx

[ ] Contribute to team readiness prior to ground tests, so tests can be conducted on schedule

[ ] Participate in scheduled HIPPO ground tests

[ ] Coordinate with team members as necessary

**Notes**

## 2198 – HIPPO Ground Testing

**Content**

As a HIPPO team member, I would like to participate in and support the HIPPO team’s ground testing missions.

**Definition of Done**

[ ] Review test matrices located here: \HIPPO\Administrative\ProjectPlan\PreliminaryTestMatrix.xlsx

[ ] Review mission document located here:

\FlightOperations\Operations\Missions\18\_XX\_XX\_HIPPO\_test01\MissionDocument.docx

[ ] Contribute to team readiness prior to ground tests, so tests can be conducted on schedule

[ ] Participate in scheduled HIPPO ground tests

[ ] Coordinate with team members as necessary

**Notes**

## 2199 – HIPPO Ground Testing

**Content**

As a HIPPO team member, I would like to participate in and support the HIPPO team’s ground testing missions.

**Definition of Done**

[ ] Review test matrices located here: \HIPPO\Administrative\ProjectPlan\PreliminaryTestMatrix.xlsx

[ ] Review mission document located here:

\FlightOperations\Operations\Missions\18\_XX\_XX\_HIPPO\_test01\MissionDocument.docx

[ ] Contribute to team readiness prior to ground tests, so tests can be conducted on schedule

[ ] Participate in scheduled HIPPO ground tests

[ ] Coordinate with team members as necessary

**Notes**

## 2200 – HIPPO Flight Testing

**Content**

As a HIPPO team member, I would like to participate in and support the HIPPO team’s flight testing missions.

**Definition of Done**

[ ] Review test matrices located here: \HIPPO\Administrative\ProjectPlan\PreliminaryTestMatrix.xlsx

[ ] Review mission document located here:

\FlightOperations\Operations\Missions\18\_XX\_XX\_HIPPO\_test01\MissionDocument.docx

[ ] Complete required safety training and quiz, outlined by night testing procedure

[ ] Contribute to team readiness prior to flight tests, so tests can be conducted on schedule

[ ] Participate in scheduled HIPPO flight tests

[ ] Assist in post-testing review and analysis

[ ] Coordinate with team members and AFSL personnel as necessary

**Notes**

## 2201 – HIPPO Flight Testing

**Content**

As a HIPPO team member, I would like to participate in and support the HIPPO team’s flight testing missions.

**Definition of Done**

[ ] Review test matrices located here: \HIPPO\Administrative\ProjectPlan\PreliminaryTestMatrix.xlsx

[ ] Review mission document located here:

\FlightOperations\Operations\Missions\18\_XX\_XX\_HIPPO\_test01\MissionDocument.docx

[ ] Complete required safety training and quiz, outlined by night testing procedure

[ ] Contribute to team readiness prior to flight tests, so tests can be conducted on schedule

[ ] Participate in scheduled HIPPO flight tests

[ ] Assist in post-testing review and analysis

[ ] Coordinate with team members and AFSL personnel as necessary

**Notes**

## 2202 – HIPPO Flight Testing

**Content**

As a HIPPO team member, I would like to participate in and support the HIPPO team’s flight testing missions.

**Definition of Done**

[ ] Review test matrices located here: \HIPPO\Administrative\ProjectPlan\PreliminaryTestMatrix.xlsx

[ ] Review mission document located here:

\FlightOperations\Operations\Missions\18\_XX\_XX\_HIPPO\_test01\MissionDocument.docx

[ ] Complete required safety training and quiz, outlined by night testing procedure

[ ] Contribute to team readiness prior to flight tests, so tests can be conducted on schedule

[ ] Participate in scheduled HIPPO flight tests

[ ] Assist in post-testing review and analysis

[ ] Coordinate with team members and AFSL personnel as necessary

**Notes**

## 2203 – HIPPO Flight Testing

**Content**

As a HIPPO team member, I would like to participate in and support the HIPPO team’s flight testing missions.

**Definition of Done**

[ ] Review test matrices located here: \HIPPO\Administrative\ProjectPlan\PreliminaryTestMatrix.xlsx

[ ] Review mission document located here:

\FlightOperations\Operations\Missions\18\_XX\_XX\_HIPPO\_test01\MissionDocument.docx

[ ] Complete required safety training and quiz, outlined by night testing procedure

[ ] Contribute to team readiness prior to flight tests, so tests can be conducted on schedule

[ ] Participate in scheduled HIPPO flight tests

[ ] Assist in post-testing review and analysis

[ ] Coordinate with team members and AFSL personnel as necessary

**Notes**

## 2204 – HIPPO April Meetings

**Content**

As a HIPPO Team member, I will be prepared for and make contributions to all scheduled meetings through the month of April.

**Definition of Done**

[ ] Participation in weekly internal meetings (4 this month)

[ ] Participation in weekly internal student meetings (4 this month)

[ ] Participation in weekly meetings with Joel (3 this month)

**Notes**

## 2205 – HIPPO April Meetings

**Content**

As a HIPPO Team member, I will be prepared for and make contributions to all scheduled meetings through the month of April.

**Definition of Done**

[ ] Participation in weekly internal meetings (4 this month)

[ ] Participation in weekly internal student meetings (4 this month)

[ ] Participation in weekly meetings with Joel (3 this month)

**Notes**

## 2206 – HIPPO April Meetings

**Content**

As a HIPPO Team member, I will be prepared for and make contributions to all scheduled meetings through the month of April.

**Definition of Done**

[ ] Participation in weekly internal meetings (4 this month)

[ ] Participation in weekly internal student meetings (4 this month)

[ ] Participation in weekly meetings with Joel (3 this month)

**Notes**

## 2207 – HIPPO April Meetings

**Content**

As a HIPPO Team member, I will be prepared for and make contributions to all scheduled meetings through the month of April.

**Definition of Done**

[ ] Participation in weekly internal meetings (4 this month)

[ ] Participation in weekly internal student meetings (4 this month)

[ ] Participation in weekly meetings with Joel (3 this month)

**Notes**

## 2208 – HIPPO April Admin Duties

**Content**

As the HIPPO Admin Lead, I would like to fulfill whatever duties are necessary relating to administrative leadership for the team.

**Definition of Done**

[ ] Update and add user stories as needed

[ ] See User Story 1955 for more details

[ ] Coordinate test planning, update mission documents

**Notes**

## 2209 – HIPPO April Budgeting Duties

**Content**

As the HIPPO Budgeting Coordinator, I would like to fulfill whatever duties are necessary relating to budgeting and purchasing for the team.

**Definition of Done**

[ ] Update a budgeting spreadsheet as needed, located here: HIPPO\Administrative\Budget\

[ ] Order/purchase necessary equipment when the team decides a new item is needed and add to budget

**Notes**

## 2210 – Develop Night Testing Training Program

**Content**

As a HIPPO Team member, I will be prepare for and make contributions to all scheduled meetings through the month of April.

**Definition of Done**

[ ] Participation in weekly internal meetings (4 this month)

[ ] Participation in weekly internal student meetings (4 this month)

[ ] Participation in weekly meetings with Joel (3 this month)

**Notes**

## 2211 – HIPPO March Meetings

**Content**

As a HIPPO Team member, I will be prepared for and make contributions to all scheduled meetings through the month of March.

**Definition of Done**

[ ] Participation in weekly internal meetings (3 this month)

[ ] Participation in weekly internal student meetings (3 this month)

[ ] Participation in weekly meetings with Joel (3 this month)

**Notes**

## 2212 – HIPPO March Meetings

**Content**

As a HIPPO Team member, I will be prepared for and make contributions to all scheduled meetings through the month of March.

**Definition of Done**

[ ] Participation in weekly internal meetings (3 this month)

[ ] Participation in weekly internal student meetings (3 this month)

[ ] Participation in weekly meetings with Joel (3 this month)

**Notes**

## 2213 – HIPPO March Meetings

**Content**

As a HIPPO Team member, I will be prepared for and make contributions to all scheduled meetings through the month of March.

**Definition of Done**

[ ] Participation in weekly internal meetings (3 this month)

[ ] Participation in weekly internal student meetings (3 this month)

[ ] Participation in weekly meetings with Joel (3 this month)

**Notes**

## 2214 – HIPPO March Meetings

**Content**

As a HIPPO Team member, I will be prepared for and make contributions to all scheduled meetings through the month of March.

**Definition of Done**

[ ] Participation in weekly internal meetings (3 this month)

[ ] Participation in weekly internal student meetings (3 this month)

[ ] Participation in weekly meetings with Joel (3 this month)

**Notes**

## 2215 – Dummy Payload for HIPPO

**Content**

As a HIPPO Team member, I will finalize the dummy payload build for preliminary flight testing.

**Definition of Done**

[ ] Determine a roughly accurate number for the mass of the payload based on mass of the batteries, raspberry pi, storage device, camera, lens and other components of the sensor payload (preliminary estimate was ~300g)

[ ] Drill into 3D printed camera/lens combo to create a space to put BBs or sand into model such that we can increase its mass to be equal to the mass that was determined for our final, real payload. Seal the BBs/sand in when mass is accurate

[ ] Assemble massed camera model with a 3D printed mount and attach to UAS using high strength Velcro in same manner as planned for flight testing of the actual payload

[ ] Coordinate with team members and AFSL personnel as necessary

**Notes**

## 2216 – TEMPEST March Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of March.

**Definition of Done**

[ ] Participation in Tuesday weekly internal meetings

[ ] Participation in Thursday weekly internal meetings

[ ] Participation of Friday weekly meetings with Todd

**Notes**

## 2217 – TEMPEST March Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of March.

**Definition of Done**

[ ] Participation in Tuesday weekly internal meetings

[ ] Participation in Thursday weekly internal meetings

[ ] Participation of Friday weekly meetings with Todd

**Notes**

## 2218 – TEMPEST March Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of March.

**Definition of Done**

[ ] Participation in Tuesday weekly internal meetings

[ ] Participation in Thursday weekly internal meetings

[ ] Participation of Friday weekly meetings with Todd

**Notes**

## 2219 – TEMPEST March Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of March.

**Definition of Done**

[ ] Participation in Tuesday weekly internal meetings

[ ] Participation in Thursday weekly internal meetings

[ ] Participation of Friday weekly meetings with Todd

**Notes**

**2220 - TEMPEST Administrative Lead Duties**

**Content**

As a TEMPEST member, I will fulfill my duties as the administrative team lead.

**Definition of Done**

[ ] Coordinate scheduling with other team members, Chris Lum and Todd Leighton

[ ] Update User Stories with new projects for team members

[ ] Maintain clear communication with group to ensure everyone has tasks assigned

[ ] Coordinate research efforts

**2221 - TEMPEST Secretary Lead Duties**

**Content**

Keep minutes for every meeting and upload this into a single document.

**Definition of Done**

[ ] Keep digital notes for every meeting or assign someone to do so.

[ ] Transcribe handwritten notes and upload all relevant notes for every meeting to Perforce.

[ ] Make sure this doc is current.

**Notes:**

Meeting notes document found at TEMPEST\TechnicalDataPackage\PresentationsAndMeetings\MeetingNotes.docx4

## 2222 - TEMPEST March Purchasing

As a TEMPEST Team member, I will

**Definition of Done**

[ ] Send purchase orders to Nancy Lou

[] Update budget spreadsheet as necessary

**Notes**

## 2223 - TEMPEST Mockup Board

As a TEMPEST Team member, I will

**Definition of Done**

[ ] Get started placing components on a mockup board to make sure they fit together

**Notes**

## 2224 - TEMPEST Start on SciTech Paper Component

As a TEMPEST Team member, I will

**Definition of Done**

[] Start writing a draft of my contribution of the SciTech paper

**Notes**

## 2225 - TEMPEST Start on SciTech Paper Component

As a TEMPEST Team member, I will

**Definition of Done**

[] Start writing a draft of my contribution of the SciTech paper

**Notes**

## 2226 - TEMPEST Start on SciTech Paper Component

As a TEMPEST Team member, I will

**Definition of Done**

[] Start writing a draft of my contribution of the SciTech paper

**Notes**

## 2227 - TEMPEST Start on SciTech Paper Component

As a TEMPEST Team member, I will

**Definition of Done**

[] Start writing a draft of my contribution of the SciTech paper

**Notes**

## 2228 – TRAPIS2 Conference Paper (MAVLINK Section)

As a TRAPIS2 Team member, I would like to complete MAVLINK section of the conference paper draft along with correct nomenclatures and updated diagram on the project vision.

**Definition of Done**

[] Complete writing a draft of MAVLINK section of the conference paper including the explanation of how data flow from TRAPIS to mavproxy to TMP to the plane.

[] Complete writing how to package MAVLINK message for future reference.

[] Complete nomenclatures for the TMP

[] Update project vision with new work flow diagram and nomenclature.

**Notes**

## 2229 – TRAPIS2 Conference Paper (MAVLINK Section) (Copy)

**Content**

Copy of user story [2228](#_2228_–_TRAPIS2) – TRAPIS2 Conference Paper (MAVLINK Section)

**Definition of Done**

Copy of user story [2228](#_2228_–_TRAPIS2) – TRAPIS2 Conference Paper (MAVLINK Section)

**Notes**

## 2230 – Finwing Traveler Build (Robin)

**Content**

As a test engineer, I would like to build the Robin Finwing Traveler aircraft.

**Definition of Done**

[ ] Coordinate with Helen before starting aircraft construction.

[ ] View the aircraft construction manual for tips before starting.

[ ] Update \FlightOperations\UAS\ComponentTracker.xlsx

[ ] Flight test these aircraft, and ensure they are tuned appropriately for safe and reliable flight.

[ ] Create necessary documentation/paperwork for these aircraft

[ ] Ensure they are airworthy.

**Notes**

* You can use the other Finwings for reference

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## 2231 – Finwing Traveler Build (Robin) (copy)

**Content**

Copy of user story 2230 – Finwing Traveler Build (Robin)

**Definition of Done**

Copy of user story 2230 – Finwing Traveler Build (Robin)

**Notes**

* You can use the other Finwings for reference

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## 2232 – Finwing Sabre Build (Papaya)

**Content**

As a test engineer, I would like to build the Papaya Finwing Sabre aircraft.

**Definition of Done**

[ ] Coordinate with Helen before starting aircraft construction.

[ ] View the aircraft construction manual for tips before starting.

[ ] Update \FlightOperations\UAS\ComponentTracker.xlsx

[ ] Flight test these aircraft, and ensure they are tuned appropriately for safe and reliable flight.

[ ] Create necessary documentation/paperwork for these aircraft

[ ] Ensure they are airworthy.

**Notes**

* You can use the other Finwings for reference

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## 2233 – Finwing Sabre Build (Papaya) (copy)

**Content**

Copy of user story 2232 – Finwing Sabre Build (Papaya)

**Definition of Done**

Copy of user story 2232 – Finwing Sabre Build (Papaya)

**Notes**

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## 2234 – Flight Training Program – Multi-Rotor (Copy)

**Content**

Copy of user story 1272 – Flight Training Program

**Definition of Done**

Copy definition of done from user story 1272 – Flight Training Program

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## 2235 – Leia Maintenance (copy)

**Content**

Copy of user story 1831 – Leia Maintenance

**Definition of Done**

Copy of user story 1831 – Leia Maintenance

**Notes**

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## 2236 – Dummy Payload CAD Drawings

**Content**

As a lab member, I would like to create CAD drawings for the PUCK Lite dummy payload.

**Definition of Done**

[X] Create CAD drawings with the final CAD.

[X] Upload the files onto Perforce.

**Notes**

* \FlightOperations\UAS\CommonDocuments\VelodynePuckLite\Dummy Payload

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## 2237 – LARAMID Sled manual documentation

**Content**

As a lab LARAMID team member, I would like to make a sled manual document.

**Definition of Done**

[] Make a necessary document for sled manual.

**Notes**

* \FlightOperations\UAS\Samwise

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## 2238 – LARAMID Project Vision Documentation

**Content**

As a lab LARAMID team member, I would complete LARAMID project vision document with necessary parts and processes.

**Definition of Done**

[] Complete LARAMID project vision document

[] Discuss with Dr. Lum

**Notes**

* \LARAMID\ProjectVision

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## 2239 – LARAMID System Illustration Documentation

**Content**

As a lab LARAMID team member, I would complete LARAMID system illustration document with necessary CAD files, part name and description.

**Definition of Done**

[] Make LARAMID system illustration ppt file

[] Make CAD file for Prodo, Samwise with detailed description

[] Discuss with Dr. Lum

**Notes**

* \LARAMID\SystemIllustration

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## 2244 – Sprint Metrics (copy)

**Content**

Copy of user story 380 – Sprint Metrics

**Definition of Done**

Copy definition of done from user story 380 – Sprint Metrics.

**Notes**

Modify codes.

## 2245 – LARAMID Sled Build (Copy)

**Content**

Copy of user story 2132 – Sled Build

**Definition of Done**

Copy of user story 2132 – Sled Build.

**Notes**

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## 2246 – LARAMID Sled Build (Copy)

**Content**

Copy of user story 2132 – Sled Build

**Definition of Done**

Copy of user story 2132 – Sled Build.

**Notes**

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## 2247 – Solder Batteries

**Content**

As a lab member, I would like to solder connectors to the new batteries.

**Definition of Done**

[ ] Solder XT60 connectors to the new batteries

**Notes**

## 2248 – Peach Battery Wire Replacement

**Content**

As a lab member, I would like to replace Peach’s battery wire in order to better accommodate the TRAPIS payload.

**Definition of Done**

[ ] Solder and install a new connection between battery plug and main power switch on Peach

[ ] Test to make sure the TRAPIS payload fits in the aircraft without excessive tension or twisting on the wires connecting to the switch

**Notes**

## 2249 – FPV Transmitter Repair

**Content**

As a lab member, I would like to redo the connections on the FPV antenna in a safer way.

**Definition of Done**

[x] Splice wires to XT60 connector in order to install shrink tube around the connector attachments

[x] Secure loose connection to the XT60

**Notes**

## 2250 – Security Audit and Hardening

**Content**

As a lab member, I would like to arrange and supervise a security audit of the labs network.

**Definition of Done**

[ ] Contact a party willing and able to perform a security audit and arrange a meeting.

[ ] Construct a summary of the lab’s network setup.

[ ] Agree some sort of right-to-audit contract with the auditors.

[ ] Supervise the audit.

[ ] Assist in implementing security changes.

**Notes**

* We are currently working with Batman’s Kitchen, a student cybersecurity organization, to perform the audit.

## 2251 – Security Audit and Hardening (Copy)

**Content**

Copy of user story 2250 – Security Audit and Hardening

**Definition of Done**

Copy of user story 2250 – Security Audit and Hardening

## 2252 – Stand-Alone GPS Integration, Part 2

**Content**

Continuation of user story 1849 – Stand-Alone GPS Integration

**Definition of Done**

[x] Acquire a GPS that can be plugged into or integrated to the plug into the LiDAR’s interface box.

[ ] Properly configure the GPS to work with the LiDAR.

[ ] Determine where the GPS will be mounted on the aircraft.

[ ] Determine whether calibration will be needed to account for the actual distance between the sensor and the GPS location.

[ ] Work the software team at the time to see if there is a offset solution to ensure GPS accuracy.

## 2253 – Stand-Alone GPS Integration, Part 2 (Copy)

**Content**

Copy of user story 2252 – Stand-Alone GPS Integration, Part 2

**Definition of Done**

Copy of user story 2252 – Stand-Alone GPS Integration, Part 2

## 2254 – Create Log for Static IPs

**Content**

Create a list of the static IPs currently assigned to the lab.

**Definition of Done**

[x] Find or create a document to store information about static IPs in (date issued, computer assigned to, etc.).

**Notes**

* Table of static IPs and configuration parameters can be found in \\AFSL\ComputingInfo\Computers.docx

## 2255 – WSTR Waypoint Navigation Development

**Content**

As a software developer for the TRAPIS2 project, I would like to add a waypoint following feature to the WSTR mode

**Definition of Done**

[x] Create Waypoint Navigation code within the WSTR Library within the TRAPIS2 repository on GitHub

[x] Allow user to specify certain parameters as necessary

[x] Verify functionality within simulator

[x] Verify functionality at a flight test

[ ] Clean up code (make sure the final result is readable and ready for an unrelated client to understand and use)

**Notes**

* Related to 1910 - WSTR Development

## 2256 – TRAPIS2 Documentation

**Content**

As a member of the TRAPIS2 project, I would like to create clear documentation to use/setup TRAPIS2 for a flight test.

**Definition of Done**

[x] Create documentation to use TRAPIS application, TRAPIS payload, TMP (TRAPIS MavProxy Script), etc.

[x] Test script with a lab member that has not setup previously

[ ] Make adjustments to documentation as necessary

[ ] Verify functionality at a flight test

**Notes**

* Located in Perforce/TRAPIS2/TRAPIS2\_Notes.docx

## 2257 – JCATI Symposium Preparation

**Content**

As a JCATI representative for the TRAPIS2 project, I would like to prepare the necessary materials for the JCATI Poster Presentation and Pitch Contest.

**Definition of Done**

[x] Modify a copy of the ProjectVision documentation to be used for the pitch contest

[x] Modify a copy of the ProjectVision documentation to be used for the poster presentation

[x] Prepare the pitch

[x] Present the necessary information at the JCATI Symposium (US\_2260)

**Notes**

* Located in \Perforce\TRAPIS2\TechnicalDataPackage\PresentationsAndMeetings\
* Related to 2260 JCATI Symposium Attendance

## 2258 – TRAPIS2 Conference Paper (Ardupilot Section)

**Content**

As a TRAPIS2 Team member, I would like to complete Ardupilot section of the conference paper draft along with correct nomenclatures and updated diagram on the project vision.

**Definition of Done**

[ ] Complete writing a draft of Ardupilot/Software section of the conference paper including the explanation of how the custom flight modes, specifically WSMP and WSTR

[ ] Verify nomenclature

[ ] Verify project vision document of correct nomenclature and data flow

**Notes**

## 2259 – TRAPIS2 Software Clean-Up

**Content**

As a software developer for the TRAPIS2 project, I would like to verify that the software will be easy to understand and use as a client for future projects.

**Definition of Done**

[ ] Verify TRAPIS2 classes and code is properly commented

[ ] Peer-review code style with another software developer (and possibly Dr. Lum)

[ ] Confirm WSTR behavior during a flight test

[ ] Remove unnecessary parameters with the end of flight-tuning phase

**Notes**

* Related to 1910 - WSTR Development
* Related to 2255 – WSTR Waypoint Navigation

## 2260 – JCATI Symposium Attendance

**Content**

As a JCATI representative for the TRAPIS2 project, I would like to attend the JCATI Symposium and present the necessary information throughout the conference.

**Definition of Done**

[x] Coordinate with Dr. Lum and Beth Hacker to organize travel planes

[x] Attend the conference

[x] Present the pitch for the Pitch Contest

[x] Present the poster for the Poster Session

[x] Have fun learning about other research/developments within the aerospace industry

**Notes**

* Located in \Perforce\TRAPIS2\TechnicalDataPackage\PresentationsAndMeetings\
* Related to 2257 JCATI Symposium Attendance

## 2261 – JCATI Symposium Attendance (Copy)

**Content**

Copy of user story 2260 – JCATI Symposium Attendance

**Definition of Done**

Copy definition of done from user story2260 – JCATI Symposium Attendance

**Notes**



## 2262 – Standardize Mission Planners

**Content**

As a lab member, I would like to standardize the Mission Planner version on all computers

**Definition of Done**

[ ] Verify functionality of an AFSL Mission Planner version on one computer

[ ] Confirm flight behavior on custom modes on lab computers

[ ] Copy the setup on all lab computers

**Notes**

## 2263 – Standardize Simulation and Build Process

**Content**

As a lab member, I would like to standardize the simulation and build process on as many lab computers as possible (all Windows 10 machines)

**Definition of Done**

[ ] Verify functionality of simulator and build process on one computer

[ ] Confirm flight behavior on custom modes on lab computers

[ ] Copy the setup on all lab computers

**Notes**

* Build process will only be available on Windows 10 machines

## 2264 – Create Data Log Script

**Content**

As a software developer, I would like to create a script that will make moving the data logs to the necessary folders easier.

**Definition of Done**

[ ] Develop a script that will move the necessary files from a specific directory to their spots in Perforce/ on the KDrive

[ ] Validate performance on one computer (CONDOR)

[ ] Validate performance on all computers (that are connected to perforce and KDrive)

**Notes**



## 2265 – LARAMID System integration for Samwise

**Content**

As a LARAMID team member, I will design appropriate system for Samwise electronic components.

**Definition of Done**

[ ] Design a circuit for connecting electromagnet, Pixhawk, Arduino and battery.

[ ] Validate performance of using two electromagnet simultaneously.

[ ] Connect H-bridge to the battery and Arduino for getting required current.

[ ] Make necessary document for the system

**Notes**

* **LARAMID\Research\Samwise\_System\_Integration**

## 2266 – LARAMID System integration for Samwise (Copy)

**Content**

Copy of user story 2265 – System integration for Samwise

**Definition of Done**

Copy of user story 2265 – System integration for Samwise

**Notes**

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## 2267 – LARAMID Sled Build (Copy)

**Content**

Copy of user story 2132 – Sled Build

**Definition of Done**

Copy of user story 2132 – Sled Build.

**Notes**

|  |
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## 2268 – LARAMID EM Polarity Control (Copy)

**Content**

Copy of user story 2189 – LARAMID Electromagnet Polarity Control

**Definition of Done**

Copy of user story 2189 – LARAMID Electromagnet Polarity Control

**Notes**

**2269 – Part 107 Test Preparation (copy)**

**Content**

As a researcher, I would like to prepare for and take the FAA Part 107 Commercial Remote Pilot Certification test.

**Definition of Done**

[ ] Take the online course offered by the FAA

[ ] Take the three practice tests on the network drive

[ ] Study all topics identified as weak when taking practice tests

[ ] Take the part 107 test

[ ] Do the paperwork to get the license from the FAA

[ ] Do the paperwork to get reimbursed for test

|  |
| --- |
|  |

## 2270 – HIPPO CDR Preparation and Attendance

**Content**

As a HIPPO team member, I would like to prepare for a successful CDR.

**Definition of Done**

[ ] Contribute to and update the internal CDR ppt located at HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_04\_19\_InternalCDR\18\_04\_19\_InternalCDR.pptx

[ ] Contribute to and update the external CDR ppt located at

HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_04\_27\_ExternalCDR\18\_04\_27\_AllClassCDR.pptx

[ ] Coordinate with team to determine relevant content for CDR

[ ] Familiarize self with entire ppt

[ ] Review and revise ppt with advisors, team

[ ] Practice to present CDR

[ ] Attend and participate in the in-depth CDR presentation

[ ] Attend and participate in the full class CDR presentations

[ ] Revise CDR in response to internal CDR feedback

[ ] Support group efforts as needed

**Notes**

## 2271 – HIPPO CDR Preparation and Attendance

**Content**

As a HIPPO team member, I would like to prepare for a successful CDR.

**Definition of Done**

[ ] Contribute to and update the internal CDR ppt located at HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_04\_19\_InternalCDR\18\_04\_19\_InternalCDR.pptx

[ ] Contribute to and update the external CDR ppt located at

HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_04\_27\_ExternalCDR\18\_04\_27\_AllClassCDR.pptx

[ ] Coordinate with team to determine relevant content for CDR

[ ] Familiarize self with entire ppt

[ ] Review and revise ppt with advisors, team

[ ] Practice to present CDR

[ ] Attend and participate in the in-depth CDR presentation

[ ] Attend and participate in the full class CDR presentations

[ ] Revise CDR in response to internal CDR feedback

[ ] Support group efforts as needed

**Notes**

## 2272 – HIPPO CDR Preparation and Attendance

**Content**

As a HIPPO team member, I would like to prepare for a successful CDR.

**Definition of Done**

[ ] Contribute to and update the internal CDR ppt located at HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_04\_19\_InternalCDR\18\_04\_19\_InternalCDR.pptx

[ ] Contribute to and update the external CDR ppt located at

HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_04\_27\_ExternalCDR\18\_04\_27\_AllClassCDR.pptx

[ ] Coordinate with team to determine relevant content for CDR

[ ] Familiarize self with entire ppt

[ ] Review and revise ppt with advisors, team

[ ] Practice to present CDR

[ ] Attend and participate in the in-depth CDR presentation

[ ] Attend and participate in the full class CDR presentations

[ ] Revise CDR in response to internal CDR feedback

[ ] Support group efforts as needed

**Notes**

## 2273 – HIPPO CDR Preparation and Attendance

**Content**

As a HIPPO team member, I would like to prepare for a successful CDR.

**Definition of Done**

[ ] Contribute to and update the internal CDR ppt located at HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_04\_19\_InternalCDR\18\_04\_19\_InternalCDR.pptx

[ ] Contribute to and update the external CDR ppt located at

HIPPO\TechnicalDataPackage\PresentationsAndMeetings\18\_04\_27\_ExternalCDR\18\_04\_27\_AllClassCDR.pptx

[ ] Coordinate with team to determine relevant content for CDR

[ ] Familiarize self with entire ppt

[ ] Review and revise ppt with advisors, team

[ ] Practice to present CDR

[ ] Attend and participate in the in-depth CDR presentation

[ ] Attend and participate in the full class CDR presentations

[ ] Revise CDR in response to internal CDR feedback

[ ] Support group efforts as needed

**Notes**

## 2274 – Plum Maintenance

**Content**

Fix battery connection and make power module interchangeable.

**Definition of Done**

[ ] Power supply works.

[ ] Power module can be easily changed.

## 2275 – LARAMID 3D Print Docking Frame

**Content**

As a LARAMID team member, I will print the docking frame from CAD file

**Definition of Done**

[ ] See if dimension of part is correct

[ ] Print out part that has right dimension & necessary structures and bring it to lab

**Notes**

## 2276 – Diagnose Monitors for AFSL04

**Content**

As a lab member, I will diagnose why the monitors used with AFSL04 are not working and attempt to remedy the problem.

**Definition of Done**

[x] Determine which ports on AFSL04 and the defunct monitors are not working.

[x] Find connectors for the working ports and reconnect monitors.

~~[ ] Discard any broken monitors.~~

**Notes**

* None of the monitors were found to be completely broken. There was only a broken VGA port on one, and a broken DVI port on the other.

## 2277 – Develop Method for Forwarding LAMS Transmission

**Content**

As a member of the TRAPIS2 project, I will determine how to forward the LAMS transmission from a lab computer to other computers in and outside the local network.

**Definition of Done**

[x] Determine how to forward the LAMS transmission to a computer in the local network.

[ ] Determine how to forward the LAMS transmission to a computer in an external network.

[ ] Create a guide on how to do the above.

## 2278 – Install PhoenixRC on Lab Computers

**Content**

As a lab member, I would like to install PhoenixRC on lab computers with the standardized method.

**Definition of Done**

[x] Upload the PhoenixRC zip file to the KDrive.

[x] Copy the AFSL\_SKYWALKER model to Perforce.

[x] Create a standardized installation procedure.

[x] Follow procedure to install PhoenixRC.

[x] Set up AFSL\_SKYWALKER model for PhoenixRC.

[x] Calibrate transmitter.

**Notes**

## 2279 – Clean up AFSL Ardupilot code

**Content**

As a lab member, I would like to make improvements to our custom ArduPilot code

**Definition of Done**

[] Make flight mode code generic/reusable

[] improve readability and documentation

[] safety and realiability improvements

**Notes**

## 2280 – Fix TRAPIS payload

**Content**

As a lab member, I would like to fix the TRAPIS payload’s connectivity issues

**Definition of Done**

[x] resolder the antenna

[x] build a new power switch

[x] hot glue all loose wires

**Notes**

Faulty power switch was causing pixhawk to reboot

## 2281 – Visual Anchoring Thesis

**Content**

As a lab member, I would like to complete my Master’s thesis on the visual anchoring project.

**Definition of Done**

[] complete draft of thesis

[] submit to committee for revisions

[] give thesis presentation

[] submit revised thesis

**Notes**

## 2282 – Finalize Vision System

**Content**

As a lab member, I would like to finalize the vision system for the visual anchoring project

**Definition of Done**

[] implement nonlinear correction factor in Matlab code

[] document vision system in thesis

**Notes**

## 2283 – TEMPEST April Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of April.

**Definition of Done**

[ ] Participation in Wednesday weekly internal meetings

[ ] Participation in other scheduled team meetings

[ ] Participation in scheduled meetings with AeroTEC

**Notes**

## 2284 – TEMPEST April Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of April.

**Definition of Done**

[ ] Participation in Wednesday weekly internal meetings

[ ] Participation in other scheduled team meetings

[ ] Participation in scheduled meetings with AeroTEC

**Notes**

## 2285 – TEMPEST April Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of April.

**Definition of Done**

[ ] Participation in Wednesday weekly internal meetings

[ ] Participation in other scheduled team meetings

[ ] Participation in scheduled meetings with AeroTEC

**Notes**

## 2286 – TEMPEST April Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of April.

**Definition of Done**

[ ] Participation in Wednesday weekly internal meetings

[ ] Participation in other scheduled team meetings

[ ] Participation in scheduled meetings with AeroTEC

**Notes**

**2287 - TEMPEST Administrative Lead Duties**

**Content**

As a TEMPEST member, I will fulfill my duties as the administrative team lead.

**Definition of Done**

[ ] Coordinate scheduling with other team members, Chris Lum and Todd Leighton

[ ] Update User Stories with new projects for team members

[ ] Maintain clear communication with group to ensure everyone has tasks assigned

[ ] Coordinate research efforts

## 2288 - TEMPEST April Purchasing

As a TEMPEST Team member, I will

**Definition of Done**

[ ] Send purchase orders to Nancy Lou

[] Update budget spreadsheet as necessary

**Notes**

## 2289 – TEMPEST CDR Preparation

As a TEMPEST Team member, I will prepare for our internal Critical Design Review (CDR) on Thursday, April 26th.

**Definition of Done**

[ ] Review CDR requirements document on Canvas

[ ] Agree on revised internal CDR requirements to present to AeroTEC

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at CDR

[ ] Attend CDR and contribute to team presentation

**Notes**

## 2290 – TEMPEST CDR Preparation

As a TEMPEST Team member, I will prepare for our internal Critical Design Review (CDR) on Thursday, April 26th.

**Definition of Done**

[ ] Review CDR requirements document on Canvas

[ ] Agree on revised internal CDR requirements to present to AeroTEC

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at CDR

[ ] Attend CDR and contribute to team presentation

**Notes**

## 2291 – TEMPEST CDR Preparation

As a TEMPEST Team member, I will prepare for our internal Critical Design Review (CDR) on Thursday, April 26th.

**Definition of Done**

[ ] Review CDR requirements document on Canvas

[ ] Agree on revised internal CDR requirements to present to AeroTEC

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at CDR

[ ] Attend CDR and contribute to team presentation

**Notes**

## 2292 – TEMPEST CDR Preparation

As a TEMPEST Team member, I will prepare for our internal Critical Design Review (CDR) on Thursday, April 26th.

**Definition of Done**

[ ] Review CDR requirements document on Canvas

[ ] Agree on revised internal CDR requirements to present to AeroTEC

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at CDR

[ ] Attend CDR and contribute to team presentation

**Notes**

## 2293 – TEMPEST CDR Presentation

As a TEMPEST Team member, I will present at our departmental CDR

**Definition of Done**

[ ] Review CDR requirements document on Canvas

[ ] Abbreviate slides for PowerPoint presentation

[ ] Present CDR to peers

**Notes**

## 2294 – TEMPEST CDR Presentation

As a TEMPEST Team member, I will present at our departmental CDR

**Definition of Done**

[ ] Review CDR requirements document on Canvas

[ ] Abbreviate slides for PowerPoint presentation

[ ] Present CDR to peers

**Notes**

## 2295 – TEMPEST Truck Test Prep

As a TEMPEST Team member, I will prepare for our truck test on Friday, April 13th.

**Definition of Done**

[ ] Gather all materials in toolboxes

[] Modify mission document to represent each run

[] Assign and understand team roles

**Notes**

## 2296 – TEMPEST Truck Test Prep

As a TEMPEST Team member, I will prepare for our truck test on Friday, April 13th.

**Definition of Done**

[ ] Gather all materials in toolboxes

[] Modify mission document to represent each run

[] Assign and understand team roles

**Notes**

## 2297 – TEMPEST Truck Test Prep

As a TEMPEST Team member, I will prepare for our truck test on Friday, April 13th.

**Definition of Done**

[ ] Gather all materials in toolboxes

[] Modify mission document to represent each run

[] Assign and understand team roles

**Notes**

## 2298 – TEMPEST Truck Test Prep

As a TEMPEST Team member, I will prepare for our truck test on Friday, April 13th.

**Definition of Done**

[ ] Gather all materials in toolboxes

[] Modify mission document to represent each run

[] Assign and understand team roles

**Notes**

## 2299 – TEMPEST Truck Test

As a TEMPEST Team member, I will execute our planned flight test to gather stability data from different configurations of our drogue.

**Definition of Done**

[ ] Execute all runs listed on mission doc

[] Take photos and videos of tests

[] Make adjustments as needed

**Notes**

## 2300 – TEMPEST Truck Test

As a TEMPEST Team member, I will execute our planned flight test to gather stability data from different configurations of our drogue.

**Definition of Done**

[ ] Execute all runs listed on mission doc

[] Take photos and videos of tests

[] Make adjustments as needed

**Notes**

## 2301 – TEMPEST Truck Test

As a TEMPEST Team member, I will execute our planned flight test to gather stability data from different configurations of our drogue.

**Definition of Done**

[ ] Execute all runs listed on mission doc

[] Take photos and videos of tests

[] Make adjustments as needed

**Notes**

## 2303 – TEMPEST Truck Test

As a TEMPEST Team member, I will execute our planned flight test to gather stability data from different configurations of our drogue.

**Definition of Done**

[ ] Execute all runs listed on mission doc

[] Take photos and videos of tests

[] Make adjustments as needed

**Notes**

## 2304 – TEMPEST Truck Test Data Analysis

As a TEMPEST Team member, I will analyze the data gathered from our Pixhawk unit from our truck test

**Definition of Done**

[ ] Generate useful plots from the raw data collected

[ ] Report useful findings

**Notes**

## 2305 – TEMPEST Truck Test Data Compiling

As a TEMPEST Team member, I will organize the data collected from our flight test to be uploaded to the lab K: drive

**Definition of Done**

[ ] Upload all data to an external hard drive

[ ] Format videos, pictures, and other data into organized folders

[ ] Give drive to Dr. Lum to upload

**Notes**

## 2306 – TEMPEST Drogue Ground Stability Test

As a TEMPEST Team member, I will execute a simple check to validate a degree of stability before driving to Moses Lake for our full truck test.

**Definition of Done**

[ ] Tie rope around CG of drogue and spin around

[ ] If drogue stabilizes itself, this suggests that the drogue will be stable under truck testing conditions

**Notes**

## 2307 – TEMPEST Drogue Ground Stability Test

As a TEMPEST Team member, I will execute a simple check to validate a degree of stability before driving to Moses Lake for our full truck test.

**Definition of Done**

[ ] Tie rope around CG of drogue and spin around

[ ] If drogue stabilizes itself, this suggests that the drogue will be stable under truck testing conditions

**Notes**

## 2308 – TEMPEST Winch Final Design

As a TEMPEST Team member, I will finalize the design of the drogue winch system.

**Definition of Done**

[ ] Design model to balance weight, torque, voltage, and speed

[ ] Complete a BOM

[ ] Request purchases of parts

**Notes**

## 2309 – TEMPEST Winch CAD

As a TEMPEST Team member, I will model the final design of the winch using CAD.

**Definition of Done**

[ ] Model motor

[ ] Model spool

[ ] Model motor mount

[ ] Export to Parasolid for integration with rest of system model

**Notes**

## 2310 – TEMPEST Lab Inspection Prep

As a TEMPEST Team member, I will ensure that all necessary safety precautions are taken in preparation of an inspection of AERB 120.

**Definition of Done**

[ ] Ensure each member completes

[ ] “AA Shared Workspaces: Rules and Policies”

[ ] “ehs\_lab\_safey\_training\_for\_laboratory\_personnel”

[ ] “EHS\_Safety\_Training\_Matrix”  
[ ] Ensure one document gets filled out for whole team

[ ] PPE hazard assessment form

[ ] Send to Curtis Promislow by Monday 4/23 at noon

**Notes**

## 2311 – TEMPEST May Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of May.

**Definition of Done**

[ ] Participation in Wednesday weekly internal meetings

[ ] Participation in other scheduled team meetings

[ ] Participation in scheduled meetings with AeroTEC

**Notes**

## 2312 – TEMPEST May Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of May.

**Definition of Done**

[ ] Participation in Wednesday weekly internal meetings

[ ] Participation in other scheduled team meetings

[ ] Participation in scheduled meetings with AeroTEC

**Notes**

## 2313 – TEMPEST May Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of May.

**Definition of Done**

[ ] Participation in Wednesday weekly internal meetings

[ ] Participation in other scheduled team meetings

[ ] Participation in scheduled meetings with AeroTEC

**Notes**

## 2314 – TEMPEST May Meetings

As a TEMPEST Team member, I will be prepare for and make contributions to all scheduled meetings trough the month of May.

**Definition of Done**

[ ] Participation in Wednesday weekly internal meetings

[ ] Participation in other scheduled team meetings

[ ] Participation in scheduled meetings with AeroTEC

**Notes**

**2315 - TEMPEST Administrative Lead Duties**

**Content**

As a TEMPEST member, I will fulfill my duties as the administrative team lead.

**Definition of Done**

[ ] Coordinate scheduling with other team members, Chris Lum and Todd Leighton

[ ] Update User Stories with new projects for team members

[ ] Maintain clear communication with group to ensure everyone has tasks assigned

[ ] Coordinate research efforts

## 2316 - TEMPEST May Purchasing

As a TEMPEST Team member, I will

**Definition of Done**

[ ] Send purchase orders to Nancy Lou

[] Update budget spreadsheet as necessary

**Notes**

## 2317 – TEMPEST FDR Preparation

As a TEMPEST Team member, I will prepare for our internal Final Design Review (FDR) on Tuesday, June 5th.

**Definition of Done**

[ ] Review FDR requirements document on Canvas

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at FDR

**Notes**

## 2318 – TEMPEST FDR Preparation

As a TEMPEST Team member, I will prepare for our internal Final Design Review (FDR) on Tuesday, June 5th.

**Definition of Done**

[ ] Review FDR requirements document on Canvas

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at FDR

**Notes**

## 2319 – TEMPEST FDR Preparation

As a TEMPEST Team member, I will prepare for our internal Final Design Review (FDR) on Tuesday, June 5th.

**Definition of Done**

[ ] Review FDR requirements document on Canvas

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at FDR

**Notes**

## 2320 – TEMPEST FDR Preparation

As a TEMPEST Team member, I will prepare for our internal Final Design Review (FDR) on Tuesday, June 5th.

**Definition of Done**

[ ] Review FDR requirements document on Canvas

[ ] Create slides for PowerPoint presentation

[ ] Prepare to present at FDR

**Notes**

## 2321 – TEMPEST CDR Presentation

As a TEMPEST Team member, I will present at our departmental FDR

**Definition of Done**

[ ] Review FDR requirements document on Canvas

[ ] Abbreviate slides for PowerPoint presentation

[ ] Present FDR to peers

**Notes**

## 2322 – TEMPEST CDR Presentation

As a TEMPEST Team member, I will present at our departmental FDR

**Definition of Done**

[ ] Review FDR requirements document on Canvas

[ ] Abbreviate slides for PowerPoint presentation

[ ] Present FDR to peers

**Notes**

## 2323 – TEMPEST CDR Presentation

As a TEMPEST Team member, I will present at our departmental FDR

**Definition of Done**

[ ] Review FDR requirements document on Canvas

[ ] Abbreviate slides for PowerPoint presentation

[ ] Present FDR to peers

**Notes**

## 2324 – TEMPEST CDR Presentation

As a TEMPEST Team member, I will present at our departmental FDR

**Definition of Done**

[ ] Review FDR requirements document on Canvas

[ ] Abbreviate slides for PowerPoint presentation

[ ] Present FDR to peers

**Notes**

## 2325 – TEMPEST Write Sections of Department Paper

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2326 – TEMPEST Write Sections of Department Paper

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2327 – TEMPEST Write Sections of Department Paper

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2328 – TEMPEST Write Sections of Department Paper

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2329 – TEMPEST Edit Department Paper

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2330 – TEMPEST Edit Department Paper

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2331 – TEMPEST Edit Department Paper

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2332 – TEMPEST Edit Department Paper

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2333 – TEMPEST Final Line Selection

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2334 – TEMPEST Design Line Spooling Control

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2335 – TEMPEST Full System FEA

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2336 – TEMPEST Spool/Motor Mount Manufacturing

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2337 – TEMPEST Coordinate Plane Body Signal Penetration Test

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2338 – TEMPEST Organize Final Flight Test

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2339 – TEMPEST Systems Integration

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2340 – TEMPEST Final CAD Model

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2341 – TEMPEST Facilitate Body Thickness Reduction

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2342 – TEMPEST Facilitate Nose/Tail Cone Printing

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2343 – TEMPEST C-Channel Modifications

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2344 – TEMPEST Board Manufacturing

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2345 – TEMPEST Systems Integration

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2346 – TEMPEST Final CFD Analysis

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2347 – TEMPEST Final Plane Attachment Design

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2348 – TEMPEST Build Air Routing System

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2349 – TEMPEST Systems Integration

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2350 – TEMPEST GPS Integration

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2351 – TEMPEST Build Complete Sensor Circuit

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2352 – TEMPEST Build Complete Winch Control Cicruit

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2353 – TEMPEST Write Software to Read Sensor Data

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2354 – TEMPEST Plane Body Signal Penetration Test

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2355 – TEMPEST Systems Integration

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2356 – TEMPEST Full System Ground Test

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2357 – TEMPEST Full System Ground Test

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2358 – TEMPEST Full System Ground Test

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2359 – TEMPEST Full System Ground Test

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2360 – TEMPEST Final Flight Test

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2361 – TEMPEST Final Flight Test

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2362 – TEMPEST Final Flight Test

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2363 – TEMPEST Final Flight Test

As a TEMPEST Team member,

**Definition of Done**

[ ]

**Notes**

## 2364 – TEMPEST Secretary Lead Duties

**Content**

Keep minutes for every meeting and upload this into a single document.

**Definition of Done**

[ ] Keep digital notes for every meeting or assign someone to do so.

[ ] Transcribe handwritten notes and upload all relevant notes for every meeting to Perforce.

[ ] Make sure this doc is current.

**Notes:**

Meeting notes document found at TEMPEST\TechnicalDataPackage\PresentationsAndMeetings\MeetingNotes.docx4

## 2365 – TEMPEST Secretary Lead Duties

**Content**

Keep minutes for every meeting and upload this into a single document.

**Definition of Done**

[ ] Keep digital notes for every meeting or assign someone to do so.

[ ] Transcribe handwritten notes and upload all relevant notes for every meeting to Perforce.

[ ] Make sure this doc is current.

**Notes:**

Meeting notes document found at TEMPEST\TechnicalDataPackage\PresentationsAndMeetings\MeetingNotes.docx4

## 2366 – Solar Plane Trade Study

**Content**

As a lab member, I will conduct a trade study into the feasibility of implementing a battery assistance solar power system on our UAV fleet.

**Definition of Done**

[ ] Asses state of the solar powered UAV industry.

[ ] Asses lab owned solar plane, make recommendations for flight test

[ ] Research electrical needs of lab UAV fleet, test capability of lab-owned solar cells

[ ] Present feasibility study, with recommendations of hardware, projected cost, pros/cons to fleet capability.

**Notes:**

## 2367 – Add pin on magnetic battery

**Content**

As a lab member, I pin a magnetic battery.

**Definition of Done**

[ ] Finish pinning the battery

**Notes:**

## 2368 – Add close button and improve open button on the interface

**Content**

Add close button and improve open button on the interface

**Definition of Done**

[ ] Adding close button and improving open button on the interface

**Notes:**

## 2369 – Improve Mapping graph

**Content**

Add some coordinates to make graph nicer

**Definition of Done**

[ ] Adding some coordinates on the graph

**Notes:**

## 2380 – HIPPO May Admin Duties

**Content**

As a HIPPO admin lead, I would like to fulfill whatever duties are necessary to ensure smooth operation of the team.

**Definition of Done**

[ ] See story 2152

**Notes**

## 2381 – HIPPO May Meetings

**Content**

As a HIPPO team member, I would like to attend all necessary meetings.

**Definition of Done**

[ ] see story 2211

**Notes**

## 2382 – HIPPO May Meetings

**Content**

As a HIPPO team member, I would like to attend all necessary meetings.

**Definition of Done**

[ ] see story 2211

**Notes**

## 2383 – HIPPO May Meetings

**Content**

As a HIPPO team member, I would like to attend all necessary meetings.

**Definition of Done**

[ ] see story 2211

**Notes**

## 2384 – HIPPO May Meetings

**Content**

As a HIPPO team member, I would like to attend all necessary meetings.

**Definition of Done**

[ ] see story 2211

**Notes**

## 2385 – HIPPO May Budgeting Duties

**Content**

As a HIPPO team member, I would like to fulfil my duties a team budgeting manager.

**Definition of Done**

[ ] see story 2209

**Notes**

## 2386 – HIPPO FDR Preparation and Attendance

**Content**

As a HIPPO team member, I would like to prepare for a successful FDR.

**Definition of Done**

[ ] Contribute to and update the internal FDR ppt located at HIPPO\TechnicalDataPackage\PresentationsAndMeetings\

[ ] Contribute to and update the external FDR ppt located at

HIPPO\TechnicalDataPackage\PresentationsAndMeetings\

[ ] Coordinate with team to determine relevant content for FDR

[ ] Familiarize self with entire ppt

[ ] Review and revise ppt with advisors, team

[ ] Practice to present FDR

[ ] Attend and participate in the in-depth FDR presentation

[ ] Attend and participate in the full class FDR presentations

[ ] Revise FDR in response to internal FDR feedback

[ ] Support group efforts as needed

**Notes**

## 2387 – HIPPO FDR Preparation and Attendance

**Content**

As a HIPPO team member, I would like to prepare for a successful FDR.

**Definition of Done**

[ ] Contribute to and update the internal FDR ppt located at HIPPO\TechnicalDataPackage\PresentationsAndMeetings\

[ ] Contribute to and update the external FDR ppt located at

HIPPO\TechnicalDataPackage\PresentationsAndMeetings\

[ ] Coordinate with team to determine relevant content for FDR

[ ] Familiarize self with entire ppt

[ ] Review and revise ppt with advisors, team

[ ] Practice to present FDR

[ ] Attend and participate in the in-depth FDR presentation

[ ] Attend and participate in the full class FDR presentations

[ ] Revise FDR in response to internal FDR feedback

[ ] Support group efforts as needed

**Notes**

## 2388 – HIPPO FDR Preparation and Attendance

**Content**

As a HIPPO team member, I would like to prepare for a successful FDR.

**Definition of Done**

[ ] Contribute to and update the internal FDR ppt located at HIPPO\TechnicalDataPackage\PresentationsAndMeetings\

[ ] Contribute to and update the external FDR ppt located at

HIPPO\TechnicalDataPackage\PresentationsAndMeetings\

[ ] Coordinate with team to determine relevant content for FDR

[ ] Familiarize self with entire ppt

[ ] Review and revise ppt with advisors, team

[ ] Practice to present FDR

[ ] Attend and participate in the in-depth FDR presentation

[ ] Attend and participate in the full class FDR presentations

[ ] Revise FDR in response to internal FDR feedback

[ ] Support group efforts as needed

**Notes**

## 2389 – HIPPO FDR Preparation and Attendance

**Content**

As a HIPPO team member, I would like to prepare for a successful FDR.

**Definition of Done**

[ ] Contribute to and update the internal FDR ppt located at HIPPO\TechnicalDataPackage\PresentationsAndMeetings\

[ ] Contribute to and update the external FDR ppt located at

HIPPO\TechnicalDataPackage\PresentationsAndMeetings\

[ ] Coordinate with team to determine relevant content for FDR

[ ] Familiarize self with entire ppt

[ ] Review and revise ppt with advisors, team

[ ] Practice to present FDR

[ ] Attend and participate in the in-depth FDR presentation

[ ] Attend and participate in the full class FDR presentations

[ ] Revise FDR in response to internal FDR feedback

[ ] Support group efforts as needed

**Notes**

## 2390 – HIPPO Additional Flight Test Support

**Content**

As a HIPPO team member, I would like to contribute to the team effort to conduct successful flight tests.

**Definition of Done**

[ ] Support group efforts as needed

[ ] Attend flight tests

[ ] See stories 2200-2203

**Notes**

## 2391 – HIPPO Additional Flight Test Support

**Content**

As a HIPPO team member, I would like to contribute to the team effort to conduct successful flight tests.

**Definition of Done**

[ ] Support group efforts as needed

[ ] Attend flight tests

[ ] See stories 2200-2203

**Notes**

## 2392 – HIPPO Additional Flight Test Support

**Content**

As a HIPPO team member, I would like to contribute to the team effort to conduct successful flight tests.

**Definition of Done**

[ ] Support group efforts as needed

[ ] Attend flight tests

[ ] See stories 2200-2203

**Notes**

## 2393 – HIPPO Additional Flight Test Support

**Content**

As a HIPPO team member, I would like to contribute to the team effort to conduct successful flight tests.

**Definition of Done**

[ ] Support group efforts as needed

[ ] Attend flight tests

[ ] See stories 2200-2203

**Notes**

## 2394 – HIPPO Final Paper Completion

**Content**

As a HIPPO team member, I would like to assist in completing and editing the final paper.

**Definition of Done**

[ ] Ensure all data is up-to-date in paper

[ ] Assist with finishing any unfinished sections

[ ] Assist with editing the paper

[ ] Refer to user stories 2173-2176 for sections of paper I am directly responsible for

[ ] Coordinate with team to ensure any relevant work conducted by the team is included

**Notes**

## 2395 – HIPPO Final Paper Completion

**Content**

As a HIPPO team member, I would like to assist in completing and editing the final paper.

**Definition of Done**

[ ] Ensure all data is up-to-date in paper

[ ] Assist with finishing any unfinished sections

[ ] Assist with editing the paper

[ ] Refer to user stories 2173-2176 for sections of paper I am directly responsible for

[ ] Coordinate with team to ensure any relevant work conducted by the team is included

**Notes**

## 2396 – HIPPO Final Paper Completion

**Content**

As a HIPPO team member, I would like to assist in completing and editing the final paper.

**Definition of Done**

[ ] Ensure all data is up-to-date in paper

[ ] Assist with finishing any unfinished sections

[ ] Assist with editing the paper

[ ] Refer to user stories 2173-2176 for sections of paper I am directly responsible for

[ ] Coordinate with team to ensure any relevant work conducted by the team is included

**Notes**

## 2397 – HIPPO Final Paper Completion

**Content**

As a HIPPO team member, I would like to assist in completing and editing the final paper.

**Definition of Done**

[ ] Ensure all data is up-to-date in paper

[ ] Assist with finishing any unfinished sections

[ ] Assist with editing the paper

[ ] Refer to user stories 2173-2176 for sections of paper I am directly responsible for

[ ] Coordinate with team to ensure any relevant work conducted by the team is included

**Notes**

## 2398 – HIPPO Data/Image Analysis

**Content**

As a HIPPO team member, I would like to assist in conducting data analysis on data gathered after flight tests.

**Definition of Done**

[ ] Back-up and save images/data obtained from flight testing

[ ] Organize images/data in logical manner

[ ] Run images through Matlab infrastructure to perform data analysis and calculate SNR, other relevant information

[ ] Visually look at images and see if presence of light is detectable to the human eye in images

[ ] Record results

[ ] Prepare information for inclusion in final report and/or FDR

**Notes**

## 2399 – HIPPO Process Document

**Content**

As a HIPPO team member, I would like to lay the foundation for future work on this process.

**Definition of Done**

[ ] Prepare a process document describing the interface between the camera and raspberry pi

[ ] Provide to AFSL for test

[ ] Prepare information for inclusion in final report and/or FDR

**Notes**

## 2400 – HIPPO April/May Weekly Reports

**Content**

As a HIPPO team member, I will fulfill the departmental requirements for the capstone project.

**Definition of Done**

[ ] Submit weekly reports of activities to Canvas

[ ] Fulfill other miscellaneous requirements as necessary

**Notes**

## 2401 – HIPPO April/May Weekly Reports

**Content**

As a HIPPO team member, I will fulfill the departmental requirements for the capstone project.

**Definition of Done**

[ ] Submit weekly reports of activities to Canvas

[ ] Fulfill other miscellaneous requirements as necessary

**Notes**

## 2402 – HIPPO April/May Weekly Reports

**Content**

As a HIPPO team member, I will fulfill the departmental requirements for the capstone project.

**Definition of Done**

[ ] Submit weekly reports of activities to Canvas

[ ] Fulfill other miscellaneous requirements as necessary

**Notes**

## 2403 – HIPPO April/May Weekly Reports

**Content**

As a HIPPO team member, I will fulfill the departmental requirements for the capstone project.

**Definition of Done**

[ ] Submit weekly reports of activities to Canvas

[ ] Fulfill other miscellaneous requirements as necessary

**Notes**

## 2404 – GUI for controlling multiple UAV

**Content**

As a lab member, I would like to make graphic user interface for SWARM/LARAMID with pyqt and mavproxy in order for anyone to connect two UAV at the same time and have control over them in a single screen.

**Definition of Done**

[ ] Successfully create GUI

[ ] Successfully integrate mavproxy in the background

[ ] Able to connect to two UAV at the same time and gather controls and readings over them

**Notes**

## 2405 – LARAMID Electromagnet Optimization Testing

**Content**

As a LARAMID team member, I would like to do find the best distance gap between permanent magnet and electromagnet in order to magnify the repulsion force.

**Definition of Done**

[X] Build multiple EM receiver with 3D printer that has different depth for EM

[X] Measure force of attraction and repulsion in EM system.

[X] Figure out the right EM design

**Notes**

Repulsion force of EM was too weak to be used. Therefore, EM mechanism changed

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## 2406 – LARAMID Electromagnet Receiver Mounting

**Content**

As a LARAMID team member, I would like to mount EM under the Frodo and finalize Frodo and EM building.

**Definition of Done**

[X] Choose the appropriate location for EM receiver for Frodo considering CG

[X] Mount electromagnet receiver under the Frodo with screws and bolts

[X] Calculate CG of Frodo and optimize

**Notes**

* LARAMID\Research\Electromagnet Receiver.pdf
* UAS\Frodo\FrodoAircraftFlightManual.doc

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## 2407 – Mini-Talon Build part 2 (Merry)

**Content**

As a LARAMID team member, I would like to build the Mini-Talon so I can use it for demonstration purposes as well as research and testing.

**Definition of Done**

[X] Order necessary parts of Mini-Talon

[] Build the Mini Talon and make it airworthy. Some subsystem to consider

[] ESC

[] Battery

[] Pixhawk

[] Servo

[] etc

[] Review final product with Chris Lum

[] Document all construction in appropriate location

[] Conduct flight tests

[] Additional tasks TBD

[] Setup user stories for Jan 2018 (sprint 1801).

**Notes**

UAS\Merry\MerryAircraftFlightManual.doc

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## 2408 – LARAMID Samwise Dummy Payload Testing

**Content**

As a LARAMID team member, I would like to do dummy payload testing with Samwise to see its maximum payload capacity.

**Definition of Done**

[X] Make dummy payload with sand weights 1.2 times of Frodo

[X] Take multiple flight test with dummy payload

[X] Optimize Samwise design if failed

**Notes**

* LARAMID/Samwise\_System\_Integration.docx
* LARAMID/Important Flight Test Log and Description.docx

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## 2409 – LARAMID Samwise Dummy Payload Testing (Copy)

**Content**

Copy of user story 2408 – System integration for Samwise

**Definition of Done**

Copy of user story 2408 – System integration for Samwise

**Notes**

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**2410 – Mini-Talon Build part 2 (Merry) (copy)**

**Content**

Copy of user story 2407 – Mini-Talon Build part 2 (Merry)

**Definition of Done**

Copy definition of done from user story 2407 – Mini-Talon Build part 2 (Merry)

**Notes**

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**2411 – Track Components**

**Content**

As a lab member, I would like to track all components and update document.

**Definition of Done**

[ ] Look at all the boxes and find the lost component and update document.

**Notes**

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**2412 – Transmitter Organizing**

**Content**

As a lab member, I would like to label new transmitters and update document

**Definition of Done**

[] Put new transmitters in the transmitter boxes.

[] Label each transmitter

[] Get rid of old transmitters

**Notes**

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**2413 –** **CONDOR To–Do items**

**Content**

As a lab member, I would like to fix CONDOR to get it completely “airworthy.”

**Definition of Done**

[ ] Assess the current condition of CONDOR units in the lab

[ ] Identify missing hardware. Minimum:

* Pixhawk
* Power module
* ESC
* Motor
* 1-4 servos
* 915 MHz telemetry radio
* On/Off switch
* Arming switch
* 2.4 GHz receiver
* Buzzer

[ ] Look through inventory and purchase new parts as necessary

Install new components

[ ] Update component tracker to reflect changes: \FlightOperations\UAS\ComponentTracker.xlsx

[ ] Update construction and maintenance logs to show what has been done, and what is still a “To-Do” item: \FlightOperations\UAS\HiLPixhawk1\ConstructionAndMaintenenceLog.docx

[ ] Flash Plane 3.8.0 firmware onto Pixhawk \FlightOperations\UAS\CommonDocuments\MissionPlanner\binaries\_and\_installers\firmware\Plane\stable\PX4\v3\_8\_0\ArduPlane-v2.px4

[ ] Load Excelsior default parameters onto Pixhawk \FlightOperations\UAS\Excelsior\Subsystems\Autopilot\17\_09\_07B.param

[ ] Bind receiver to a transmitter and update transmitter notes: \FlightOperations\UAS\CommonDocuments\Transmitters\TransmitterNotes.docx

[ ] Calibrate radio

[ ] Calibrate accelerometers

[ ] Calibrate compass

[ ] Ensure tlogs & data flash logs record correctly and can be downloaded

**Notes**

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## 2415 – Switch Repair

**Content**

As a lab member, I would like to fix the connections for the backup switch.

**Definition of Done**

[ ] Recrimp connections and ensure they are super strong.

**Notes**

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## 2416 – Secure Finwing Canopies

**Content**

As a lab member, I would like to create a reusable securing mechanism for the Finwing canopies.

**Definition of Done**

[ ] Create Velcro straps, or a similar method to hold the canopies and “mouths” on the plane so that we don’t have to use a lot of tape.

**Notes**

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## 2417 – Make Finwing Spares Box

**Content**

As a lab member, I would like to create a box for the spare Finwing components.

**Definition of Done**

[ ] Find and label an orange box for the Finwing spares parts

[ ] Update \AFSL\LabInfo\EquipmentInventory\EquipmentInventory.docx to include new parts

**Notes**

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## 2418 – Update Aircraft Parameters for Geofence

**Content**

As a lab member, I would like to adjust aircraft parameters to accommodate for Geofencing.

**Definition of Done**

[ ] Map params as shown on last slide of: \AFSL\HowToDocumentation\HowtoUseGeofence.pptx

[ ] Do not overwrite existing channels if 6 and 7 are used for other purposes

**Notes**

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## 2419 – FPV Charging Cable

**Content**

As a lab member, I would like to create an adapter so that we can charge the FPV goggles.

**Definition of Done**

[ ] Create an adapter from XT60 to DC power

**Notes**

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## 2420 – XT60 Extension Cable

**Content**

As a lab member, I would like to create an extension cable for the XT60 connectors.

**Definition of Done**

[ ] Create an extender from XT60 male to female

**Notes**

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## 2421 – Checklist Updates

**Content**

As a lab member, I would like to update the checklists.

**Definition of Done**

[ ] Fix the checklist problems following the 5/3-5/5 flight tests

[ ] Add prop guard to checklist

[ ] See mission notes

**Notes**

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## 2422 – Increase Wingnut Visibility

**Content**

As a lab member, I would like to make the wingnuts higher viz so that they are harder to lose.

**Definition of Done**

[ ] Find a way to color the wingnuts or do something to make them higher visibility.

[ ] Find where we can buy spare wingnuts

**Notes**

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## 2423 – Standardize Construction & Maintenance Logs

**Content**

As a lab member, I would like to standardize the Cx and Mx logs.

**Definition of Done**

[ ] Simplify the logs

[ ] See Hannah for more details

**Notes**

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## 2425 – Mapping Initialization Startup

**Content**

As a lab member, I would like to familiarize myself with the mapping project

**Definition of Done**

[ ] Review related literature

[X] Shida’s AIAA SciTech paper (on Perforce at Mapping\TechnicalDataPackage\ConferencePaper2\_AIAASciTech\MAIN\_3D\_Renders\_From\_UAS\_From\_AIAA.pdf)

[ ] Pix4DNotes document: [\\Mapping\TechnicalDataPackage\Pix4D\Pix4DNotes.docx](file:///\\Mapping\TechnicalDataPackage\Pix4D\Pix4DNotes.docx)

[ ] Youtube tutorials on Pix4D: <https://www.youtube.com/watch?v=ZNKOWP8qAMY&list=PL8ZbncaV3f_anQs_DoyKUxmNDApxM0HT8>

[ ] Mission notes from last summer’s mapping flight tests, on Perforce at:

* \FlightOperations\Operations\Missions\17\_07\_07\_carnation\_fire\_monitoring\MissionDocument.docx
* \FlightOperations\Operations\Missions\17\_07\_25\_carnation\_AMFAV\_Grass\MissionDocument.docx

[ ] Review data from past summers; use this data to familiarize with Pix4DSoftware

[ ] Start Multirotor Flight Training (talk to Helen Kuni)

**Notes**

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## 2426 – Mapping Excursion 1

**Content**

As a lab member, I would like to plan and execute an excursion focused on obtaining data for the mapping project

**Definition of Done**

[ ] Plan trip to Carnation

[ ] Familiarize with the Phantom 3, Phantom 4, and any other multi-rotors that will be used for the project

[ ] Create a document that outlines/complies all the previous flight tests and data that we already have. Use this to plan the next excursion.

[ ] Execute preliminary data collection

**Notes**

* Find better targets.

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## 2427 – Familiarize with Pix4D

**Content**

As a lab member, I would like to familiarize myself with Pix4D for aerial mapping

**Definition of Done**

[ ] Research Pix4D file types

[ ] Read documents and watch videos on the program

[ ] Attempt to recreate work done in the past summers using Pix4D

[X] Modify the robocopy script at \\Mapping\Research\BlakelyElementaryProject\robocopy\CopyKDriveToCDrive\_Data.cmd to pull down relevant data sets.

[ ] Fill in the skeleton of the \\Mapping\TechnicalDataPackage\Pix4D\Pix4DNotes.docx

**Notes**

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## 2428 – Mapping Initialization Startup (Copy)

**Content**

As a lab member, I would like to familiarize myself with the mapping project

**Definition of Done**

[ ] Review related literature

[ ] Review literature from past summers

[ ] Find and organize old data

**Notes**

## 2429 – Mapping Excursion 1 (Copy)

**Content**

As a lab member, I would like to plan and execute an excursion focused on obtaining data for the mapping project

**Definition of Done**

[ ] Plan trip to Carnation

[ ] Familiarize with the Phantom 3, Phantom 4, and any other multi-rotors that will be used for the project

[ ] Execute preliminary data collection

**Notes**

## 2430 – Familiarize with Pix4D (Copy)

**Content**

As a lab member, I would like to familiarize myself with Pix4D for aerial mapping

**Definition of Done**

[ ] Research Pix4D file types

[ ] Read documents and watch videos on the program

[ ] Attempt to recreate work done in the past summers using Pix4D

**Notes**

## 2431 – SFTE NW Symposium Preparation

**Content**

As a JCATI representative for the TRAPIS2 project, I would like to prepare the necessary materials for the JCATI Poster Presentation and Pitch Contest.

**Definition of Done**

[ ] Meet with Dr. Lum to confirm presentation information.

[ ] Modify a copy of the ProjectVision documentation to be used for the power point presentation.

[ ] Prepare the pitch.

[ ] Prepare the necessary information to present at the SFTE NW Symposium.

**Notes**

* Located in \Perforce\TRAPIS2\TechnicalDataPackage\PresentationsAndMeetings\
* Related to 2432 SFTE NW Symposium Attendance

## 2432 – SFTE NW Symposium Attendance

**Content**

As a JCATI representative for the TRAPIS2 project, I would like to attend the JCATI Symposium and present the necessary information throughout the conference.

**Definition of Done**

[ ] Coordinate with Dr. Lum to organize travel planes.

[ ] Attend the conference.

[ ] Present the power point at the SFTE NW Symposium.

[ ] Have fun learning about other research/developments within the aerospace industry.

**Notes**

* Located in \Perforce\TRAPIS2\TechnicalDataPackage\PresentationsAndMeetings\
* Related to 2431 SFTE NW Symposium Preparation

## 2433 – SFTE NW Symposium Preparation (copy)

**Content**

Copy of user story 2431 – SFTE NW Symposium Preparation.

**Definition of Done**

Copy definition of done from user story 2431 – SFTE NW Symposium Preparation.

**Notes**

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## 2434 – SFTE NW Symposium Attendance (copy)

**Content**

Copy of user story 2432 – SFTE NW Symposium Attendance.

**Definition of Done**

Copy definition of done from user story 2432 – SFTE NW Symposium Attendance.

**Notes**

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## 2435 – AeroStand Copies

**Content**

As a lab member, I would like to duplicate multiple aerostands from the new design.

**Definition of Done**

[x] Purchase materials needed.

[x] Build the design.

**Notes**

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## 2436 – AFSL Website Updates (UWCUTS Section)

**Content**

As a marketing agent, I would like to create a “UWCUTS” section on the AFSL website with new information so I can publicize our activities.

**Definition of Done**

[x] Coordinate with Chris Lum and Hannah before starting this user story.

[ ] Create and update the “UWCUTS” section

[ ] Review all materials with Chris Lum

[ ] Send mock ups to AA department.

[ ] Ensure that changes are made and correct on the final website.

**Notes**

* All website material is located in [\\AFSL\WebsiteInfo](file:///\\AFSL\WebsiteInfo)

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## 2437 – Rebuild TEDD

**Content**

As a Lab member, I would like to check all the components and reassemble the broken fuselage.

**Definition of Done**

[ ] Check all the components if they are fully functional

[ ] Reassemble all the parts

[ ] Update PX4 firmware 3.8.0

[ ] Calibrations

[ ] Accelerometer

[ ] Compass

[ ] Radio

[ ] Ground Test

[ ] Flight Test

**Notes**

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## 2438 – Excelsior Maintenance

**Content**

As a Lab Member, I would like to make a new rudder and solve the throttle connection problem.

**Definition of Done**

[ ] Make a new rudder

[ ] add a Servo

[ ] cut the fixed vertical stabilizer and make a airfoil shape

[ ]

[ ] Throttle connection check

[ ] recalibration

[ ] or replace ESC

**Notes**

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## 2439 – Assist Team India with LiDAR Project

**Content**

As a Lab Member, I would like to assist Junior group Team India with configuring and operating the Velodyne LiDAR sensor and payload and collecting and preparing data for their class project.

**Definition of Done**

[ ] Discuss what their plans are. Develop a schedule.

[ ] Teach Team India how to operate the LiDAR.

[ ] Complete test flights with Team India.

[ ] Prepare the collected data and give it to Team India, or provide them with a method for preparing the data.

**Notes**

* Had a hand in all project objectives, but focused more on the first 3.

## 2440 – Assist Team India with LiDAR Project (COPY)

**Content**

Copy of user story 2439 – Assist Team India with LiDAR Project.

**Definition of Done**

Copy definition of done from user story 2439 – Assist Team India with LiDAR Project.

**Notes**

* Worked exclusively on the first and last objective, with an emphasis on the last.

## 2441 – HIPPO Payload Check

**Content**

As a Lab Member, I would like to help verify that HIPPO payload setup is replicable.

**Definition of Done**

[ ] Follow instructions at \\HIPPO\Software\Vulcan Software Resources\Vulcan 2018 Capstone Raspberry Pi-Camera Interface Guide.docx

[ ] Verify payload operates as expected.

[ ] Modify instructions as needed to make things more clear.

**Notes**

## 2442 – HIPPO Payload Check (COPY)

**Content**

Copy of user story 2441 – HIPPO Payload Check.

**Definition of Done**

Copy definition of done from user story 2441 – HIPPO Payload Check.

**Notes**

## 2443 – Reattach Wheel to Lab Chair

**Content**

As a Lab Member, I would like to reattach a wheel to one of the lab chairs.

**Definition of Done**

[ ] Chair is functional again.

**Notes**

* I only put this here because I was already adding user stories

## 2444 – Put sticker on the lab box

**Content**

As a Lab Member, I would like to put sticker on the lab box

**Definition of Done**

[ ] put sticker on the lab box

**Notes**

## 2445 – Format maintenance files of all drones

**Content**

As a Lab Member, format maintenance files of all drones

**Definition of Done**

[ ] maintenance file of all drones are format in the same way

**Notes**

## 2446 – LARAMID Samwise Dummy Payload Testing (Copy)

**Content**

Copy of user story 2408 – System integration for Samwise

**Definition of Done**

Copy of user story 2408 – System integration for Samwise

**Notes**

## 2447 – Glue/Tape Aircraft Stands

**Content**

As a lab member, I would like to glue or tape the new (x shaped) PVC aircraft stands together so that the joints and foam pieces don’t fall off all the time.

**Definition of Done**

[ ] Use some sort of method to attach the joints together so they don’t easily come apart

[ ] Glue the foam pieces in place so they don’t fall off

**Notes**

## 2448 – Repair FPV Transmitter

**Content**

As a lab member, I would like to repair the power connector on the FPV transmitter.

**Definition of Done**

[ ] Resolder connector

**Notes**

## 2449 – Equip Finwings with FPV Cameras

**Content**

As a lab member, I would like to equip each of the Finwings with a permanent FPV setup.

**Definition of Done**

[ ] Determine if we have enough supplies to do this: Mobius camera, transmitter, wire etc

[ ] Determine a permanent mounting location for the transmitter and camera

[ ] Wire the transmitter power so that it shares the main aircraft battery

[ ] Route the wires so that they won’t get cut by the propeller in case of a hard landing

[ ] Update component tracker with new equipment

[ ] Determine and label what channel the transmitter is operating on

**Notes**

* Plum, Peach, Pear, Papaya

## 2450 – Equip Finwings with FPV Cameras (copy)

**Content**

Copy of user story 2449 – Equip Finwings with FPV Cameras

**Notes**

## 2451 – Auto Calculate Flight Time on the Flight Logs

**Content**

As a lab member, I would like to modify the flight logs so that they auto calculate the flight time and auto fill in that time on the summary page.

**Definition of Done**

[ ] Create a formula that will automatically calculate the flight time each flight

[ ] Have it auto fill on the summary page

[ ] Auto fill should round to two decimal places (we don’t need 3.11223234234266786 precision)

[ ] Roll this out across all of the aircraft

**Notes**

## 2452 – AFSL Action Items 1

**Content**

As a Lab member, I would like to check all the components and reassemble the broken fuselage.

**Definition of Done**

[X] Clean up the Precision laptops so each one only has a single Perforce workspace (delete the others)? I would recommend syncing the AFSL, Flight Operations, and TRAPIS2 depots for now. You could call the workspace devFlightTest. The idea is to have a single workspace that everyone can use.

[X] Install the Phantom charger in the charging station. It is currently sitting on top of the charging station.

[ ] Pick out 5 lbs worth of the dead LiPo batteries (in the red toolbox) and dispose of them over in the eMedia bin in the CSE building (we did that together once a long time ago). Take them out of their LiPo bags, and tape over the leads so that we can keep the rubber caps. Be sure to mark on the Comp Tracker the batteries that you are taking over to the eMedia bin. Change their current location to eMedia and switch the disposed column to yes on the tracker.

[X] Find a link to what kind of ink cartridge our printer uses, since it is getting low.

[X] Inventory all of the new servos and battery, both on the component tracker and physically put everything away in their appropriate box.

[ ] Find the appropriate extra wires and connections necessary to allow us to charge Argo's batteries at the MFOC? Argo's batteries use the big red and black plugs.

**Notes**

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## 2453 – AFSL Action Items 2

**Content**

As a Lab member, I would like to check all the components and reassemble the broken fuselage.

**Definition of Done**

[ ] create a few XT60 connection extenders

* Basically, an extension wire with an XT60 connector on each side so that if we need the leads on a battery to be a little bit longer, we could just plug in this extender so that the battery can reach farther. It would be useful if we had two extenders that are about 3 inches long, and two that are about 5 inches long.

[ ] Labeling

[ ] Sam's switches with off/on

[ ] Sam's aileron wires with left/right aileron

[ ] Repair battery 58 - it has a loose main lead and I believe the red balance connector is loose. I think the battery is somewhere in the black battery bin.

**Notes**

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## 2454 – TRAPIS Payload Interference Testing

**Content**

As a lab member, I would like to conduct interference testing on the TRAPIS payload.

**Definition of Done**

[ ] Conduct ground testing to determine the optimum location on the Finwing Sabres for the transponder and the antenna in order to minimize interference.

**Notes**

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## 2455 – TRAPIS Payload Interference Testing - Copy

**Content**

As a lab member, I would like to conduct interference testing on the TRAPIS payload.

**Definition of Done**

Copy of User Story 2454 – TRAPIS Payload Interference Testing

**Notes**

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## 2456 – Finwing canopy and nose door latches. TRAPIS antenna fixture

**Content**

Create latches for canopy and nose door, TRAPIZ antenna fixture to reduce duct taping.

**Definition of Done**

[ ] Doors and antenna can be easily removed and installed without changing duct tape each time.

**Notes**

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## 2457 – Finwing Decals (copy)

**Content**

Copy of user story 2103 – Finwing Decals

**Definition of Done**

Copy definition of done from user story 2103 – Finwing Decals.

**Notes**

## 2458 – Component Wiring Modification

**Content**

As a Lab member, I would like to modify wiring connections.

**Definition of Done**

[ ] GPS connection wire

[ ] Battery extension wire

[ ]

**Notes**

## 2468 – Perforce Visual Client (Copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

## 2469 – Perforce Visual Client (Copy)

**Content**

Copy of user story 002 – Perforce Visual Client.

**Definition of Done**

Copy definition of done from user story 002 – Perforce Visual Client.

**Notes**

## 2470 – Drill out propellers

**Content**

As a lab member, I would like to drill out propellers.

**Definition of Done**

[ ] Drill out the new propellers in the RC Parts Large box using the prop reamer, so that they are ready to be used on the fixed wing fleet.

**Notes**

**2476 – Luke Rebuild**

**Content**

As a lab member, I would like to rebuild Luke.

**Definition of Done**

[ ] Reconstruct airframe using glue, popsicle sticks, foam, etc.

[ ] Assess the airworthiness of the old components

[ ] Rewire the aircraft, installing new components where necessary to replace those determined not to be airworthy

[ ] Update the Construction & Maintenance log and Component Tracker to reflect work done

[ ] Perform necessary ground checks and flight testing to verify airworthiness

**Notes**

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**2477 – Troubleshoot Finwings**

**Content**

As a lab member, I would like to find out what is wrong with Peach and Pear and make them airworthy.

**Definition of Done**

[ ] Ground test, analyze logs, or perform other analysis to determine the cause of the problems Peach is having

[ ] Inability to record Data Flash Logs

[ ] Various error messages and occasional refusal to arm

[ ] Unusual servo/motor behavior, warning lights, and indicator beeps

[ ] Severe telemetry radio connection problems

[ ] Perform necessary maintenance to fix the problem

[ ] Repeat with Pear

**Notes**

* Problems started during the TRAPIS project and appeared to be correlated with the installation of the ADS-B transponder and/or antenna
* Replacing the Pixhawk and telemetry radio did not fix the problem

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**2478 – Troubleshoot Finwings (copy)**

**Content**

Copy of user story 2477.

**Definition of Done**

Copy of definition of done from user story 2477.

**Notes**

* See notes for user story 2477.

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**2478 – Construction & Maintenance Items**

**Content**

As a lab member, I would like to address the following construction and maintenance items.

**Definition of Done**

[ ] Glue Anakin’s left wingtip back on

[ ] Secure Papaya’s empennage

[ ] Repair structural damage to Peach’s tail

[ ] Cross off completed items on the Construction & Maintenance logs

**Notes**

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## 2480 – Perforce Visual Client (copy)

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 2481 – Perforce Visual Client (copy)

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 2482 – Perforce Visual Client (copy)

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 2483 – Perforce Visual Client (copy)

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 2484 – Assess Component Status

**Content**

As a lab member, I would like to assess the status of several potentially broken components.

**Definition of Done**

[ ] Determine if the following telemetry radios are functional:

* 74
* 716
* 546
* 673
* 286

[ ] Determine if the following Pixhawks are functional:

* 623
* 911

[ ] Put functional components in RC Parts Large, and nonfunctional components in the broken components box, and update the component tracker to reflect this.

**Notes**

* Components are on Helen Kuni’s desk

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## 2485 – Investigate MicaSense camera and Pix4Dfields

**Content**

As a member of the mapping team, I would like to look into some potential equipment for use in the mapping project.

**Definition of Done**

[ ] Look into the use of the MicaSense camera and the Pix4Dfields software package, and determine if these would be useful for the Mapping project.

**Notes**

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## 2486 – Build flight team power station

**Content**

As a lab member, I would like to build a power station for use in the field at flight tests.

**Definition of Done**

[ ] Build a power station for the team at flight tests that is in the field

* Should be battery-based (the goal is to eliminate the need for the generator)
* Intended for plugging in phones, laptops, etc.

**Notes**

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## 2487 – Assess 3DRSoloSTF

**Content**

As a lab member, I would like to assess the status of the 3DRSoloSTF.

**Definition of Done**

[ ] Determine if the vehicle is functional/airworthy

[ ] Diagnose the cause of the 06/13/18 crash (did the motors or something else on the quadcopter fail, or was the wind simply too strong?)

**Notes**

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## 2488 – Frodo Rebuild

**Content**

As a LARAMID member, I would like to repair Frodo after the 06/19/18 crash.

**Definition of Done**

[X] Glue Frodo’s airframe structure back together

[X] Install new structural components as necessary (wing spars, etc.)

[X] Ensure all components are functional, and reinstall/secure components and wiring

X] Fix the airspeed sensor (it was not zeroing properly on 06/19)

[X] Bind to a new transmitter (not TX H)

[X] Conduct ground tests as necessary to confirm airworthiness

**Notes**

* Frodo had an issue with motor. Ordered new motor and ESC.

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## 2497 – Perforce Visual Client (copy)

**Content**

Copy of user story **Error! Reference source not found.**

**Definition of Done**

Copy definition of done from user story **Error! Reference source not found.**

**Notes**

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## 2499 – Mapping Initialization Startup (copy)

**Content**

Copy of User Story [2425 – Mapping Initialization Startup.](#_2425_–_Mapping)

**Definition of Done**

[ ] Copy of definition of done from [2425- Mapping Initialization Startup.](#_2425_–_Mapping)

**Notes**

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## 2500 – Perforce Visual Client (copy)

**Content**

Copy of user story 002.

**Definition of Done**

Copy definition of done from user story 002.

**Notes**

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## 2501 – Perforce Visual Client (copy)

**Content**

Copy of user story 002.

**Definition of Done**

Copy definition of done from user story 002.

**Notes**

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## 2502 – Mapping Initialization Startup (copy)

**Content**

Copy of User Story [2425 – Mapping Initialization Startup.](#_2425_–_Mapping)

**Definition of Done**

[ ] Copy of definition of done from [2425- Mapping Initialization Startup.](#_2425_–_Mapping)

**Notes**

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## 2503 – Mapping Initialization Startup (copy)

**Content**

Copy of User Story [2425 – Mapping Initialization Startup.](#_2425_–_Mapping)

**Definition of Done**

[ ] Copy of definition of done from [2425- Mapping Initialization Startup.](#_2425_–_Mapping)

**Notes**

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## 2504 – Mapping Initialization Startup (copy)

**Content**

Copy of User Story [2425 – Mapping Initialization Startup.](#_2425_–_Mapping)

**Definition of Done**

[ ] Copy of definition of done from [2425- Mapping Initialization Startup.](#_2425_–_Mapping)

**Notes**

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## 2505 – Flight Training Program – Multi-Rotor (Copy)

**Content**

Copy of user story 1263: Flight Training Program – Multi-Rotor

**Definition of Done**

Copy definition of done from user story 1263: Flight Training Program – Multi-Rotor

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## 2506 – LARI Initialization/Startup

**Content**

As a software developer on the LARI project, I would like to familiarize myself with the existing infrastructure related to LARI and lay the groundwork for this project.

**Definition of Done**

[ ] Ensure you can build the \\UWSDK\UWSDK\UW.sln solution

[ ] Ensure you can build and run the \\FlightOperations\Software\LARI\LARI.sln solution

[ ] Organize recurring LARI meetings

[ ] Create and assign user stories for tasks that need to be completed.

[ ] Create a GitHub team and repository for LARI

[ ] Create a guide for inducting new developers

**Notes**



## 2507 – Investigate Precision laptop chargers

**Content**

As a lab member, I would like to investigate the power issues with the Precision laptop chargers.

**Definition of Done**

[ ] Determine which chargers in the lab are functional and which are not

[ ] Find a type of charger that fulfills the power requirements of the laptops so we can purchase replacements

**Notes**



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**2508 – Flight Ops Administration (1806)**

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other miscellaneous lab administration

**Notes**

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## 2509 – Flight Ops Administration (1806) (copy)

**Content**

As flight operations director, I would like to complete the following tasks to administrate flight operations.

**Definition of Done**

[ ] Coordinate and administrate flight tests

[ ] Coordinate and administrate ground tests

[ ] Coordinate flight training

[ ] Other miscellaneous lab administration

**Notes**

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## 2510 – Finwing Maintenance

**Content**

As a member of the hardware team, I would like to perform various maintenance tasks on the Finwing fleet.

**Definition of Done**

[ ] Glue wood pieces that secure the wings on Peach

[ ] Replace Pear’s servo arming button/usb/I2C/buzzer unit

[ ] Secure servo arming button/usb/buzzer units on Peach and Pear

**Notes**

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## 2511 – Generate Wireframe of UI

**Content**

As a member of the development team, I will construct the wireframe of the UI for LARI using WPF

**Definition of Done**

[ ] Build a skeleton of how the interface is supposed to look

**Notes:**

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## 2512 – Clarify Internet Connectivity in the MFOC

**Content**

As a member of the LARI team, I would like to determine the extent for the internet usage for LARI.

**Definition of Done**

[ ] Clarify when users will have internet access during flight tests

[ ] Determine what parts of LARI we do need internet access for

[ ] Add a report to the requirements section of the LARI document

**Notes:**

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## 2513 – Understand the systems component list and checklist

**Content**

As a member of the LARI team, I would like to familiarize myself with the systems compo

**Definition of Done**

[ ] Report findings to the LARI document

[ ] Write a description of the current structure and develop ideas on how to improve on it

**Notes:**

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## 2514 – Look into database layers

**Content**

As a member of the LARI team, do research on the different options available of different database layers

**Definition of Done**

[ ] Add technology evaluation

[ ]

**Notes:**

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## 2515 – Build a mockup LARI example

**Content**

As a member of the LARI team, I would like to build a preliminary interface using C# and WPF.

**Definition of Done**

[ ] Download necessary programs (i.e. Visual Studio, WPF)

[ ] Save all files in the project folder in

c:\P4V\FlightOperations\Software\UW\LARI\

**Notes:**

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## 2516 – Build a mockup LARI example (copy)

**Content**

As a member of the LARI team, I would like to build a preliminary interface using C# and WPF.

**Definition of Done**

[ ] Download necessary programs (i.e. Visual Studio, WPF)

[ ] Save all files in the project folder in

c:\P4V\FlightOperations\Software\UW\LARI\

**Notes:**

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## 2517 – Build a mockup LARI example (copy)

**Content**

As a member of the LARI team, I would like to build a preliminary interface using C# and WPF.

**Definition of Done**

[ ] Download necessary programs (i.e. Visual Studio, WPF)

[ ] Save all files in the project folder in

c:\P4V\FlightOperations\Software\UW\LARI\

**Notes:**

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## 2518 – Build a mockup LARI example (copy)

**Content**

As a member of the LARI team, I would like to build a preliminary interface using C# and WPF.

**Definition of Done**

[ ] Download necessary programs (i.e. Visual Studio, WPF)

[ ] Save all files in the project folder in

c:\P4V\FlightOperations\Software\UW\LARI\

**Notes:**

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## 2519 – Build a mockup LARI example (copy)

**Content**

As a member of the LARI team, I would like to build a preliminary interface using C# and WPF.

**Definition of Done**

[ ] Download necessary programs (i.e. Visual Studio, WPF)

[ ] Save all files in the project folder in

c:\P4V\FlightOperations\Software\UW\LARI\

**Notes:**

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## 2520 – Build a mockup LARI example (copy)

**Content**

As a member of the LARI team, I would like to build a preliminary interface using C# and WPF.

**Definition of Done**

[ ] Download necessary programs (i.e. Visual Studio, WPF)

[ ] Save all files in the project folder in

c:\P4V\FlightOperations\Software\UW\LARI\

**Notes:**

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**2521 – Luke Rebuild (copy)**

**Content**

Copy of User Story 2476 – Luke Rebuild

**Definition of Done**

Copy of definition of done from User Story 2476 – Luke Rebuild

**Notes**

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**2522 – JCATI Final Report**

**Content**

As a member of the TRAPIS2 team, I would like to write the JCATI final report.

**Definition of Done**

[ ] Write JCATI final report for TRAPIS2

[ ] Create Penta chart for TRAPIS2

**Notes**

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**2523 – Frodo Rebuild (copy)**

**Content**

Copy of User Story 2488 – Frodo Rebuild

**Definition of Done**

Copy of definition of done from User Story 2488 – Frodo Rebuild

**Notes**

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**2524 – LARAMID Electromagnet Receiver Mounting (copy)**

**Content**

Copy of user story 2406 – LARAMID Electromagnet Receiver Mounting

**Definition of Done**

Copy definition of done from user story 2406 – LARAMID Electromagnet Receiver Mounting

**Notes**

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**2525 – LARAMID Samwise Weight Optimization**

**Content**

As a LARAMID team member, I would like to reduce Samwise weight by optimizing design and replacing components.

**Definition of Done**

[X] Redesign docking frame and mount it to Samwise

[X] Replace Arduino and H-bridge to receiver controller switch and activate communication channel

[X] Research proper motors and ESC for Samwise and order

**Notes**

* LARAMID/Research/Samwise\_System\_Integration.docx

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**2526 – LARAMID Samwise Weight Optimization (copy)**

**Content**

Copy of user story 2525 – LARAMID Samwise Weight Optimization

**Definition of Done**

Copy definition of done from user story 2525 – LARAMID Samwise Weight Optimization

**Notes**

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**2527 – LARAMID Motor Thrust Testing**

**Content**

As a LARAMID member, I would like to test diverse motor’s thrust to find proper motor for Samwise and make documentation.

**Definition of Done**

[X] Make proper test environment and check safety procedure

[X] Choose motors to test with right ESCs

[] Test motor’s thrust and make proper documentation

**Notes**

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**2528 – LARAMID Motor Thrust Testing (copy)**

**Content**

Copy of user story 2527 – LARAMID Motor Thrust Testing

**Definition of Done**

Copy definition of done from user story 2527 – LARAMID Motor Thrust Testing (copy)

**Notes**

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**2529 – LARAMID Docking Frame Design (part2)**

**Content**

As a LARAMID member, I would like to revise docking frame design making aerodynamic worthy and light weight.

**Definition of Done**

[X] Revise docking frame design with SolidWorks

[X] Simulate structural strength with SolidWorks

[X] Print out new docking frame and mount it on Samwise

**Notes**

* Save file in LARAMID/Research/Samwise\_System\_Integration.docx

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**2530 – LARAMID Docking Frame Design (part2) (copy)**

**Content**

Copy of user story 2528 – LARAMID Docking Frame Design (part2)

**Definition of Done**

Copy definition of done from user story 2528 – LARAMID Docking Frame Design (copy)

**Notes**

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**2531 – LARAMID Aerodynamics Simulation**

**Content**

As a LARAMID member, I would like to simulate aerodynamics environment of Frodo using ANSYS Fluent software for two cases. 1) When Frodo is flying at 10m/s. 2) When Frodo is flying at 10m/s with nose up situation.

**Definition of Done**

[X] Simulate Fluent software with given situation

[] Make a proper document with results

[] Figure out whether making nose up situation is valid detachment process

**Notes**

* Save file in LARAMID/Research/Aerodynamics\_Simulation.doc

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**2532 – LARAMID Aircraft CAD Design**

**Content**

As a LARAMID member, I would like make CAD file of Frodo and Samwise for future simulation.

**Definition of Done**

[X] Make CAD file of Frodo with SolidWorks

[X] Make CAD file of Samwise with SolidWorks

[X] Upload each CAD image in each flight manuals

**Notes**

* FlightOperations/UAS/Samwise/SamwiseAircraftFlightManual.docx
* FlightOperations/UAS/Frodo/FrodoAircraftFlightManual.docx

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**2533 – LARAMID Aircraft CAD Design (copy)**

**Content**

Copy of user story 2532 – LARAMID Aircraft CAD Design

**Definition of Done**

Copy definition of done from user story 2532 – LARAMID Aircraft CAD Design

**Notes**

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**2534 – LARAMID Detachment Process Pre-Ground Test**

**Content**

As a LARAMID member, I would like to plan and conduct detachment process pre-testing by making similar environment. I would like to see how Frodo behaves with nose up situation on top of Samwise.

**Definition of Done**

[X] Find available options of testing

[X] Make similar environment for testing. (Assume Frodo is flying at 10m/s ~ 20m/s)

[X] Check safety procedures during the testing

[X] Make proper documentation

**Notes**

* Save file at LARAMID/Research/LARAMID Ground Test.doc

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**2535 – LARAMID Detachment Process Pre-Testing (copy)**

**Content**

Copy of user story 2534 – LARAMID Detachment Process Pre-Testing

**Definition of Done**

Copy definition of done from user story 2534 – LARAMID Detachment Process Pre-Testing

**Notes**

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**2536 – LARAMID Docking Frame Design (part3)**

**Content**

As a LARAMID member, I would like to revise docking frame design compatible for the LARAMID mating system. The revised docking frame should be compatible with tilted Frodo and airworthy.

**Definition of Done**

[X] Revise docking frame design with SolidWorks

[X] Simulate structural strength with SolidWorks

[] Make a proper document about new docking frame

[X] Print out new docking frame and mount it on Samwise

**Notes**

* Save file at LARAMID/Research/Samwise\_System\_Integration.docx

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**2537 – LARAMID Docking Frame Design (part3) (copy)**

**Content**

Copy of user story 2536 – LARAMID Docking Frame Design (part3)

**Definition of Done**

Copy definition of done from user story 2536 – LARAMID Docking Frame Design (part3) (copy)

**Notes**

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**2538 – LARAMID Motor Thrust Testing (copy)**

**Content**

Copy of user story 2527 – LARAMID Motor Thrust Testing

**Definition of Done**

Copy definition of done from user story 2527 – LARAMID Motor Thrust Testing (copy)

**Notes**

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**2548 – KDLS Compilation Video**

**Content**

As a lab member, I would like to create a video showing the successful flight at the KDLS flight test.

**Definition of Done**

[ ] Edit together footage from OCam, the video camera, the iPad, and the Mobius, as well as the conference call audio, from Papaya Flight003 to create a promo video highlighting the success of the TRAPIS2 project.

**Notes**

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**2549 – Investigate Cloud Compare**

**Content**

As a member of the Mapping team, I would like to integrate the use of Cloud Compare into the Mapping project.

**Definition of Done**

[ ] Install Cloud Compare on one of the lab computers

[ ] Experiment with using Cloud Compare to post-process Mapping data after processing in Pix4D

**Notes**

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**2552 – FPV Transmitter Repair**

**Content**

As a lab member, I would like to repair the broken FPV transmitter.

**Definition of Done**

[ ] Re-solder the broken power connection on the FPV transmitter.

**Notes**

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**2553 – LAMS Documentation**

**Content**

As a member of the TRAPIS2 team, I would like to write some documentation on the LAMS.

**Definition of Done**

[ ] Document the details of the LAMS, in particular how it was used in TRAPIS2, and the steps/instructions for using it as part of TRAPIS2.

[ ] Upload this document to Perforce.

**Notes**

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**2554 – TRAPIS2 Writeup**

**Content**

As a member of the TRAPIS2 team, I would like to create a writeup of the KDLS flight test.

**Definition of Done**

[ ] Write a summary of the test, including pictures, a description of what was tested, the outcome of the test, who participated, and a list of our industry partners

[ ] Create some slides about the test

**Notes**

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**2555 – Find software for managing user stories**

**Content**

As a member of the LARI team, I would like to investigate software for managing user stories.

**Definition of Done**

[ ] Understand current user stories system. Look at \\AFSL\UserStories\user\_stories.docx and \\AFSL\UserStories\user\_stories.xlsx.

[ ] Create spreadsheet for comparing different pieces of software (free or not free, mobile integration, administrative features, general features, etc.).

[ ] Present findings during a meeting and decide on a piece of software, or decide if we need to continue searching for other options.

[ ] Create migration plan and present it at a meeting for adjustments.

**Notes**

* Ideally, we want software that is free for new lab member to install and use.
* Make sure to analyze how frequently a piece software is updated. The more frequently a piece of software is updated, the more we can rely on it working in the future.
* Migration plan includes how the software will be hosted and administrated, and possibly how we might transfer old user stories over (the latter is not necessary though).
* Actual migration will be a separate user story.

**2556 – Convert lab's GitHub account to an organization**

**Content**

As a lab member, I would like to convert the uwafsl GitHub account to an organization.

**Definition of Done**

[ ] Convert uwafsl to an organization.

[ ] Assign organization owners.

[ ] Add all lab’s software developers as members.

[ ] Update new member orientation.

**2557 – Assess 3DRSoloSTF (copy)**

**Content**

Copy of user story 2487.

**Definition of Done**

Copy of definition of done from user story 2487.

**2558 – Pix4D Analysis, 6/29/18**

**Content**

As a member of the Mapping team, I would like to analyze the data gathered from the 6/29/18 flight test in Pix4D.

**Definition of Done**

[ ] Process the images from all flights where data was gathered in Pix4D, and generate 3D models

[ ] Perform volume calculations on the boxes, and on sections of clipped grass, and determine the accuracy of these calculations

[ ] Determine the effectiveness of each of the different flight paths tested in terms of the accuracy of the resultant volume and grass height measurements

[ ] Produce recommendations for improving the results from the next flight test

**Notes**

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**2559 – Pix4D Analysis, 6/29/18 (copy)**

**Content**

Copy of user story 2558.

**Definition of Done**

Copy of definition of done from user story 2558.

**Notes**

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**2560 – Repair silver 4s battery connector**

**Content**

As a lab member, I would like to repair the connector on the silver 4s battery.

**Definition of Done**

[X] Solder a new adapter from the XT90 on the battery to the XT60 used on the aircraft.

**Notes**

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**2561 – General fleet maintenance tasks**

**Content**

As a lab member, I would like to perform various routine maintenance tasks on the fleet.

**Definition of Done**

[X] Identify which 3DR Solo propellers go on which motors, and label them

[X] Verify all transmitter switches are labeled correctly

[X] Sort the parts in the Finwing Sabre box

[X] Return parts that are useful for the whole fleet to RC Large or Medium

[X] Store the spare Finwing horizontal and vertical stabilizers

**Notes**

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## 2562 – Perforce Visual Client (copy)

**Content**

Copy of user story 2: Perforce Visual Client

**Definition of Done**

Copy definition of done from user story 2: Perforce Visual Client

**Notes**

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## 2563 – Perforce Visual Client (copy)

**Content**

Copy of user story 2: Perforce Visual Client

**Definition of Done**

Copy definition of done from user story 2: Perforce Visual Client

**Notes**

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**2564 – LARAMID Detachment Process Pre-Testing**

**Content**

As a LARAMID member, I would like to plan and conduct detachment process pre-testing by making similar environment. I would like to see how Frodo behaves with nose up situation on top of Samwise.

**Definition of Done**

[] Find available options of testing

[] Make similar environment for testing. (assume Frodo is flying at 10m/s ~ 20m/s)

[] Check safety procedures during the testing

[] Make proper documentation

**Notes**

* Save file at LARAMID/Research/Detachment\_process.doc

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## 2572 – Visual Anchoring vision system study

**Content**

Visual anchoring system source of error study for specified altitude and radius.

**Definition of Done**

[] Vision system gives the right estimate of ground radius for radius of 100 and altitude of 100m.

**Notes**

## 2573 – Visual Anchoring gimbal study

**Content**

Modify the gimbal construction, make gimbal more stable and responsive to control

**Definition of Done**

[] Loose wiring is removed (maybe mini Pixhawk is removed).

[] Try to get course angle from the gimbal.

[] Modify gimbal RC.

**Notes**

## 2574 – HiL Airworthiness (copy)

**Content**

Copy of user story 1891 – HiL Airworthiness

**Definition of Done**

Copy definition of done from user story 1891 – HiL Airworthiness

**Notes**

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## 2575 – Perforce Visual Client (copy)

**Content**

Copy of user story 2: Perforce Visual Client

**Definition of Done**

Copy definition of done from user story 2: Perforce Visual Client

**Notes**

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## 2576 – Repair TEDD

**Content**

As a member of the hardware team, I would like to repair TEDD.

**Definition of Done**

[ ] Repair structural damage to TEDD from the 7/13/18 crash

**Notes**

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**2577 – Pix4D Analysis, 7/13/18**

**Content**

As a member of the Mapping team, I would like to analyze the data gathered from the 7/13/18 flight test in Pix4D.

**Definition of Done**

[ ] Process the images from all flights where data was gathered in Pix4D, and generate 3D models

[ ] Perform volume calculations on the boxes, and on sections of clipped grass, and determine the accuracy of these calculations

[ ] Create smaller datasets for quickly testing different analysis methods

[ ] Export data as PLY and XYZ files for further analysis

**Notes**

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**2578 – Pix4D Analysis, 7/13/18 (copy)**

**Content**

Copy of user story 2577

**Definition of Done**

Copy of definition of done from user story 2577

**Notes**

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**2579 – Pix4D Analysis, 7/13/18 (copy)**

**Content**

Copy of user story 2577

**Definition of Done**

Copy of definition of done from user story 2577

**Notes**

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**2580 – Point cloud Matlab analysis**

**Content**

As a member of the Mapping team, I would like to figure out how to analyze the outputs of Pix4D in Matlab.

**Definition of Done**

[ ] Figure out how to export data from Pix4D to Matlab

[ ] Figure out how to perform volume calculations on the data in Matlab/write a script for doing this

**Notes**

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**2581 – Point cloud Matlab analysis (copy)**

**Content**

Copy of user story 2580

**Definition of Done**

Copy of definition of done from user story 2580

**Notes**

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**2583 – Write Component Class**

**Content**

As a member of the LARI team, I would like to write the Component class for LARI.

**Definition of Done**

[ ] Write methods to read and write into an XML file

**Notes**

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**2584 – Write unit tests for Component class**

**Content**

As a member of the LARI team, I would like to write the unit tests for the Component class for LARI.

**Definition of Done**

[ ] Write unit tests for Component class

**Notes**

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**2585 – 3D Print from Pix4D Models**

**Content**

As a member of the Mapping team, I would like to figure out how to 3D print models generated in Pix4D.

**Definition of Done**

[ ] Find a way to single out a specific area of the map for printing and export it in a format that can be sent to a 3D printer

[ ] Print something as a test

[ ] Work on potential to the workflow to improve the quality of the printed model

**Notes**

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**2593 – SolarUAS Rebuild**

**Content**

As a lab member, I would like to make the solar plane airworthy.

**Definition of Done**

[ ] Assess the current status of the aircraft and determine feasibility of using this aircraft

[ ] Install and wire any necessary components

[ ] Repair any structural damage

[ ] Install appropriate firmware and parameters on the Pixhawk

[ ] Update the lab’s documentation with correct telemetry radio net ID and transmitter

[ ] Ensure the aircraft has a UAS folder with up-to-date documentation

[ ] Conduct a full airworthiness test, including standard ground checks and flight testing

**Notes**

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**2594 – Fix broken/loose pitot tubes**

**Content**

As a lab member, I would like to fix the fixed wing fleet’s broken pitot tubes.

**Definition of Done**

[ ] Check that all pitot tubes are secure and properly oriented

[ ] Secure/adjust any that are not, ensuring that they are not crooked

**Notes**

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**2595 – TEDD Postmortem**

**Content**

As a lab member, I would like to determine the cause of TEDD’s 7/13/18 crash and make the plane airworthy again.

**Definition of Done**

[ ] Analyze data flash logs, tlogs, and video to determine the cause of the crash

[ ] Go through all parameters and ensure they are set correctly

[ ] It is likely that the rudder was deflecting the wrong way when the ailerons were commanded in Stabilize mode. This can be fixed with the SERVO4\_REVERSED parameter.

[ ] Save a new parameter file if any changes are made, and update the parameter notes excel sheet

[ ] Perform necessary adjustments to hardware or parameters to ensure this scenario is not repeated

[ ] Perform any other necessary repairs to make the plane airworthy

**Notes**

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**2596 – Blakely Elementary Data Analysis**

**Content**

As a member of the Mapping team, I would like to perform an analysis of the various datasets from the Blakely Elementary School.

**Definition of Done**

[ ] Process all datasets in Pix4D

[ ] Merge all datasets for each day of flying

[ ] Export data as necessary to other programs (Matlab, CloudCompare, etc.)

[ ] Compare 3D models for purposes of determining changes that have taken place over time

[ ] Perform relevant volume and area calculations

[ ] Assess characteristics such as vegetation quantity, changes in buildings and structures, etc.

[ ] Print 3D models of relevant portions of the data for illustration purposes

**Notes**

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## 2597 – Frodo Rebuild 2

**Content**

As a LARAMID member, I would like to repair Frodo after the 07/7/18 crash.

**Definition of Done**

[X] Glue Frodo’s airframe structure back together

[X] Install new structural components as necessary (wing spars, etc.)

[X] Ensure all components are functional, and reinstall/secure components and wiring

X] Fix the airspeed sensor (it was not zeroing properly on 06/19)

[X] Bind to a new transmitter (not TX H)

[] Conduct ground tests as necessary to confirm airworthiness

**Notes**

* Frodo had an issue with motor. Ordered new motor and ESC.

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**2598 – Frodo Rebuild 2 (copy)**

**Content**

Copy of User Story 2597 – Frodo Rebuild 2

**Definition of Done**

Copy of definition of done from User Story 2597 – Frodo Rebuild 2

**Notes**

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## 2599 – LARAMID Wireless Network Setup

**Content**

As a LARAMID member, I would like to create a wireless network connection for Samwise to perform autonomous mission operation using Raspberry Pi and Drone-kit library.

**Definition of Done**

[X] Order Raspberry Pi and necessary parts

[X] Install Raspbian OS for Raspberry Pi

[X] Connect Raspberry Pi with Pixhawk using Mavproxy.py

[X] Perform drone-kit examples using drone-kit sitl while connected to mission planner

[X] Make wireless ad-hoc network connection setting with laptop and Raspberry pi where there is no access to Internet.

[] Make necessary document for system setting and trouble shooting

**Notes**

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## 2600 – LARAMID Electromagnet Control with Raspberry Pi

**Content**

As a LARAMID member, I would like to control electromagnet via Raspberry Pi

**Definition of Done**

[] Control electromagnets with Raspberry Pi

[] Make necessary document for system setting and trouble shooting

**Notes**

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## 2601 – LARAMID EM Receiver Mounting 2

**Content**

As a LARAMID member, I would like to mount EM receiver on Frodo with new docking frame.

**Definition of Done**

[X] Calculate CG of Samwise and Frodo

[X] Mount EM receiver on Frodo that will enable to connect with Samwise precisely

[X] Make necessary document

**Notes**

**Save file in LARAMID/Research/Samwise\_System\_Integration.docx**

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## 2602 – LARAMID EM Receiver Mounting 2 (copy)

**Content**

Copy of User Story 2601 – LARAMID EM Receiver Mounting 2

**Definition of Done**

Copy of definition of done from User Story 2601 – LARAMID EM Receiver Mounting 2

**Notes**

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## 2603 – LARAMID Autonomous Mission Operation

**Content**

As a LARAMID member, I would like make Samwise perform its mission autonomously using python script.

**Definition of Done**

[] Make proper python script using drone-kit library

[] Find a way to specify way points for detachment process

[] Find a way to accurately control EM with precise timing

[] Make Samwise come back to base point after detachment

[] Make necessary document

**Notes**

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## 2604 – LARAMID Mating System Options

**Content**

As a LARAMID member, I would like to think of possible ways for mating system

**Definition of Done**

[] Mating system has to be safe

[] Make sure the mating system doesn’t violate FAA 107

[] Consider budget for new mating system

[] Make necessary document

**Notes**

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## 2605 – Clean Up VA Ardupilot Code

**Content**

As a Software Developer or Engineer, I would like get familiar with the AFSL custom ardupilot code by breaking the current Visual Anchoring code down into other classes.

**Definition of Done**

[] Clone the TRAPIS2 Repository on GitHub.

[] Look at/get familiar with the code structure of the Trapis modes: WSMP and WSTR

[] Copy the code structure to the Visual Anchoring modes: UW\_Mode\_2, UW\_Mode\_3, UW\_Mode\_4

[] Run the new version of the code in simulation

[] Run the new version of the code in a flight test

[] Have the code structure reviewed by the Chief Software Architect

[] Push all final changes to GitHub

**Notes**

* Main goal here is to get familiar with the ardupilot code while decreasing our footprint on the Visual Anchoring code. AFSL has already done this with Trapis, we can just follow that model for the Visual Anchoring modes. Be sure to comment correctly as well.

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## 2606 – LARI: AFSLSystem class and unit tests, EquippageController methods and unit tests

**Content**

As an engineer on LARI, I would like to finish the AFSLSystem class and units as well as write methods for the EquippageController.

**Definition of Done**

[] AFSLSystem class methods

[] AFSLSystem unit tests

[] EquippageController write to xml methods

[] EquippageController unit tests

**2607 – C# GUI Tutorial**

**Content**

As a member of the software development team, I would like to complete a GUI tutorial to setup my environment and understand how to make a basic GUI application.

**Definition of Done**

[ ] Install Visual Studio Community 2017 (or a higher version of Visual Studio): <https://visualstudio.microsoft.com/downloads/>

[ ] Follow this setup tutorial: <https://docs.microsoft.com/en-us/visualstudio/ide/walkthrough-create-a-simple-application-with-visual-csharp-or-visual-basic>

[ ] Follow this basic picture viewer tutorial: <https://docs.microsoft.com/en-us/visualstudio/ide/tutorial-1-create-a-picture-viewer>

[ ] Follow this math quiz tutorial: <https://docs.microsoft.com/en-us/visualstudio/ide/tutorial-2-create-a-timed-math-quiz>

Optional : [ ] Follow this matching game tutorial: <https://docs.microsoft.com/en-us/visualstudio/ide/tutorial-3-create-a-matching-game>

Go through the following document about MVVM: <https://docs.microsoft.com/en-us/xamarin/xamarin-forms/enterprise-application-patterns/mvvm>

**Notes**

* Do the optional matching game tutorial if you want to practice building a complicated GUI program.
* You need to understand the MVVM, not just simply read it. The lab will typically follow this model for C# applications.

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**2608 – C# GUI Tutorial (copy)**

**Content**

Copy of User Story 2607 – C# GUI Tutorial

**Definition of Done**

Copy of definition of done from User Story 2607 – C# GUI Tutorial

**Notes**

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**2609 – C# GUI Tutorial (copy)**

**Content**

Copy of User Story 2607 – C# GUI Tutorial

**Definition of Done**

Copy of definition of done from User Story 2607 – C# GUI Tutorial

**Notes**

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**2610 – C# GUI Tutorial (copy)**

**Content**

Copy of User Story 2607 – C# GUI Tutorial

**Definition of Done**

Copy of definition of done from User Story 2607 – C# GUI Tutorial

**Notes**

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**2611 – C# GUI Tutorial (copy)**

**Content**

Copy of User Story 2607 – C# GUI Tutorial

**Definition of Done**

Copy of definition of done from User Story 2607 – C# GUI Tutorial

**Notes**

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**2612 – UWXML Serialize/Deserialize Doubles Test**

**Content**

As a member of the LARI team, I would like to complete and verify the existing UWXML serialize and deserialize methods for doubles.

**Definition of Done**

[ ] Setup your dev environment with Visual Studio Community 2017 and download the UWSDK from Perforce (add to your workspace and get latest revisions.)

[ ] Open the UW.sln: <pathToPerforceDir>/Perforce/UWSDK/UWSDK/UW.sln

[ ] Understand the existing UWSerializer class located under the UWXML project: UWXML/Serialization/UWSerializer.cs

[ ] Understand the existing UWDeserializer.cs class located under the UWXML project: UWXML/Serialization/UWDeserializer.cs

[ ] Complete the tests for each of these classes under the UnitTests folder: UnitTests/TestUWXML/Serialization/<testClassesHere>

[ ] Verify the functionality of the double methods, and make any changes necessary to make the doubles read/write to work as intended

[ ] Add comments

**Notes**

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**2613 – UWXML Serialize/Deserialize Strings**

**Content**

As a member of the LARI team, I would like to develop methods that will read/write strings to an XML.

**Definition of Done**

[ ] Setup your dev environment with Visual Studio Community 2017 and download the UWSDK from Perforce (add to your workspace and get latest revisions.)

[ ] Open the UW.sln - <pathToPerforceDir>/Perforce/UWSDK/UWSDK/UW.sln

[ ] Understand the existing UWSerializer class located under the UWXML project: UWXML/Serialization/UWSerializer.cs

[ ] Understand the existing UWDeserializer.cs class located under the UWXML project: UWXML/Serialization/UWDeserializer.cs

[ ] Write methods for writing strings to an XML: UWSerializer.cs

[ ] Write methods for reading strings from an XML file: UWDeserializer.cs

[ ] Write test method for writing strings to an XML: /UnitTests/TestUWXML/Serialization/UWSerializer.cs

[ ] Write test method for reading strings from an XML:

/UnitTests/TestUWXML/Serialization/UWDeserializer.cs

[ ] Verify functionality and fix methods as necessary

[ ] Add comments

**Notes**

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**2620 – General Fleet Maintenance**

**Content**

As a member of the hardware team, I would like to address general fleet maintenance items.

**Definition of Done**

[ ] Re-solder broken battery connector

[ ] Complete installation of the Finwing canopy straps, and improve those that have been installed

**Notes**

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**2621 – KDLS Data Analysis**

**Content**

As a member of the TRAPIS2 Team, I would like to conduct data analysis for the KDLS mission.

**Definition of Done**

[ ] Create graphs demonstrating the behavior of the system

[ ] Flight path

[ ] Crosstrack error, or some other way of quantifying the performance of the system

[ ] Rudder behavior, bank angle, etc. to demonstrate WSTR behavior

[ ] Incorporate all these into the Main\_TRAPIS\_Analysis.m script for 6/12/18

[ ] Put these graphs in the conference paper with an accompanying writeup of the test and the analysis

**Notes**

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**2622 – KDLS Data Analysis (copy)**

**Content**

Copy of user story 2621 – KDLS Data Analysis

**Definition of Done**

Copy of definition of done from user story 2621 – KDLS Data Analysis

**Notes**

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**2623 – KDLS Compilation Video (copy)**

**Content**

Copy of user story 2548 – KDLS Compilation Video

**Definition of Done**

Copy of definition of done from user story 2621 – KDLS Compilation Video

**Notes**

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**2624 – TEDD Postmortem (copy)**

**Content**

Copy of user story 2595 – TEDD Postmortem

**Definition of Done**

Copy of definition of done from user story 2595 – TEDD Postmortem

**Notes**

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**2625 – TEDD Postmortem (copy)**

**Content**

Copy of user story 2595 – TEDD Postmortem

**Definition of Done**

Copy of definition of done from user story 2595 – TEDD Postmortem

**Notes**

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**2626 – Anakin Repairs**

**Content**

As a lab member I would like to repair Anakin after the 7/28/18 crash.

**Definition of Done**

[ ] Repair structural damage to the nose

[ ] Secure switches in the correct positions

[ ] Ensure all wiring is undamaged and organized as best as possible

**Notes**

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**2627 – Repair CONDOR’s wings**

**Content**

As a lab member I would like to repair CONDOR’s wings.

**Definition of Done**

[x] Repair structural damage

[x] Fix split down the middle

[x] Fix damage to right flap

[x] Replace broken right flap servo

**Notes**

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**2630 – Evaluate Transmitter K**

**Content**

As a lab member I would like to evaluate the airworthiness of TX K.

**Definition of Done**

[x] Anakin’s rudder was not deflecting fully to one side, and was not properly returning to center, until it was switched to TX Q. Verify that this is a TX K problem by testing the rudder functionality of other planes on TX K.

[x] If TX K is not functional, move the planes that are on K to other transmitters, and update the transmitter notes to reflect these changes.

**Notes**

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**2631– Evaluate Transmitter K (copy)**

**Content**

Copy of user story 2630 – Evaluate Transmitter K

**Definition of Done**

Copy of definition of done from user story 2630 – Evaluate Transmitter K

**Notes**

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**2632– Pix4D Analysis, 7/13/18 (copy)**

**Content**

Copy of user story 2577

**Definition of Done**

Copy of definition of done from user story 2577

**Notes**

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**2633– X-Plane Simulator Setup**

**Content**

Install and setup X-Plane 10.

**Definition of Done**

X-Plane 10 installed on machines in the lab and properly set.

**Notes**

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## 2653 – Flight Training Program – Fixed Wing (Copy)

**Content**

Copy of user story 1127 – Flight Training Program

**Definition of Done**

Copy definition of done from user story 1127 – Flight Training Program

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## 2654 – Visual Anchoring code integration

**Content**

Integrate rectification algorithm to Runtracker.m

**Definition of Done**

Rectification algorithm gives results in accordance to developed formula.

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## 2655 – Visual Anchoring Rectification algorithm ground test

**Content**

Find places to test Rectification algorithm, describe process and put results in thesis.

**Definition of Done**

Rectification algorithm gives correct results, thesis documentation written.

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**2661 – Samwise repairs**

**Content**

As a member of the LARAMID team, I would like to repair Samwise following the 8/25/18 crash.

**Definition of Done**

[ ] Perform a full inspection of the aircraft and determine the extent of the damage

[ ] Analyze the cause of the crash and implement preventative measures for future operations

[ ] Determine parts that need to be ordered

[ ] Install new parts, perform all repairs, and perform a full airworthiness inspection

**Notes**

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**2662 – Pix4D Analysis, 8/20/18**

**Content**

As a member of the Mapping team, I would like to analyze the data gathered from the 8/20/18 flight test in Pix4D.

**Definition of Done**

[ ] Process the images from all flights where data was gathered in Pix4D, and generate 3D models

[ ] Input GCP coordinates and merge datasets

[ ] Extract point clouds for each individual clip plot, as well as any other areas of interest, and archive these appropriately for analysis in Matlab

**Notes**

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**2663 – Pix4D Analysis, 8/20/18 (copy)**

**Content**

Copy of user story 2662: Pix4D Analysis, 8/20/18

**Definition of Done**

Copy of definition of done from user story 2662: Pix4D Analysis, 8/20/18

**Notes**

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**2665 – Matlab analysis, 8/20/18**

**Content**

As a member of the Mapping team, I would like to perform height calculations in Matlab for the data gathered on 8/20/18.

**Definition of Done**

[ ] Run each smaller point cloud generated from the 8/20/18 Pix4D data through the VolumeCalculator.m script

[ ] Add the mean height and max height outputted by VolumeCalculator.m to the spreadsheet located on Perforce at Mapping\Research\18\_08\_20\_carnation\Height\_Measurements.xlsx

[ ] Assess the accuracy of the heights obtained from the code, make any necessary changes or improvements to the code, and suggest changes and improvements for the data collection process

**Notes**

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**2666 – Setup Static Analysis Tool**

**Content**

As the Chief Software Architect, I would like to setup SonarQube as a static analysis tool for the lab so that software developers can learn good coding styling and leverage a free tool.

**Definition of Done**

[ ] Research SonarQube installation

[ ] Setup a server on a computer that can constantly run

[ ] (Maybe) setup startup script to allow easy startup of the SonarQube server

[ ] Test SonarQube with LARI project

[ ] Change configuration settings as needed

[ ] Create documentation on how to configure SonarQube and how to use the tool

**Notes**

* May need to get a dedicated computer to stay online 24/7 to run the SonarQube server, or at the very least setup on Flight Director’s computer so that it can be accessible.

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**2667 – Setup Continuous Integration Tool**

**Content**

As a member of the software team, I would like to research on the complete cycle of devops, and find out a list of current solutions for continuous integration tooling available.

**Definition of Done**

[ ] Research various continuous integration tools (Jenkins, Kubernetes, Docker, etc.) and decide which is best for our applications

**Notes**

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**2668 – Ardupilot Software Development Setup (Copy)**

**Content**

Copy of user story [1856 – Ardupilot Software Development Setup](#_1857_–_ArduPilot)

**Definition of Done**

Copy of user story 1856 – Ardupilot Software Development Setup

**Notes**

* Contact the Chief Software Architect if you have any issues

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**2669 – Advanced TRAPIS Flight Mode**

**Content**

As a member of the lab, I would like to create a new TRAPIS flight mode that will all the control surfaces available on an aircraft to steer rather than just the rudder in WSTR so that I can learn programming skills and apply my knowledge of control laws.

**Definition of Done**

[ ] Study and understand how WSTR works

[ ] Create the new, empty flight mode: WADV

[ ] Verify the plane properly switches to WADV in the simulator. You may need to change your MissionPlanner to allow the custom modes (set aileron to max or min, and check in Mission Planner). Refer to:

//FlightOperations/UAS/CommonDocuments/MissionPlanner/MissionPlannerModification/MissionPlannerBuildNotes.docx – Section 11.3 Adding a flight mode

[ ] Copy the necessary code from WSTR into WADV so that WADV works correctly

[ ] Add controllers to allow WADV to reliably use its ailerons, rudder, and elevator correctly.

[ ] Test in simulation

**Notes**

* Reference Ardupilot Modification Guide for extra help: //FlightOperations/UAS/CommonDocuments/ArduPlane/ArduPlaneModification/ArduplaneBuildNotes.docx

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**2670 – Advanced TRAPIS Flight Mode (copy)**

**Content**

Copy of User Story 2669 – Advanced TRAPIS Flight Mode

**Definition of Done**

Copy of definition of done from User Story 2669 – Advanced TRAPIS Flight Mode

**Notes**

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**2671 – Carnation Test Site Radio Identification Script**

**Content**

As a lab member, I would like to write a script to be read over the radio to local aircraft when researchers are testing at the Carnation UAS test site. This script will include position, altitude, and UAS registration information to keep local aircraft better appraised of our operations and widen our margin of safety.

**Definition of Done**

[ ] Write Scripts for a general address of the airwaves (perhaps to be read at the start of daily operations), and more specific script to directly address aircraft self-identifying over the radio.

[ ] Review the script with a certified GA pilot to ensure relevant information is included and appropriate phrasing (pilot lingo) is used.

[ ] Use at Test Site

**Notes**

* Nicholas Price has taken this on.

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## 2678 – Perforce Visual Client (copy)

**Content**

Copy of user story 2: Perforce Visual Client

**Definition of Done**

Copy definition of done from user story 2: Perforce Visual Client

**Notes**

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## 2679 – Perforce Visual Client (copy)

**Content**

Copy of user story 2: Perforce Visual Client

**Definition of Done**

Copy definition of done from user story 2: Perforce Visual Client

**Notes**

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## 2680 – Lab Moving

**Content**

As a lab member, I would like to assist in moving the lab from AERB 139 to AERB 117.

**Definition of Done**

[ ] Complete any necessary prep work

[ ] Pack and move all lab equipment and gear to the new room

[ ] Set up the new room and get it functional

**Notes**

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## 2681 – Lab Moving (copy)

**Content**

Copy of user story 2680 – Lab Moving

**Definition of Done**

Copy of definition of done from user story 2680 – Lab Moving

**Notes**

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## 2682 – Lab Moving (copy)

**Content**

Copy of user story 2680 – Lab Moving

**Definition of Done**

Copy of definition of done from user story 2680 – Lab Moving

**Notes**

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## 2683 – Lab Moving (copy)

**Content**

Copy of user story 2680 – Lab Moving

**Definition of Done**

Copy of definition of done from user story 2680 – Lab Moving

**Notes**

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## 2684 – Lab Moving (copy)

**Content**

Copy of user story 2680 – Lab Moving

**Definition of Done**

Copy of definition of done from user story 2680 – Lab Moving

**Notes**

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## 2685 – Lab Moving (copy)

**Content**

Copy of user story 2680 – Lab Moving

**Definition of Done**

Copy of definition of done from user story 2680 – Lab Moving

**Notes**

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## 2686 – Lab Moving (copy)

**Content**

Copy of user story 2680 – Lab Moving

**Definition of Done**

Copy of definition of done from user story 2680 – Lab Moving

**Notes**

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## 2687 – Lab Moving (copy)

**Content**

Copy of user story 2680 – Lab Moving

**Definition of Done**

Copy of definition of done from user story 2680 – Lab Moving

**Notes**

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## 2688 – Perforce Visual Client (copy)

**Content**

Copy of user story 2: Perforce Visual Client

**Definition of Done**

Copy definition of done from user story 2: Perforce Visual Client

**Notes**

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## 2689 – Perforce Visual Client (copy)

**Content**

Copy of user story 2: Perforce Visual Client

**Definition of Done**

Copy definition of done from user story 2: Perforce Visual Client

**Notes**

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## 2690 – LARAMID Electromagnet Control Programming

**Content**

As a LARAMID member, I would write python programming script to control electromagnets connected with Raspberry Pi.

**Definition of Done**

[X] Write python scripts that will turn on and turn off electromagnets

[X] Operate those scripts with remote accessible Mac using ssh client

[X] Make necessary document illustrating control script

**Notes**

Document save in LARAMID/Research/Electromagnet Manual.docx

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## 2691 – LARAMID Mating System 3D Sensor Option

**Content**

As a LARAMID member, I would like to propose mating system utilizing 3D sensor.

**Definition of Done**

[X] Do research about commercial 3D sensors for drone

[X] Find out compatible programming languages of using 3D sensor

[ ] Make document illustrating how to utilize 3D sensor for mating system

**Notes**

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## 2692 – LARAMID Intel Realsense 3D Camera and Drone Integration

**Content**

As a LARAMID member, I would like use Intel Realsense 3D Camera and make necessary manual.

**Definition of Done**

[X] Follow Realsense package download steps in Github

[X] Operate simple depth sensor operation file

[X] Do research on UDP and TCP to communicate between C based Realsense camera and python based drone operation system

[ ] Make necessary document

**Notes**

Save file in LARAMID/Research/Intel Realsense 3D Sensor

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**2693 – LARAMID Docking Frame Design (part4)**

**Content**

As a LARAMID member, I would like to revise docking frame design compatible for the LARAMID mating system. The revised docking frame should be compatible with tilted Frodo and airworthy.

**Definition of Done**

* [X] Revise docking frame design with SolidWorks
* [X] Simulate structural strength with SolidWorks
* [X] Make a proper document about new docking frame
* [X] Print out new docking frame and mount it on Samwise

**Notes**

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**2694 – Samwise Inspection and Repaired**

**Content**

As a LARAMID member, I would like to inspect and repair the Samwise after its failure payload flight test.

**Definition of Done**

* Inspected and Found one of the motor shaft was too short to hold prop tight.
* Purchased a new prop kit set to replace
* Rebuild the Samwise after getting the new parts

**Notes**

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**2695 – LARAMID Mating System 3D Sensor Option (copy)**

**Content**

Copy of user story 2691: LARAMID Mating System 3D Sensor Option

**Definition of Done**

Copy of definition of done from user story 2691: LARAMID Mating System 3D Sensor Option

**Notes**

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## 2696 – CellNav Project Acronym Brainstorm

**Content**

Come up with a good acronym for the project to use

**Definition of Done**

[] Think about possible options, submit top three.

**Notes**

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## 2697 – CellNav Populate Backlog

**Content**

Populate the backlog with meaningful tasks for the team members

**Definition of Done**

[] Identify team members, assign delegates

[] Populate at least 2 sprints worth of work for identified team

[] Create follow tasks related to backlog population and scrub

**Notes**

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## 2698 – CellNav Onboarding Automation Investigation

**Content**

Identify points of failure in the onboarding process and places where a script the installs/assigns variables would ease the process.

**Definition of Done**

[] Go through the process with a clean machine and document points of failure

[] Create follow-on tasks (e.g. a story to actually script the installs, one to clean the environment after mucking it up)

[] Stretch: Verify that the points of failure are actually scriptable

**Notes**

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**2699 – LARAMID Docking Frame Design (part4) (copy)**

**Content**

Copy of user story 2693: LARAMID Docking Frame Design (part4)

**Definition of Done**

Copy of definition of done from user story 2693: LARAMID Docking Frame Design (part4)

**Notes**

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**2700 – Refactor Project Structure (LARI)**

**Content**

Refactor LARI’s project structure for LARI and UWLARI.

**Definition of Done**

[] Restructure file arrangement

[] Establish consistent code formatting

[] Establish naming convention

[] Correct any misspellings

**Notes**

**2701 – Develop Basic Components/Systems Viewer and Editor (LARI)**

**Content**

Develop a basic GUI for viewing and editing components

**Definition of Done**

[] Add functionality for loading and saving equipage information

[] Add tree view for viewing systems

**Notes**

* This user story was made irrelevant due to new GUI design. It will still be considered “finished” for the work that was put in.

**2702 – Implement Skeleton GUI for Components (LARI)**

**Content**

Implement the GUI for viewing and editing components in XAML, without functionality.

**Definition of Done**

[] Add table for listing component information.

[] Add buttons for adding, deleting, editing, and copying components.

**Notes**

* Adding functionality is optional, and should be distributed as separate user stories.

**2703 – Implement Skeleton GUI for Systems (LARI)**

**Content**

Implement the GUI for adding components in XAML, without functionality.

**Definition of Done**

[] Add pane for viewing and selecting systems.

[] Add buttons for adding, deleting, and editing systems.

**Notes**

* Adding functionality is optional, and should be distributed as separate user stories.

**2704 – Implement Skeleton GUI for Adding and Editing Components (LARI)**

**Content**

Implement the GUI for adding and editing components in XAML, without functionality.

**Definition of Done**

[] Create View and View-model for the add/edit window.

[] Add pane for viewing and selecting systems.

[] Add buttons for adding, deleting, and editing systems.

**Notes**

* This GUI should be a single, separate window that appears when the user is either editing or adding a component
* Adding functionality is optional, and should be a separate user story or set of user stories

**2715 – Troubleshoot Excelsior**

**Content**

As a member of the hardware team, I would like to figure out what is wrong with Excelsior and fix it.

**Definition of Done**

[] Determine the cause of the issues with Excelsior’s airspeed sensor and compass that were encountered during AA198 Lab 4

[] Implement a fix

**Notes**

**2718 – BVLOS CONOPS Document**

**Content**

As a lab member I would like to write a Concept of Operations document for a potential BVLOS operation.

**Definition of Done**

[] Summarize the workflow, personnel and sequence of events associated with the potential BVLOS operation

**Notes**

**2719 – C# GUI Tutorial (copy)**

**Content**

Copy of User Story 2607 – C# GUI Tutorial

**Definition of Done**

Copy of definition of done from User Story 2607 – C# GUI Tutorial

**Notes**

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**2720 – Implement Saving and Loading for User Settings Model (LARI)**

**Content**

As a member of the LARI team, I would like to develop loading and saving functionality for the User Settings Model/Controller.

**Definition of Done**

[ ] Develop method for serializing user settings

[ ] Develop method for deserializing user settings

[ ] Document code.

[ ] Create unit tests (in LARI, not UWLARI) for testing serializing and deserializing methods.

**Notes**

* Talk to Joshua about the current implementation of the User Settings Model.
* https://stackoverflow.com/questions/453161/best-practice-to-save-application-settings-in-a-windows-forms-application

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**2721 – Design GUI for Checklists (LARI)**

**Content**

As a member of the LARI team, I would like to design the GUI that will be used for managing checklists.

**Definition of Done**

[ ] Become familiar with the current checklist system.

[ ] Design a GUI for checklists.

[ ] Present design at a LARI meeting to receive feedback.

[ ] Initialize the GUI’s View/Control and ViewModel.

[ ] Implement skeleton GUI in XAML.

**Notes**

* It is recommended you attend a test flight and work on checklists to get a feel for them.

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**2722 – Implement Data Structures for Checklists (LARI)**

**Content**

As a member of the LARI team, I would like to design and implement the data structures/models for Checklists and

**Definition of Done**

[ ] Develop data structures for Checklists

~~[ ] Develop method for serializing and deserializing Checklists~~ TENTATIVE

**Notes**

* Consider implementing multiple data structures, e.g. an object for representing a Checklist Entry and an object Checklist for storing these entries.

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**2723 – Add Unit Testing for LARI**

**Content**

As a member of the LARI team, I would like to implement unit testing into the LARI architecture.

**Definition of Done**

[ ] Implement unit testing.

[ ] Create a unit test to demonstrate unit testing capabilities.

[ ] Create documentation to assist other developers with setting up unit testing with LARI (if documentation does not already exists)

[ ] Present working results at a meeting and/or to a manager.

**Notes**

* This is for LARI, not UWLARI.
* The example unit test can either be a dummy test or a test for an actual Model.
* Unit tests will be used exclusively for Models within LARI.
* Unit testing may be done the same way it is done in UWSDK, but beware it uses an out of date framework and some packages may not install on some computers. You will need to ensure unit testing will work on any (modern) Windows machine.

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**2724 – Add Functionality to the Add Systems Window (LARI)**

**Content**

As a member of the LARI team, I would like to add functionality to the Add System window.

**Definition of Done**

[ ] Make the “Add” and “Edit” buttons in the Component Tracker view open the Add System window

[ ] Have the “Edit” button pre-fill fields based on a selected system

[ ] Disable the “Edit” button when no system more than one system is selected

[ ] Make the “Cancel” button close the window

[ ] Make the “Apply” button update the Equipage data

[ ] Verify the validity of inputs (e.g. no duplicate systems, name field isn’t empty, etc.)

**Notes**

* Only one Add System window should ever be present on the screen at a time
* The main window should freeze when the Add System window is opened

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**2725 – Add Functionality to the Add Components Window (LARI)**

**Content**

As a member of the LARI team, I would like to add functionality to the Add Components window.

**Definition of Done**

[ ] Make the “Add” and “Edit” buttons in the Component Tracker view open the Add Components window

[ ] Have the “Edit” button pre-fill fields based on a selected component

[ ] Disable the “Edit” button when no component or more than one component is selected

[ ] Make the “Cancel” button close the window

[ ] Make the “Apply” button update the Equipage data

[ ] Verify the validity of inputs (e.g. , description field isn’t empty, etc.)

**Notes**

* Only one Add Component window should ever be present on the screen at a time
* The main window should freeze when the Add Component window is opened

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**2726 – Explore Excel Integration (LARI)**

**Content**

As a member of the LARI team, I would like to research the feasibility of saving and loading data for the Component Tracker in the Excel format.

**Definition of Done**

[ ] Research C# APIs for Excel

[ ] Explore methods of version control for the Excel format

[ ] Present findings either to a project manager in private or to the team during a meeting

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**2727 – Add Fields to the Components Class (LARI)**

**Content**

As a member of the LARI team, I would to add additional fields to the Components class in UWLARI. Currently, the Components class only holds the description and part number for a component. We would like the Components class to have fields for all fields in //FlightOperations\UAS\ComponentTracker.xlsx

**Definition of Done**

[ ] Add all applicable fields to Components class

[ ] Update unit tests as applicable

[ ] Present changes to a project manager for review

**Notes**

* You do not need to update the ReadAsXML and WriteAsXML methods, as we will likely be phasing those out
* Datatypes should resemble field types in //FlightOperations\UAS\ComponentTracker.xlsx as closely as possible. At the least, have a way to translate between the two.

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**2728 – Refactor Equipage Data (LARI)**

**Content**

As a member of the LARI team, I would like to change where equipage data is stored in LARI.

**Definition of Done**

[ ] Phase out ManagerModel

[ ] Store equipage data in ComponentTrackerViewModel instead of in ManagerModel

[ ] Create an EquipageModel for loading and saving equipage data

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**2729 – LARAMID Pre-Ground Test part2**

**Content**

As a member of the LARAMID team, I would want to perform LARAMID ground test to acquire useful data we need before the actual flight test.

**Definition of Done**

[ ] Plan appropriate ground test

[ ] Get useful data and plot graph

[ ] Make appropriate document

Document save in LARAMID/Research/Ground Test.docx

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**2735 – Lab Safety Survey Checklist**

**Content**

As a lab member, I would like to address the to-do items from the 9/19/18 EH&S Lab Safety Survey.

**Definition of Done**

[ ] Address checklist items and make appropriate changes to lab setup

[ ] Create required signage where required

[ ] Create Standard Operating Procedures where required

[ ] Ensure lab is neat and organized, and fully compliant with all safety policies

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**2736 – Lab Safety Survey Checklist (copy)**

**Content**

As a lab member, I would like to address the to-do items from the 9/19/18 EH&S Lab Safety Survey.

**Definition of Done**

[ ] Address checklist items and make appropriate changes to lab setup

[ ] Create required signage where required

[ ] Create Standard Operating Procedures where required

[ ] Ensure lab is neat and organized, and fully compliant with all safety policies

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**2737 – Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See User Story 002

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**2738 – Waypoint Heading Calculations**

**Content**

As a member of the TRAPIS2 team, I would like to assist in the data analysis from the Dallesport flight test.

**Definition of Done**

[ ] Using the coordinates of each of the Dallesport waypoints, calculate the magnetic heading between each pair of waypoints.

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**2739 – Repair Anakin**

**Content**

As a member of the hardware team, I would like to repair Anakin following the 10/6/18 crash.

**Definition of Done**

[ ] Address the highlighted todo items on Anakin’s CX/MX log

[ ] Update the CX/MX log and Component Tracker to reflect the work done

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**2740 – Repair Anakin (copy)**

**Content**

As a member of the hardware team, I would like to repair Anakin following the 10/6/18 crash.

**Definition of Done**

[ ] Address the highlighted todo items on Anakin’s CX/MX log

[ ] Update the CX/MX log and Component Tracker to reflect the work done

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**2740 – Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

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**2747 – Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

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**2730 – LARAMID Thesis Preparation**

**Content**

As a member of the LARAMID team, I would want to prepare for the thesis paper doing related research searching and gathering data in to appropriate folder system.

**Definition of Done**

[ ] Read other’s thesis project preparation document

[ ] Plan for taking videos for LARAMID project

[ ] Make appropriate document

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**2731 – LARAMID Samwise Inspection and Repair part2**

**Content**

As a member of the LARAMID team, I would want to repair Samwise landing gear and docking frame.

**Definition of Done**

[ ] Repair landing gear by adding screws and putting together with epoxy

[ ] Cut fiber glass plate and mount it under the docking frame for structural reason

[ ] Make appropriate document and update it in plane manual

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**2732 – LARAMID Samwise Inspection and Repair part2 (copy)**

**Content**

Copy of user story 2731 – LARAMID Samwise Inspection and Repair part2

**Definition of Done**

Copy definition of done from user story 2731 – LARAMID Samwise Inspection and Repair part2

**2733 – LARAMID Aerodynamics Simulation (copy)**

**Content**

Copy of user story 2531 – LARAMID Aerodynamics Simulation

**Definition of Done**

Copy definition of done from user story 2531 – LARAMID Aerodynamics Simulation

**2734 – LARAMID Pre-Ground Test part2 (copy)**

**Content**

Copy of user story 2729 – LARAMID Pre-Ground Test part2

**Definition of Done**

Copy definition of done from user story 2729 – LARAMID Pre-Ground Test part2

**2735 – Update control panel software**

**Content**

As a lab member, I would like to upgrade the software for the mission planner control panel to make it easier to use for flight operations.

**Definition of Done**

* **New software uploaded and tested with a HIL unit**
* **Use it at a flight test**

**2736 – Setup workflow for ArduPlane 3.9 Update**

**Content**

As a lab member, I would like to setup the workflow to be able to transfer our custom TRAPIS2 software to arduplane 3.9.

**Definition of Done**

* **Fork the TRAPIS2 repo**
* **Figure out the new build tools**
* **Setup the SITL simulator**

**2737 – LARAMID Mini-Talon Safety Measurement Implementation**

**Content**

As a member of the LARAMID team, I would want to propose safety measurement system for hand launching Mini-talon model planes.

**Definition of Done**

[ ] Propose safety measurement system for Mini-talon model when hand launching

[ ] Discuss with LARAMID hardware team and Helen

[ ] Build the actual safety system and perform ground testing

[ ] Make appropriate document in flight manual

FlightOperations/UAS//Frodo/Flight Manual.doc

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**2738 – LARAMID Technical Video for Project Presentation**

**Content**

As a member of the LARAMID team, I would want to make a well illustrating video of LARAMID system to show audience.

**Definition of Done**

[ ] Plan necessary scenes that are related to LARAMID project

[ ] Make appropriate scripts for description videos

[ ] Film the video and do editing

[ ] Make appropriate document

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**2739 – LARAMID Mobius Camera Implementation**

**Content**

As a member of the LARAMID team, I would want to mount a Mobius action camera onto Frodo by connecting transmitter and receiver.

**Definition of Done**

[ ] Connect FPV cable and Mobius camera with soldering

[ ] Connect with main battery source with ESC

[ ] Test recording from the camera

[ ] Make appropriate document

FlightOperations/UAS/Frodo/Flightmanual.doc

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**2740 – LARAMID Docking Frame Design (part5)**

**Content**

As a LARAMID member, I would like to revise docking frame design that can adjust to Frodo’s tilt angle to keep stability.

**Definition of Done**

* [] Propose new docking frame control mechanism
* [] Test the mechanism and calculate the dynamics of the system
* [] Revise the docking frame design with SolidWorks
* [] Print out new docking frame and mount it on Samwise
* [] Implement docking frame control system using Raspberry Pi
* [] Make appropriate document

**Notes**

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**2755 – Security Camera System Integration**

**Content**

As a lab member, I would like to integrate a security camera system into AERB 117.

**Definition of Done**

[] Set up a camera in the lab. This camera must be able to:

* See the whole lab, including both doors
* Record to a storage device such as a hard drive or onboard SD card, as well as to the cloud in case the camera and onsite storage device is stolen
* Be able to store at least 3 days of footage
* Be able to broadcast the image to the internet

[] Setup surveillance server for centralizing.

[] Securely connect camera stream to surveillance server.

[] Make camera stream available to lab members.

**Notes**

* Consider using ZoneMinder for surveillance server.
* Try to find a stable, peristient hosting solution for the surveillance server.

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**2756 – LARAMID Mobius Camera Implementation (copy)**

**Content**

Copy of user story 2753 – LARAMID Mobius Camera Implementation

**Definition of Done**

Copy definition of done from user story 2753 – LARAMID Mobius Camera Implementation

**2757 – LARAMID Dronekit-SITL Practice**

**Content**

As a member of the LARAMID team, I would want to set up dronekit-SITL in order to perform autonomous flight with virtual drone.

**Definition of Done**

[ ] Download Oracle virtual box

[ ] Download ubuntu and execute ubuntu on virtual machine

[ ] Setup mission planner in ubuntu

[ ] Setup dronekit and mavproxy.py

[ ] Connect virtual drone to mission planner and perform simple\_go\_to.py in dronekit example folder

[ ] Show to Chung

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**2758 – LARAMID Dronekit-SITL Practice (copy)**

**Content**

Copy of user story 2757 – LARAMID Dronekit-SITL Practice (copy)

**Definition of Done**

Copy definition of done from user story 2757 – LARAMID Dronekit-SITL Practice (copy)

**2759 – Choosing gimbal for visual Anchoring**

**Content**

Find more robust gimbal with potentiometer on yaw axis and right mounts

**Definition of Done**

Gimbal is purchased

**2760 – Visual Anchoring thesis**

**Content**

Put the test results and correction procedure on paper

**Definition of Done**

Part of correction and current results are written

**2761 – Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

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**2762 – Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

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**2763 – Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

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**2764 – Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

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**2765– Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ x] See user story 002

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**2766– Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

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**2767– Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

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**2768– Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

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**2769– LARAMID Plane Rendezvous Control Algorithms**

**Content**

As a LARAMID member, I would like to propose LARAMID rendezvous algorithm using appropriate sensors and data.

**Definition of Done**

[] Do research about RC signal

[X] Design mating procedures using Mission planner software and Dronekit library

[] Make proper document

[] Talk with Dr. Lum

**Notes**

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**2770– LARAMID Plane Rendezvous Control Algorithms (copy)**

**Content**

Copy of User Story 2769 – LARAMID Plane Rendezvous Control Algorithm

**Definition of Done**

Copy of User Story 2769 – LARAMID Plane Rendezvous Control Algorithm

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**2771– LARAMID Plane Rendezvous Control Algorithms (copy)**

**Content**

Copy of User Story 2769 – LARAMID Plane Rendezvous Control Algorithm

**Definition of Done**

Copy of User Story 2769 – LARAMID Plane Rendezvous Control Algorithm

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**2772– LARAMID Frodo Inspection and Repair**

**Content**

As a LARAMID member, I would like to inspect Frodo and repair it after ground test crash.

**Definition of Done**

[] Inspect Frodo and finish repairing

[] Connect wings using epoxy glue

[] Repair flaps by replacing servo motors

[] Talk with Chung Choi

**Notes**

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**2773– LARAMID Frodo Inspection and Repair (copy)**

**Content**

Copy of User Story 2772 – LARAMID Frodo Inspection and Repair (copy)

**Definition of Done**

Copy of User Story 2772 – LARAMID Frodo Inspection and Repair (copy)

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**2774– LARAMID Flight Data Plotting**

**Content**

As a LARAMID member, I would like to compare flight data between LARAMID launching and hand launching.

**Definition of Done**

[X] Find useful flight data from flight data log from mission planner

[X] Plot specific flight data in MATLAB (voltage, acceleration, speed, altitude)

[X] Analyze Frodo’s altitude, pitch angle and speed data

[] Compare two different launching cases

**Notes**

Document save in LARAMID/Research/Important Flight Test Log and Description.docx

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**2775– LARAMID Ground Test Structure Build**

**Content**

As a LARAMID member, I would like to build proper ground test structure to simulate launching system safely.

**Definition of Done**

[] Design safety structure around the pick-up truck

[] Design and build adjustable mount for Samwise tilt angle

[] Talk with Chung and Helen

[] Build the structure that is removable and reusable

**Notes**

Document save in LARAMID/Research/Ground Test.docx

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**2776– LARAMID Electromagnet Testing and Replacement**

**Content**

As a LARAMID member, I would like to research on stronger EM and lighter EM receiver steel plate for higher efficiency.

**Definition of Done**

[] Order new set of electromagnet and compare the force between the current one

[] Find the reason for weaker electromagnetic force

[] Test the new items

[] Replace Electromagnets

**Notes**

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**2777– LARAMID Flight Data Plotting (copy)**

**Content**

Copy of User Story 2774 – LARAMID Flight Data Plotting (copy)

**Definition of Done**

Copy of User Story 2774 – LARAMID Flight Data Plotting (copy)

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**2778– LARAMID Ground Test Structure Build (copy)**

**Content**

Copy of User Story 2775 – LARAMID Ground Test Structure Build (copy)

**Definition of Done**

Copy of User Story 2775 – LARAMID Ground Test Structure Build (copy)

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**2786– Battery Soldering**

**Content**

As a lab member, I would like to solder the new 4s batteries.

**Definition of Done**

[] Solder XT60 connectors onto the new 4s batteries.

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**2787– Pegboard Installation**

**Content**

As a lab member, I would like to install a pegboard for tool storage.

**Definition of Done**

[] Coordinate with Helen & Dr. Lum to figure out where to put the pegboard

[] Obtain and install pegboard

[] Hang tools on pegboard

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**2788– Anakin Postmortem**

**Content**

As a lab member, I would like to investigate the cause of the 10/13/18 Anakin crash

**Definition of Done**

[] Analyze data from Anakin Flight 178 to determine why the servos stopped responding

[] Implement a solution

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**2789– Fixed Wing Landing Gear – Initial Research & Design**

**Content**

As a lab member, I would like to investigate the feasibility of installing front landing gear on the fixed wings.

**Definition of Done**

[] Design some kind of apparatus to keep the front end of a Skywalker 1900 slightly elevated on landings

[] Implement a simple design on TEDD

[] Refine design based on flight test results, and make recommendations regarding the feasibility of this design on the rest of the fleet

[ ] Refine preliminary design to implement shocks, and purchase appropriate parts

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**2790– Fixed Wing Landing Gear – Initial Research & Design**

**Content**

Copy of 2789

**Definition of Done**

[] See 2789

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**2791– Anakin Repairs**

**Content**

As a lab member, I would like to repair Anakin following the 10/13/18 crash.

**Definition of Done**

[] Assess damage

[] Glue fuselage

[] Repair any other damage

[] Perform airworthiness checks to ensure aircraft is ready to go

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**2792 – Anakin Repairs (copy)**

**Content**

Copy of 2791

**Definition of Done**

[] See 2791

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**2793 – Lab Safety Survey Checklist (copy)**

**Content**

As a lab member, I would like to address the to-do items from the 9/19/18 EH&S Lab Safety Survey.

**Definition of Done**

[ ] Address checklist items and make appropriate changes to lab setup

[ ] Create required signage where required

[ ] Create Standard Operating Procedures where required

[ ] Ensure lab is neat and organized, and fully compliant with all safety policies

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**2794 – Lab Safety Survey Checklist (copy)**

**Content**

As a lab member, I would like to address the to-do items from the 9/19/18 EH&S Lab Safety Survey.

**Definition of Done**

[ ] Address checklist items and make appropriate changes to lab setup

[ ] Create required signage where required

[ ] Create Standard Operating Procedures where required

[ ] Ensure lab is neat and organized, and fully compliant with all safety policies

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**2795 – CellNav Conops**

**Content**

Create a document that goes over the concept of operations for the CellNav project

**Definition of Done**

[ ] Document created

[ ] Document checked in

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**2796 – CellNav T-Mobile Presentation Slides**

**Content**

Create slides for the T-Mobile presentation

**Definition of Done**

[ ] Slides created

[ ] Slides checked in

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**2797 - CellNav System Signal Path Diagram**

**Content**

Create System Signal Path Diagram for CellNav for other documents

**Definition of Done**

[ ] Diagram created

[ ] Diagram checked in

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**2798 – Repair Gimbals**

**Content**

As a lab member, I would like to repair the Quanum 3-axis Mobius camera based gimbals used in the visual anchoring project.

**Definition of Done**

[ ] Return at least two gimbals to nominal functioning order.

[ ] Test gimbals on the power supply (10.5V).

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**2799 – Camera/Gimbal Protection V.1**

**Content**

As a lab member, I would like to design, in SolidWorks, a prototype structure to protect the visual anchoring gimbal and Mobius camera from water damage and impact forces experienced during landings. Protection must not impede the gimbal’s mobility or view of the visually distinct field object, and it should be designed to not transfer concentrated shear forces through its mounting on the wing. Finally, the prototype should be 3D printed and flown in an airworthiness check to ensure minimal effect on flight characteristics of the Skywalker airframe.

**Definition of Done**

[ ] Produce SolidWorks model, approved by Rostyk.

[ ] Print prototype using AIARG 3D printer.

[ ] Airworthiness check of the prototype.

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**2800 – Solar Plane Part 2**

**Content**

As a lab member, I would like to complete the construction of the lab’s solar-assisted airframe, such that it receives power from both a standard lithium-polymer battery pack and the wing-mounted solar cells. I will then conduct flight tests to determine the effect of solar-assisted-LiPo power sources on the endurance of the Solar Plane UAV.

**Definition of Done**

[ ] Install Maximum Power Point Tracker, and create a circuit for the power sources which places the solar cells in parallel to the LiPo battery pack.

[ ] Ground test this battery charging method to ensure safe, balanced charging of a standard 5000 mAh LiPo pack.

[ ] Conduct solar-assisted and non-solar-assisted flight tests of the UAV in a circular holding pattern to gather battery usage data.

[ ] Create a short presentation detailing the results/conclusions of the solar experiment and the proposal for a solar-assisted power system installed on one of the lab’s Finwing/Skywalker airframes.

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## 2801 – FUNRA Flight Testing and Troubleshooting

**Content**

As a lab member, I would like to flight test and fix FUNRA to ensure that it is ready for flight.

**Definition of Done**

[ ] Perform a flight test at Carnation to test FUNRA’s hovering capabilities

[ ] Perform a flight test at Carnation to test FUNRA’s transition and fixed-wing capabilities

[ ] Test FUNRA’s individual hardware/software components to determine root cause of any issues that arise during the flight tests and modify the aircraft to fix them

[ ] Perform a flight test as Carnation to test the modifications as well as FUNRA’s transition and fixed-wing capabilities

**Notes**

This will be completed throughout Fall quarter. Definitions may be added depending on the outcome of the flight tests.

**2802– Anakin Postmortem (Copy)**

**Content**

As a lab member, I would like to investigate the cause of the 10/13/18 Anakin crash

**Definition of Done**

[] Analyze data from Anakin Flight 178 to determine why the servos stopped responding

[] Implement a solution

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**2803– Anakin Postmortem (Copy)**

**Content**

As a lab member, I would like to investigate the cause of the 10/13/18 Anakin crash

**Definition of Done**

[] Analyze data from Anakin Flight 178 to determine why the servos stopped responding

[] Implement a solution

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**2804– Anakin Repairs (Copy)**

**Content**

As a lab member, I would like to repair Anakin following the 10/13/18 crash.

**Definition of Done**

[] Assess damage

[] Glue fuselage

[] Repair any other damage

[] Perform airworthiness checks to ensure aircraft is ready to go

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**2805– LARAMID Frodo Inspection and Repair (copy)**

**Content**

Copy of User Story 2772 – LARAMID Frodo Inspection and Repair (copy)

**Definition of Done**

Copy of User Story 2772 – LARAMID Frodo Inspection and Repair (copy)

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**2806– LARAMID Electromagnet Testing and Replacement (copy)**

**Content**

Copy of User Story 2776 – LARAMID Electromagnet Testing and Replacement (copy)

**Definition of Done**

Copy of User Story 2776 – LARAMID Electromagnet Testing and Replacement (copy)

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**2807– LARAMID Ultrasonic Sensor Testing and Control**

**Content**

As a LARAMID team member, I would like to test ultrasonic sensor and control it

**Definition of Done**

[] Control multiple ultrasonic sensors with Arduino

[] Find the appropriate geometry for sensor locations for sensing Frodo separation

[] Build necessary structure to mount the sensors

[] Make proper document illustrating ultrasonic sensor settings

Save document in LARAMID\Research\LARAMID Ultrasonic Sensor Implementation.docx

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**2808– LARAMID Ultrasonic Sensor Testing and Control (copy)**

**Content**

Copy of User Story 2807– LARAMID Ultrasonic Sensor Testing and Control (copy)

**Definition of Done**

Copy of User Story 2807– LARAMID Ultrasonic Sensor Testing and Control (copy)

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**2809– LARAMID CAD Modeling**

**Content**

As a lab member, I would like to modify Frodo CAD model to get accurate wing span area and integrate it as a whole configuration adding Samwise and mounting structure.

**Definition of Done**

[] See current Frodo CAD file

[] Compare it with real Frodo

[] Make modification

[] Integrate with other components

[] Talk to Chung

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**2810– LARAMID Frodo CAD Model Modification (copy)**

**Content**

Copy of User Story 2809– LARAMID Frodo CAD Model Modification (copy)

**Definition of Done**

Copy of User Story 2809– LARAMID Frodo CAD Model Modification (copy)

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**2811– LARAMID Ground Test Structure Build (copy)**

**Content**

Copy of User Story 2775 – LARAMID Ground Test Structure Build (copy)

**Definition of Done**

Copy of User Story 2775 – LARAMID Ground Test Structure Build (copy)

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**2812– Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

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**2813– Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

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**2814 – Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

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**2815 – LARAMID Pre-Ground Test part3**

**Content**

As a member of the LARAMID team, I would want to perform LARAMID ground test to test 18degree 30 – 35mph ground test to check docking frame stability.

**Definition of Done**

[ ] Plan appropriate ground test

[ ] Make useful videos and photos

[ ] Make appropriate document

**2816 – LARAMID Pre-Ground Test part3 (copy)**

**Content**

Copy of user story 2815 – LARAMID Pre-Ground Test part3

**Definition of Done**

Copy definition of done from user story 2815 – LARAMID Pre-Ground Test part3

**2817 – LARAMID Autonomous Vehicle Software Troubleshooting Manual**

**Content**

As a member of the LARAMID team, I would want to make troubleshooting manual document for connecting autonomous vehicle software which is using drone-kit and Samwise using mavproxy.py

**Definition of Done**

[ ] Make troubleshooting manual

**Notes**

* Save file in LARAMID/Research

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**2818 – LARAMID Autonomous Vehicle Software Troubleshooting Manual (copy)**

**Content**

Copy of user story 2818 – LARAMID Autonomous Vehicle Software Troubleshooting Manual (copy)

**Definition of Done**

Copy definition of done from user story 2818 – LARAMID Autonomous Vehicle Software Troubleshooting Manual (copy)

**2819 – LARAMID Ultrasonic Sensor Test**

**Content**

As a member of the LARAMID team, I would want to test ultrasonic sensors with Raspberry Pi and measure range and width angle.

**Definition of Done**

[ ] Connect ultrasonic sensor to Raspberry Pi

[ ] Perform ultrasonic sensor and analyze data

[ ] Test ultrasonic sensor error and measure the range

[ ] Make necessary document

**Notes**

* Save file in LARAMID/Research/Ultrasonicsensor.docx

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**2820 – LARAMID Ultrasonic Sensor Test (copy)**

**Content**

Copy of user story 2820d – LARAMID Ultrasonic Sensor Test (copy)

**Definition of Done**

Copy definition of done from user story 2820 – LARAMID Ultrasonic Sensor Test (copy)

**2821 – LARAMID Frodo Carbon Fiber Installed Under Metal Plates**

**Content**

As a member of the LARAMID team, I would want to apply a patch of carbon fiber under the metal plates to prevent the metal plates from indenting the foam due to the weight of the fixed wing on top of them. This will allow the fixed wing to be mounted on the quadcopter evenly.

**Definition of Done**

[ ] Installed carbon fiber under the area of the fixed wing where the metal plates are attached.

**2822 – LARAMID Frodo Carbon Fiber Installed Under Metal Plates**

**Content**

Copy of user story 2821 – LARAMID FRODO Carbon Fiber Installed Under Metal Plates (copy)

**Definition of Done**

Copy definition of done from user story 2821 – LARAMID Frodo Carbon Fiber Installed Under Metal Plates

**2823 – LARAMID Frodo Ground Test Safety Mount Design and Installation**

**Content**

As a member of the LARAMID team, I would want to use strings to secure Frodo in ground test to prevent it falling onto the ground and crashing.

**Definition of Done**

[ ] Installed Strings onto Frodo and make sure to be tighten with the ground test truck

**2824 – Custom arduplane flight mode 3.9 updates**

**Content**

As a member of the lab team, I want to update our lab’s custom flight modes to take advantage of new features in the latest release.

**Definition of Done**

[] successfully build, simulate, and test flight modes in 3.9 as appropriate

**2825 – Investigate feasibility of using guided mode for visual anchoring**

**Content**

As a member of the lab, I want to investigate to see if guided mode could be reused, substituting in the visual anchoring position estimates.

**Definition of Done**

[] attempt to build the flight mode and simulate in SITL

**2826 – Add Preliminary Systems View Functionality (LARI)**

**Content**

Add functionality to the systems view.

**Definition of Done**

[] Add loading of a file functionality

[] Implement button functionality

[] Populate systems table

[] Allow selection of multiple systems

[] Auto-update systems table when equipage data is updated

**Notes**

**2827 – Populate Components Table (LARI)**

**Content**

Add functionality to the component table.

**Definition of Done**

[] Populate components table with components from the selected systems

[] Auto-update components table when equipage data is updated

**Notes**

**2828 – Add Preliminary Systems View Functionality (copy) (LARI)**

**Content**

Copy of user story 2826.

**Definition of Done**

Copy definition of done from user story 2826.

**2829 – Add Component View Button Functionality (LARI)**

**Content**

Add functionality to the buttons for the component view.

**Definition of Done**

[] Implement button functionality

**Notes**

**2830 – LARAMID Electromagnet Control with Transmitter**

**Content**

As a LARAMID member, I would like to control EM with transmitter on the ground.

**Definition of Done**

[] Control Electromagnet connected to Raspberry Pi with transmitter.

**Notes**

**2831 – LARAMID Updating Aircraft Manual**

**Content**

As a LARAMID member, I would like to update Frodo and Samwise aircraft manual by adding components, spec and CAD file.

**Definition of Done**

[] Update spec of Frodo and Samwise

**Notes**

Save file in FlightOperations\UAS\Frodo and Samwise

**2832 – LARAMID Coupled Aircraft Modeling**

**Content**

As a LARAMID member, I would like make coupled aircraft dynamic model.

**Definition of Done**

[] Do research about Drag and Lift force and make proper document with plot

[] Model Frodo and Samwise dynamic model

[] Calculate pitch angle and related forward speed

**Notes**

Save in LARAMID\Research\Coupled Aircraft Dynamic.docx

**2833– LARAMID Ground Test Structure Build part2**

**Content**

As a LARAMID member, I would like to reinforce ground test structure by adding 3ft pvc pipe.

**Definition of Done**

[] Design connection part between mount wood and the pvc stand

[] 3D print connection part and attach to the stand

[] Cut the stand into 3ft long

[] Connect the stand to the mount and test stability

**Notes**

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**2834 LARAMID Ground Test Structure Build part2 (copy)**

**Content**

Copy of User Story 2833 – LARAMID Ground Test Structure Build part2 (copy)

**Definition of Done**

Copy of User Story 2833 – LARAMID Ground Test Structure Build part2 (copy)

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**2835– LARAMID Samwise flight data analysis**

**Content**

As a LARAMID member, I would like to import and analyze Samwise flight data.

**Definition of Done**

[] Import all Samwise flight data into Matlab

[] Analyze pitch angle, speed, rpm and altitude data

[] Make appropriate document

**Notes**

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**2836– LARAMID Frodo repair**

**Content**

As a LARAMID member, I would like repair Frodo.

**Definition of Done**

[] Fix Frodo airframe using exposy glue

[] Replace telemetry radio

**Notes**

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**2837– LARAMID Flight preparation**

**Content**

As a LARAMID member, I would like to prepare Frodo, Merry and Samwise for flight test.

**Definition of Done**

[] Conduct motor thrust test to check enough thrust generated

[] Text airframe and CG

[] Test Electromagnet in case of Samwise

[] Test stabilize mode with Merry and Frodo

**Notes**

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**2838 LARAMID Flight preparation (copy)**

**Content**

Copy of User Story 2837 – LARAMID Flight preparation (copy)

**Definition of Done**

Copy of User Story 2837 – LARAMID Flight preparation (copy)

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**2839– LARAMID Electromagnet manual**

**Content**

As a LARAMID member, I would like make a proper manual for controlling electromagnet

**Definition of Done**

[] Edit and combine documents related to electromagnets

[] Update photos and include H-bridge circuits

**Notes**

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**2840– LARAMID Flight test plan**

**Content**

As a LARAMID member, I would like to make LARAMID flight test plan document.

**Definition of Done**

[] Make document about Frodo stall speed test

[] Make document about pick-up truck test for similar flight test simulation

[] Make document about LARAMID launching

**Notes**

Save Document at /LARAMID/Research/Flight Test Plan.docx

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**2841 – Visual Anchoring move onto Tedd**

**Content**

Prepare Tedd for all Visual Anchoring gimbal

**Definition of Done**

Tedd can be used for visual anchoring.

**Notes**

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**2842 – Visual Anchoring thesis (copy)**

**Content**

Put the test results and correction procedure on paper

**Definition of Done**

Part of correction and current results are written

**Notes**

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**2843 – Visual Anchoring Condor setup**

**Content**

Set all the Condor for Visual Anchoring

**Definition of Done**

Condor is processing VA information (Gimbal, Camera GUI, UW custom MP, Matlab)

**Notes**

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**2844 –Visual Anchoring Tedd PID tuning**

**Content**

Tune PIDs for VA flights

**Definition of Done**

Tedd can handle orbit flights in non-wind condition

**Notes**

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**2845 – LARAMID flight test setup**

**Content**

Plan Mary flight for stall speed and angle of attack test

**Definition of Done**

Have a clearly formulated plan for flight test, proven by aerodynamics knowelege.

**Notes**

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**2846 – Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

**2847 – Cell Nav T-Mobile 4G LTE bands research**

**Content**

Research and make document about the T-Mobile bands and terminologies related to band frequency.

**Definition of Done**

[ ] Document is created at //CellNav/Research/…

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**2848 – Data Tech documentation**

**Content**

Documenting the purpose and role of Data Technician

**Definition of Done**

[ ] Data technician section of the FlightOperations\Operations\AFSLFlightOperations\AFSLFlightOperationsManual.docx is modified.

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**2849 – Add Method for Removing Systems from Equipage (LARI)**

**Content**

Add method for removing systems from the Equipage datatype.

**Definition of Done**

[] Add Equipage.Remove() method to UWLARI.Datatype.Equipage.

**Notes**

* Prevent removal of default inventory system.

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**2856 – Look into block edit for Trello**

**Content**

Look into whether you can edit multiple cards at once on Trello

**Definition of Done**

[] Look into whether you can edit multiple cards at once on Trello

**Notes**

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**2857 – Look into templates for Trello cards**

**Content**

Look into templates for Trello cards

**Definition of Done**

[] Look into templates for Trello cards

[] Create a document describing how to create templates and upload this to Perforce

**Notes**

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**2858 – Tool Peg Board**

**Content**

As a lab member I would like to build/install a peg board wall above the counters of AERB 117. This peg board will feature hooks and pegs to store the lab’s assorted tools, in an easy-to-access and convenient format.

**Definition of Done**

[] Purchase necessary peg board (cut to size), hooks, and fasteners from the Home Depot

[] Cut power outlet access holes in the peg boards to match the outlets on the wall

[] Screw the mounting 2x2 boards to the cabinets

[] Screw the peg board sections into the mounting 2x2s

[] Organize the tools from the lab’s main toolbox on the peg board

**Notes**

* To maintain compliance with UW regulations, the peg board must be fastened to the cabinets above the counter, not the wall.

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**2859 – Tool Peg Board (Copy)**

**Content**

As a lab member I would like to build/install a peg board wall above the counters of AERB 117. This peg board will feature hooks and pegs to store the lab’s assorted tools, in an easy-to-access and convenient format.

**Definition of Done**

[] Purchase necessary peg board (cut to size), hooks, and fasteners from the Home Depot

[] Cut power outlet access holes in the peg boards to match the outlets on the wall

[] Screw the mounting 2x2 boards to the cabinets

[] Screw the peg board sections into the mounting 2x2s

[] Organize the tools from the lab’s main toolbox on the peg board

**Notes**

* To maintain compliance with UW regulations, the peg board must be fastened to the cabinets above the counter, not the wall.

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**2866 – CellNav Trello Tasks(Matt,5)**

**Content**

This is a bucket to capture the work detailed on the CellNav Trello board.

**Definition of Done**

[x] Tasks complete based on Trello card/s specs

**Notes**

* Story support
* Separate slack channels to deal with trello spam
* Link trello to slack
* Check in tech assessment and 3GPP ref docs

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**2867 – CellNav Trello Tasks(Connor,5)**

**Content**

This is a bucket to capture the work detailed on the CellNav Trello board.

**Definition of Done**

[x] Tasks complete based on Trello card/s specs

**Notes**

* Survey of IoT boards/payload computers for UAS

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**2868 – CellNav Trello Tasks(Connor,1)**

**Content**

This is a bucket to capture the work detailed on the CellNav Trello board.

**Definition of Done**

[x] Tasks complete based on Trello card/s specs

**Notes**

* Look into links from Kyle

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**2869– CellNav Trello Tasks(Sita,2)**

**Content**

This is a bucket to capture the work detailed on the CellNav Trello board.

**Definition of Done**

[x] Tasks complete based on Trello card/s specs

**Notes**

* Sync up trello with AFSL sprint docs: Write script that checks out/in doc

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**2870 – Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

**2871– Robust Research Platform Proposal Budgeting**

**Content**

As a lab member I would like to determine the budget for the robust research platform proposal with the Department of Electrical & Computer engineering

**Definition of Done**

[ ] Determine the budget for the parts and test bed for this project

**Notes**

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**2872 – FUNRA Hardware Troubleshooting**

**Content**

As a lab member I would like to identify problems with FUNRA’s hardware.

**Definition of Done**

[ ] Go through the aircraft and identify any wiring problems, faulty components, or other hardware problems

[ ] Identify solutions (what components need replacement, where we can purchase them, etc.)

**Notes**

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**2873 – Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

**2874– Fixed Wing Landing Gear – Initial Research & Design (copy)**

**Content**

Copy of 2789

**Definition of Done**

[] See 2789

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**2875– Research alternative aircraft repair methods**

**Content**

As a member of the hardware team, I would like to determine more effective repair methods for major fixed-wing repair jobs.

**Definition of Done**

[] Research glues that would be a less brittle, more lightweight alternative to epoxy and are specifically designed for Styrofoam

[] Test several of these and make a recommendation as to which would be most effective for a major repair job.

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**2876 — Write Unit Tests for Checklist Data Structures (LARI)**

**Content**

As a member of the LARI team, I would like to write unit tests and documentation for the checklist data structures.

**Definition of Done**

[ ] Write unit tests.

[ ] Document code.

[ ] Get code reviewed.

**Notes**

* Code for checklist data structures will likely need some revision in the process of testing.

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**2877 — Security Camera System Integration (Copy)**

**Content**

Copy of user story 2877 — Security Camera System Integration

**Definition of Done**

Copy definition of done from user story 2877 — Security Camera System Integration

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**2878 — Create Data Structure for Timestamped Data (LARI)**

**Content**

As a member of the LARI team, I would like to create a data structure for saving timestamped data.

**Definition of Done**

[ ] Create a data structure for storing a series of objects, be them strings or otherwise, with dates associated with them.

[ ] Write methods for XML serialization and deserialization.

[ ] Write unit tests.

[ ] Write documentation.

[ ] Get code reviewed.

**Notes**

* The datatype of the objects stored by this data structure should be generic.
* This data structure will be used to store crash history, flight times, component history, and other such data.
* Probably want to allow for duplicate timestamps.

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**2879 — Design GUI for Viewing and Editing Timestamped Data (LARI)**

**Content**

As a member of the LARI team, I would like to design a window GUI for viewing and editing timestamped data. This GUI will be used for viewing and editing of all timestamped datatypes, such as crash history, flight time, and component history.

**Definition of Done**

[ ] Create skeleton GUI window for viewing and editing timestamped data.

[ ] Write documentation.

[ ] Get code reviewed and integrated.

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**2880 — Add Flight History to Systems (LARI)**

**Content**

As a member of the LARI team, I would like to add a flight history field to AFSLSystem for recording flight times

**Definition of Done**

[ ] Use our timestamped data structure to implement the flight history field.

[ ] Update unit tests.

[ ] Write documentation.

[ ] Get code reviewed.

**Notes**

* Blocked by 2878 — Create Data Structure for Dated Data

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**2881 — Organize Misc. Box of Parts**

**Content**

As a member of the lab I will organize the box of misc. telemetry radios, raspberry pis, transmitter, etc. into appropriate RC parts boxes around the lab, with appropriate labeling, documentation.

**Definition of Done**

[ ] Check with Nicholas Price to get the box, guidance if necessary

[ ] Label 2 Channel RC transmitter and enter into the transmitter notes document on Perforce.

[ ] All parts that were in the misc. box, are now put away in appropriate locations with any necessary labeling, documentation complete.

**Notes**

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**2882 — Setup Continuous Integration Tool (copy)**

**Content**

Copy of User Story 2667

**Definition of Done**

[ ] See user story 2667

**Notes**

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**2883 — Organize/Modify Charging Station**

**Content**

As a member of the lab I will organize the charging station, creating clearly labeled places for each charger and reducing the number of loose wires emanating from the station. I will also replace the wires in the power supply to lipo balance charger connection, using a smaller AWG. This will increase the safety margin when using the charger at high draw.

**Definition of Done**

[ ] Check with Nicholas Price for guidance

[ ] Charging station is visually well organized, with places marked for each type of charger, and loose wires stored out of sight.

[ ] Lipo charger main power wires are upgraded to a thicker gauge, preferably 14 AWG or less.

**Notes**

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**2884 — Wing Rack Build 2**

**Content**

As a member of the lab I will build and install a second wing rack in the lab to organize and store the remaining loose aircraft wings in the lab.

**Definition of Done**

[ ] Check with Nicholas Price for guidance

[ ] Wing rack should be light weight so as to be easily mounted on the wall with a set of strong Velcro/adhesive straps.

[ ] Wing rack should have places for at least 3 Skywalker 1900 wings as well as the Excelsior airframe’s wing + tail section.

[ ] Wing rack should be installed above the charging station in the lab, replacing the MicaSense research poster.

[ ] Move MicaSense poster to the East wall of the lab, beside the Trapis Poster.

**Notes**

* Wing Rack CAN NOT be screwed, nailed, or mounted in any way to the wall that results in puncturing the wall, as per UW rules.

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**2885 — Skywalker 1900 Storage Rack Build**

**Content**

As a member of the lab I will build and install a storage rack compatible with the Skywalker 1900 airframe (fuselage and tail section only).

**Definition of Done**

[ ] Check with Nicholas Price for guidance

[ ] Airframe rack should be light weight so as to be easily mounted on the wall with a set of strong Velcro/adhesive straps.

[ ] Rack should have a low profile against the wall so as not to intrude on other workspaces.

[ ] Storage rack should be capable of holding up to two Skywalker 1900 models, (a design that creates storage for 3 models will get extra credit).

**Notes**

* Airframe rack CAN NOT be screwed, nailed, or mounted in any way to the wall that results in puncturing the wall, as per UW rules.

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**2886 – Perforce Visual Client (copy)**

**Content**

Copy of User Story 002

**Definition of Done**

[ ] See user story 002

**Notes**

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**2887 — Make Systems View and Components View Scrollable (LARI)**

**Content**

As a member of the LARI team, I would like to make the tables within the systems view and components views vertically scrollable.

**Definition of Done**

[ ] Implement a vertical scrollbar for the table that displays systems data.

[ ] Implement a vertical scrollbar for the table that displays components data.

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**2888 — Make the Main Window Dynamically Resizable (LARI)**

**Content**

As a member of the LARI team, I would like to make the main window dynamically resizable.

**Definition of Done**

[ ] Assign reasonable minimum widths to GUI elements.

[ ] Give the main windows a minimum width and height.

[ ] Don’t allow buttons to do off-screen. One solution would be to assign a fixed width to the main window that prevents this from happening. Another solution would be to overflow buttons onto the next level. You’ll may want to do a combination of both.

[ ] Have the systems and components tables vertically expand to fit the available space.

[ ] Do not allow the systems and components tables to be obscured/covered by window resizing.

[ ] Get feedback from clients and other developers and implement their feedback (where it is reasonable).

[ ] Submit pull request to merge with the master branch and get your code reviewed.

**Notes**

* The window is currently resizable, but the elements within it can be obscured if the window is made too small.
* Consider having someone else do user story 2889 in tandem with this one.

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**2889 — Add Adjustable Divider Between Systems and Components View (LARI)**

**Content**

As a member of the LARI team, I would like to add an adjustable divider between the systems and components tables/views.

**Definition of Done**

[ ] Add an adjustable GridSplitter between the systems table/view and components table/view.

[ ] Make sure the components and systems view have minimum heights, such that the GridSplitter can’t obscure/cover either of them.

[ ] Get feedback from clients and other developers and implement their feedback (where it is reasonable).

[ ] Submit pull request to merge with the master branch and get your code reviewed.

**Notes**

* **NOTICE**: User story 2890 should be completed first. These two user stories can also be done in tandem.

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**2890 — Component Tracker Tech Demo (LARI)**

**Content**

As a member of the LARI team, I would like to oversee the completion of the component tracker’s first iteration and present it during a lab meeting. This tech demonstration will be treated as a deadline and milestone for the project.

**Definition of Done**

[ ] Determine a deadline for the tech demo.

[ ] Ensure user stories 2725, 2827, 2829, and 2849 are completed.

[ ] (OPTIONAL) Ensure user stories 2888 and 2889 are completed to make the GUI more usable and aesthetically pleasing.

[ ] (OPTIONAL) Ensure user story 2721 is completed to give a sneak-peak

[ ] Present the component tracker to Dr. Lum and other lab members during a lab meeting. Discuss what was completed since the last tech demo, and what

[ ] Determine the next milestone and determine and write up the necessary user stories (including the next tech demo user story).

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**2891 — Use Timestamped Data to Better Represent Data Fields (LARI)**

**Content**

As a member of the LARI team, I would like to use our timestamped data structure(s) to better represent various systems and components data fields.

**Definition of Done**

[ ] Determine which data fields should be replaced with timestamped data (e.g. flight history, crash history, component history, etc.)

[ ] Write separate user stories for each data structure change.

**Notes**

* **BLOCKED**: Complete user stories
* This will require modification to both LARI and UWLARI. You will need to coordinate these updates such that changes to UWLARI do not considerably interrupt development. For instance, updating fields in the Component class in the UWSDK could cause incompatible types errors in LARI. Save an old version of the UWLARI DLL for other developers to use.

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**2892 — JHA – LiPo Battery Handling**

**Content**

As a member of the lab, I would like to complete a job hazard analysis for handling lithium polymer battery packs.

**Definition of Done**

[ ] Complete a JHA form (template found under AFSL\LabInfo\LabSafety)

[ ] Review/Revise with EH&S contact Natalie Daranyi

**Notes**

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**2893 — JHA – Soldering Station**

**Content**

As a member of the lab, I would like to complete a job hazard analysis for working at the soldering station.

**Definition of Done**

[ ] Complete a JHA form (template found under AFSL\LabInfo\LabSafety)

[ ] Review/Revise with EH&S contact Natalie Daranyi

**Notes**

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**2894 — JHA – UAV Assembly**

**Content**

As a member of the lab, I would like to complete a job hazard analysis for building UAVs.

**Definition of Done**

[ ] Complete a JHA form (template found under AFSL\LabInfo\LabSafety)

[ ] Review/Revise with EH&S contact Natalie Daranyi

**Notes**

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**2895 — JHA – Flight Testing**

**Content**

As a member of the lab, I would like to complete a job hazard analysis for conducting flight testing operations.

**Definition of Done**

[ ] Complete a JHA form (template found under AFSL\LabInfo\LabSafety)

[ ] Review/Revise with EH&S contact Natalie Daranyi

**Notes**

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**2896 — Chemical Waste Collection Request**

**Content**

As a member of the lab, I would like to complete a request to EH&S to remove the storage of old lithium polymer batteries and NiMH batteries from the lab.

**Definition of Done**

[ ] Complete a chemical waste collection form with EH&S.

[ ] Schedule a time for the disposal team to collect the batteries.

[ ] Old batteries removed from lab and appropriately disposed of.

**Notes**

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**2897 — Anakin Repair (Copy)**

**Content**

As a member of the lab, I would like to assist in repairs for the Anakin airframe.

**Definition of Done**

[ ] Repairs Complete. Airframe whole.

[ ] Airframe flight tested and deemed airworthy.

**Notes**

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**2898 — Visual Anchoring move onto Peach**

**Content**

Prepare Peach for Visual Anchoring flight.

**Definition of Done**

Peach can be used for visual anchoring.

**Notes**

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**2899 — Visual Anchoring Pixhawk ADC enable.**

**Content**

As a VA team member I want to build a robust controller for VA system. We will need to measure bearing angle. One part is to install potentiometer on Yaw axis of gimbal, so the resistance is linearly dependent on the yaw turn angle.

**Definition of Done**

Potentiometer is rigidly rotated with yaw gimbal motion.

**Notes**

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**2900 – Visual Anchoring tune new gimbal**

**Content**

Set up new gimbal for work with VA

**Definition of Done**

New gimbal works properly

**Notes**

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**2913 – Looking into Zak Kassas’ publications-Exploiting LTE signals(CellNav)**

**Content**

Look into the paper and obtain information relevant to the CellNav project.

**Definition of Done**

Information found which is useful to the CellNav Project and is to Matt’s use

**Notes**

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**2918 — Cleaning Up 8/20/18 Mapping Data**

**Content**

As a member of the mapping team, I would like to perform a final clean-up on the data from Summer 2018.

**Definition of Done**

[ ] Reset GCPs to correct locations

[ ] Reprocess point clouds with correct GCP locations

[ ] Obtain new measurements and organize these into the spreadsheet at Mapping\Research\18\_08\_20\_carnation\Height\_Measurements.xlsx

**Notes**

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**2919 — Preparing Mapping Presentation**

**Content**

As a member of the mapping team, I would like to prepare slides on the work that was done during Summer 2018 for the meeting with Jim Cronan and Ruddy Mell on 2/5/19.

**Definition of Done**

[ ] Prepare slides summarizing experimental process, flight testing, and results

**Notes**

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**2920 — Investigate Whitespace Issues with XML (LARI)**

**Content**

As a member of the LARI team, I would like investigate why the XMLWriter object can only read XML files without whitespace.

**Definition of Done**

[ ] Find the source of the whitespace issue.

[ ] Fix the issue and allow it to read XML files with whitespace if possible.

[ ] Report back to LARI team in a design meeting or Ravi directly.

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**2921 — Make Inventory Permanent (Non-deletable) (LARI)**

**Content**

As a member of the LARI team, I would like to make a constant System object called Inventory that will hold all objects in inventory.

**Definition of Done**

[ ] Create a constant Inventory object on Front-end side.

[ ] Make sure every component gets tied to the inventory object.

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**2922 — Make methods multithreaded (LARI)**

**Content**

As a member of the LARI team, I would like to separate the application thread from the working thread.

**Definition of Done**

[ ] Implement multithreaded functions within the application

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**2923 — Implement Systems EDIT button (LARI)**

**Content**

As a member of the LARI team, I would like to implement the EDIT button in the systems view of LARI.

**Definition of Done**

[ ] Implement the EDIT button in the systems view. Keep in mind that systems may be immutable.

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**2924 — Convert Database from XML to SQL (LARI)**

**Content**

As a member of the LARI team, I would like to convert our existing XML database structure to SQL as that is a more robust and modern system that will save us some work.

**Definition of Done**

[ ] Research the best solution for a SQL system: whether it be a local database or one on a server.

[ ] Convert the current back-end code to use the SQL server instead of XML.

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**2925 — Preparing Mapping Presentation (copy)**

**Content**

As a member of the mapping team, I would like to prepare slides on the work that was done during Summer 2018 for the meeting with Jim Cronan and Ruddy Mell on 2/5/19.

**Definition of Done**

[ ] Prepare slides summarizing experimental process, flight testing, and results

**Notes**

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**2930 — Anakin Repair (Copy)**

**Content**

As a member of the lab, I would like to assist in repairs for the Anakin airframe.

**Definition of Done**

[ ] Repairs Complete. Airframe whole.

[ ] Airframe flight tested and deemed airworthy.

**Notes**

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**2931 — Anakin Repair (Copy)**

**Content**

As a member of the lab, I would like to assist in repairs for the Anakin airframe.

**Definition of Done**

[ ] Repairs Complete. Airframe whole.

[ ] Airframe flight tested and deemed airworthy.

**Notes**

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**2932 — Hardware Inventory**

**Content**

As a lab member, I would like to conduct an inventory of the hardware available in the lab.

**Definition of Done**

[ ] Check that the component tracker is accurate and up to date with regards to the location and status of parts currently installed on aircraft

[ ] Create and populate a matrix showing the status (airworthy, needs repairs, needs familiarization, etc.) of all aircraft in the lab

[ ] Create a similar matrix showing the status of significant non-aircraft pieces of equipment in the lab (LiDAR sensor, ADS-B transponder/TRAPIS payload, various cameras, etc.)

[ ] Upload this documentation to Perforce (consult with Helen Kuni for appropriate location)

**Notes**

* Essentially consolidate the information in the Component Tracker and the various Construction & Maintenance logs to make a quick reference guide to what aircraft and sensors are available for use.

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**2933 — CellNav MangOH Initial Setup**

**Content**

As a lab member, I would like to complete the initial dev environment setup and board setup for the mangOH.

**Definition of Done**

[x] Setup development environment in VM

[x] Complete the getting started guide up to SIM card setup

**Notes**

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**2934 — Frodo Stall Test Data Analysis**

**Content**

As a LARAMID member, I would want to analyze Frodo&Merry stall flight test data to derive lift coefficient graph and compare with ANSYS simulation for reliability.

**Definition of Done**

[ ] Import Merry flight data from Pixhawk into MATLAB

[ ] Created MATLAB algorithm to filter out not useful flight data.

[ ] Derived lift coefficient graph

[ ] Present whole process to lab

[ ] Upload this documentation to Perforce

**Notes**

* Save data in LARAMID/Research/StallSpeed.docx

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**2935 — Manual Flight Simulation with Ultrasonic Sensor**

**Content**

As a LARAMID member, I would want to see how distance measurements taken by ultrasonic sensor look like under various flight lifting tests in order to figure out if ultrasonic sensor is suitable for the flight tests and if so, how to analyze the data.

**Definition of Done**

[ ] Capture the plots ultrasonic sensor took under various lifting situations.

[ ] Check errors of measurement from ultrasonic sensor.

**Notes**

**2936 — Assess HiL Airworthiness**

**Content**

As a lab member, I would like to assess the airworthiness of the HiL units

**Definition of Done**

[ ] Perform standard airworthiness checks to ensure all 5 HiL units are functional

[ ] Perform any necessary maintenance to make them functional

**Notes**

* See the Ground Airworthiness Checks section of any recent Mission Document for an outline of a standard airworthiness check.

**2937 — Replace TEDD’s motor**

**Content**

As a member of the hardware team, I would like to replace TEDD’s motor.

**Definition of Done**

[ ] Replace the motor

[ ] Perform standard ground airworthiness checks to ensure full system functionality, noting any abnormalities in motor sound, thrust level, and motor response at throttle < 50%.

**Notes**

* As of 2/6/19, the motor has not arrived yet; contact Helen Kuni for shipment updates.
* Motor is suspect after attempted Visual Anchoring tuning on TEDD was aborted due to abnormally low thrust levels and undesirable behavior at low throttle percentage. Talk to Helen Kuni or see TEDD’s flight log (FlightOperations\UAS\TEDD\TEDDFlightLog.xlsm) for more info.

**2938 — BVLOS Waiver Investigation**

**Content**

As a member of the lab, I would like to research the practical requirements for a Part 107.31 waiver, based on the characteristics of waivers that have been granted in the past.

**Definition of Done**

[ ] Read through all the BVLOS waivers that have been approved by the FAA (as of 2/6/19, there are 29 of them, which can be found by searching for “107.31” on this webpage: <https://www.faa.gov/uas/commercial_operators/part_107_waivers/waivers_issued/>

[ ] Create a writeup summarizing the typical characteristics of approved BVLOS waivers, to aid the lab in producing our own waiver application at some point

* What safety measures are typically taken?
* What capabilities must the aircraft have, and what additional hardware is required to achieve this?
* What are the characteristics of the approved BVLOS operations?

**Notes**

* Prior familiarity with and good understanding of Part 107 regulations is preferred for this user story

**2939 — Update Lab Room Map**

**Content**

As a member of the lab, I would like to update the documentation on the dimensions and layout of AERB 117.

**Definition of Done**

[ ] Measure or approximate the dimensions of AERB 117 and create a map similar to AFSL\LabInfo\AFSLRoom\AFSLRoomMap.pptx showing the dimensions and layout of the room

[ ] Upload this to Perforce under AFSL\LabInfo\AFSLRoom.

**Notes**

**2944 — Setup new battery charger**

**Content**

As a member of the lab, I would like to set up the new battery charger.

**Definition of Done**

[ ] Read the instruction manual and set up the charger, including soldering any necessary connections to facilitate plugging in XT60s

[ ] Ensure battery charger functions normally

[ ] Update any documentation on battery charger use with any changes in functionality compared to the last charger

[ ] AFSL\HowToDocumentation\LiPoBatteryChargingInstruction.docx

[ ] Posted battery charging instructions (above charging station)

**Notes**

**2945 — Assess HiL Airworthiness (copy)**

**Content**

Copy of User Story 2936.

**Definition of Done**

Copy of Definition of Done from User Story 2936.

**Notes**

**2946 — Replace TEDD’s Motor (copy)**

**Content**

Copy of User Story 2937.

**Definition of Done**

Copy of Definition of Done from User Story 2937.

**Notes**

**2947 — Visual Anchoring Thesis (copy)**

**Content**

Put the test results and correction procedure on paper

**Definition of Done**

Part of correction and current results are written

**2948 — Visual Anchoring Peach model code**

**Content**

As a VA team member I want to build a robust controller for VA system. One way is to build a multivariable control through LQR. In this task we make a code to turn flight data to an aircraft model in Matlab. Code will take Data Flash logs parameters and convert into mathematical model state-space model, found in 2996 user story. As parameters have noise, we need to use optimization method to get the least error result from an array of data.

**Definition of Done**

[] Code for flight test data is done. Can process input parameters in vector form to state-space in matrix form.

**Notes**

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**2949 — Fix Flight Logs**

**Content**

As a lab member I would like to fix the flight logs

**Definition of Done**

[ ] Get rid of the autocal feature in the Peach, Pear, and Papaya flight logs

[ ] Fix the times on the summary sheets so they are accurate

**2951 — Perforce Visual Client (copy)**

**Content**

Copy of user story 002

**Definition of Done**

[ ] Copy of definition of done from user story 002

## 2952 – LARAMID Docking Frame Design (part5) (copy)

**Content**

Copy of User Story 2754 – LARAMID Docking Frame Design (part5)

**Definition of Done**

Copy of definition of done from User Story 2754 – LARAMID Docking Frame Design (part5)

**Notes**

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## 2953 – TOFU Simulator Manual Initial Development

**Content**

TOFU simulator manual creation and initial additions

**Definition of Done**

[ ] Create manual

[ ] Fill out sections including basic overview of three subsystems in main model

## 2954 – TOFU Simulator Basic Failure Mechanism

**Content**

Allow for basic motor failures within TOFU simulator

**Definition of Done**

[ ] Basic flight path of quadrotor achieved

[ ] Motors can be failed by developer

## 2955 – TOFU Simulator Monte Carlo Implementation

**Content**

Implement Monte Carlo process for TOFU simulator

**Definition of Done**

[ ] Analysis is able to run and record data for at least 100 simulations

## 2956 – TOFU Simulator Manual Initial Development (Copy)

**Content**

TOFU simulator manual creation and initial additions

**Definition of Done**

[ ] Create manual

[ ] Fill out sections including basic overview of three subsystems in main model

## 2957 – TOFU Simulator Basic Failure Mechanism (Copy)

**Content**

Allow for basic motor failures within TOFU simulator

**Definition of Done**

[ ] Basic flight path of quadrotor achieved

[ ] Motors can be failed by developer

## 2958 – TOFU Simulator Monte Carlo Implementation (Copy)

**Content**

Implement Monte Carlo process for TOFU simulator

**Definition of Done**

[ ] Analysis is able to run and record data for at least 100 simulations

## 2959 – Research on Filtering LTE signals

**Content**

Look for research papers dealing with filtering LTE tower signals

**Definition of Done**

[ ] if papers found, information about them and link to the paper(s) in a document in CellNav/Research

**2960 – C# GUI Tutorial (copy)**

**Content**

Copy of User Story 2960 – C# GUI Tutorial

**Definition of Done**

Copy of definition of done from User Story 2607 – C# GUI Tutorial

**Notes**

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**2961 – C# GUI Tutorial (copy)**

**Content**

Copy of User Story 2607 – C# GUI Tutorial

**Definition of Done**

Copy of definition of done from User Story 2607 – C# GUI Tutorial

**Notes**

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**2962 – C# GUI Tutorial (copy)**

**Content**

Copy of User Story 2607 – C# GUI Tutorial

**Definition of Done**

Copy of definition of done from User Story 2607 – C# GUI Tutorial

**Notes**

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**2963 – CellNav: Define Mechanical Work**

**Content**

How are we going to mount the mangoh red board to a plane? Define the work need to figure that out.

**Definition of Done**

* Stories added to backlog
* Scope approved by Matt

**Notes**

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**2964 – CellNav: Detailed design of board enclosure**

**Content**

Detail design for mangOH board enclosure and related components. Include design with/without NVIDIA Jetson board. Need to talk with Matt about details. Take into account dimensions of payload bay for Finwing Sabre aircraft, power, cooling, access ports, connections. Look at existing mangOH board cases at <https://www.thingiverse.com/Sierra_Wireless_MangOH/designs>.

**Definition of Done**

[x] Document detailing design uploaded to Perforce

[x] Follow on work identified, added to backlog

**Notes**

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**2965 – MangOH Hardware Documentation Review**

**Content**

As a lab member, I would like to review in detail the mangOH red hardware.

**Definition of Done**

* Review schematic
* Read datasheets of relevant ICs
* Review bill of materials
* Read all hardware related documentation

**Notes**

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**2966 – New antenna research**

**Content**

As a lab member, I would like to research new antennas for the mangOH red

**Definition of Done**

The current cellular antenna is difficult to mount

* Research provided antennas
* Provide new options

**Notes**

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**2967 – GPS Degrader Trade study**

**Content**

As a lab member, I would like to research ways we could deny or degrade the GPS for Cellnav

**Definition of Done**

* Start by looking at previous work done by AFSL researchers
* Propose a solution

**Notes**

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**2969 – LARI Development Environment Setup**

**Content**

As a LARI software developer, I would like to setup my local development environment so that I can work on LARI from my personal computer

**Definition of Done**

* Get access to the LARI GitHub repository from the Lead Software Engineer or Dr. Lum.
* Follow the instructions in the [GitHub repository](https://github.com/uwafsl/LARI/blob/master/Notes/setting_up_dev_env.md) to setup your environment.

**Notes**

* After this, complete the C# GUI Tutorial if you are not familiar with C# or MVVM structure.

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**2970 – LARI Development Environment Setup (copy)**

**Content**

Copy of User Story 2969 – LARI Development Environment Setup

**Definition of Done**

Copy of definition of done from User Story 2969 – LARI Development Environment Setup

**Notes**

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**2971 – LARI Development Environment Setup (copy)**

**Content**

Copy of User Story 2969 – LARI Development Environment Setup

**Definition of Done**

Copy of definition of done from User Story 2969 – LARI Development Environment Setup

**Notes**

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**2972 – LARI Development Environment Setup (copy)**

**Content**

Copy of User Story 2969 – LARI Development Environment Setup

**Definition of Done**

Copy of definition of done from User Story 2969 – LARI Development Environment Setup

**Notes**

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**2973 – LARI Setup Documentation and Review**

**Content**

As the new LARI project lead, I would like to review the state of LARI and create the necessary documentation for new developers to learn the system.

**Definition of Done**

[ ] Ensure LARI and the UWSDK is building successfully.

[ ] Run LARI and see what functions work and don’t work, create user stories as necessary.

[ ] Create setup documentation for new software developers.

**Notes**

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**2974 – LARAMID Electromagnet Receiver Design Optimization**

**Content**

As the LARAMID member, I would like to optimize Electromagnet receiver design for weight loss of Frodo UAS.

**Definition of Done**

[ ] Design new Electromagnet design and upload pdf file in perforce

[ ] Find lighter metal sheet and build electromagnet receiver

[ ] Test stability check with new electromagnet receiver with Chung

[ ] Calculate weight loss from the previous design

**Notes**

* Save pdf file in LARAMID/Research/EM\_recevier\_v2.pdf

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**2975 – LARAMID Electromagnet Receiver Design Optimization (copy)**

**Content**

Copy of User Story 2974 – LARAMID Electromagnet Receiver Design Optimization

**Definition of Done**

Copy of definition of done from User Story 2974 – LARAMID Electromagnet Receiver Design Optimization

**Notes**

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**2976 – LARAMID Detachment Process Implementation using Raspberry Pi**

**Content**

As a LARAMID member, I would like to program LARAMID detachment process using EM and GPS data from Raspberry Pi.

**Definition of Done**

[] Read Samwise GPS data from Raspberry Pi

[] Load GPS data in EM\_turnon.py

[] Complete writing detachment python file

**Notes**

* Save in LARAMID/Research/Detachment.pdf

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**2977 – LARAMID Detachment Process Implementation using Raspberry Pi (copy)**

**Content**

Copy of User Story 2975 – LARAMID Detachment Process Implementation using Raspberry Pi

**Definition of Done**

Copy of definition of done from User Story 2975 – LARAMID Detachment Process Implementation using Raspberry Pi

**Notes**

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**2978 – September 2018 Safety Checklist**

**Content**

As a lab member, I will complete the lab safety checklist given to us in September 2018. Rectifying any outstanding failing points.

**Definition of Done**

[ ] All failed requirements marked in red fixed according to suggestions made by the EH&S surveyor.

[ ] Fixes Reviewed with Helen and/or Dr. Lum

**Notes**

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**2979 – JCATI 2019 Proposal**

**Content**

As a lab member, I would like to help develop the proposal for JCATI 2019

**Definition of Done**

[ ] Work with Dr. Lum and Dr. Vagners to revise and compile the proposal

**Notes**

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**2980 – Install new USB ports on AFSL Condor**

**Content**

As a lab member, I would like to install new USB ports on AFSL Condor

**Definition of Done**

[ ] Install the new USB ports

[ ] Verify that they work

**Notes**

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**2981 – Drone/Quadcopter Inspection**

**Content**

As a lab member, I would like to inspect the drones, Merry and Frodo, and the quadcopter, Samwise, to make sure they are flight-test ready

**Definition of Done**

[ ] Make any necessary repairs to Frodo and Merry

[ ] Make any necessary repairs to Samwise

**Notes**

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**2982 – Antenna Mounting Research**

**Content**

Determine where and how to best mount the antenna/antennas, taking into account connections to the board, visibility, etc.

**Definition of Done**

[] Research documented and uploaded to Perforce  
[] Recommendations made to be implemented in the detailed design of enclosure  
[] Follow on work identified, added to backlog

**Notes**

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**2991 – LARAMID Frodo Thrust Test and Analysis**

**Content**

As a LARAMID member, I would want to test Frodo’s exact maximum motor thrust. By putting on the scale, record the max thrust.

**Definition of Done**

[] Set ground test environment for motor thrust test  
[] Connect Frodo’s motor to ground test environment and test with full throttle  
[] Apply thrust equation and plot Frodo’s thrust with different throttle

[] Calculate necessary throttle value for Frodo’s stall speed

[] Save thrust analysis data document

**Notes**

Save in Research/LARAMID/LARAMID Thrust Test and Analysis.docx

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**2992 – LARAMID Frodo Thrust Test and Analysis (copy)**

**Content**

Copy of User Story 2991 – LARAMID Frodo thrust test and analysis

**Definition of Done**

Copy of definition of done from User Story 2991 – LARAMID Frodo thrust test and analysis

**Notes**

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**2993 – LARAMID Coupled Aircraft Moment Calculation**

**Content**

As a LARAMID member, I would want to calculate moment equations of coupled aircraft with altitude hold mode of quadcopter.

**Definition of Done**

[] Make FBD of coupled aircraft  
[] Calculate moments equations  
[] Research altitude hold mode

[] Calculate necessary throttle value for Frodo’s stall speed

[] Save data in document

**Notes**

Save in Research/LARAMID/Coupled Aircraft Dynamics

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**2994 – LARAMID Samwise altitude hold mode and Take-Off Capacity**

**Content**

As a LARAMID member, I would want to research altitude hold mode for Samwise and make alt hold manual document.

**Definition of Done**

[] Research with altitude hold mode  
[] Calculate required thrust limit  
[] Make document about alt-hold mode

**Notes**

Save in Research/LARAMID/LARAMID Altitude Hold mode Manual.docx

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**2995 – LARAMID Separation Process Design**

**Content**

As a LARAMID member, I would want to model full separation process of LARAMID system.

**Definition of Done**

[] Design a full separation process  
[] Discuss with quadcopter pilots and fixed wing pilot about the process  
[] Consider ground test results and optimize the speed and throttle

[] Consider mission planner control

[] Save data in document

**Notes**

Save in Research/LARAMID/LARAMID Separation Process.docx

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**2996 — Visual Anchoring Plane state-space model**

**Content**

As a VA team member I want to build a robust controller for VA system. One way is to build a multivariable control through LQR. In this task we create a simplest model for Radius-Bearing controller. State space consists of radius and bearing, also all needed parameters for control. If needed, the model will be increased with other parameters.

**Definition of Done**

[] Have a mathematical description of radius and bearing dependence from measured parameters.

**Notes**

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**2997 — Visual Anchoring Rectification algorithm update**

**Content**

As a VA team member I want to build a robust controller for VA system. For that we use a multivariable control, which requires bearing measurement. As bearing control will be added, we need image bearing angle to be determined from vision system. System has to be tested before flying.

**Definition of Done**

[] Code gives a vision bearing angle as an additional output.

[] System tested on ground and gives reliable result.

**Notes**

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**2998 — Visual Anchoring radius and bearing transmission study**

**Content**

As a VA team member I want to build a robust controller for VA system. For that we use a multivariable control, which requires bearing measurement. Currently VA has only one channel to pass vision system data from Matlab back on-board. As now we need to transmit radius and bearing, we need to find a way to use one channel for data transmission. I purpose to use data pairing, which allows uniquely combine two numbers on-ground and decompose on board. The problem arises, that we have to limit output to 31999, because of the limitations of the transmission channel.

**Definition of Done**

[] Find the data pairing algorithm and modify it for our limitations.

**Notes**

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**2999 — Visual Anchoring UW mode 3 study**

**Content**

As a VA team member I want to build a robust controller for VA system. For that we use a multivariable control. One of implementation is to modify current UW\_mode\_3 and add a PD controller over bearing. For this I need to study the current implementation of radius PID controller.

**Definition of Done**

[] Understand general outer and inner loop controllers.

[] Gather all pieces of UW\_mode\_3 in ArdupilotAFSL solution, understand how they work.

**Notes**

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**3000 — Visual Anchoring Pixhawk ADC enable.**

**Content**

As a VA team member I want to build a robust controller for VA system. For that we need bearing measurement. One measurement is done by vision system. The second – by the modified gimbal. We need to add readout of this measurement through a Pixhawk ADC.

**Definition of Done**

[] Pixhawk ADC reads angle data from gimbal, feeds it into a controller.

[] ADC is properly calibrated.

**Notes**

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**3001 — Visual Anchoring UW mode 5 implementation**

**Content**

As a VA team member I want to build a robust controller for VA system. We need to implement new PD control over the bearing.

**Definition of Done**

[] UW\_mode\_5 (may be done in UW\_mode\_3) is created. PD parameters can be tuned from Mission planner.

**Notes**

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| This mode may still need sideslip angle. |

**3002 — Investigate surveying drone options**

**Content**

As a member of the Chelan Land Trust team, I would like to investigate our options for a drone to use for this project.

**Definition of Done**

[] Research the specs and pricing of the new DJI drone that was just announced

* <https://www.auvsi.org/industry-news/dji-unveils-new-hardware-and-software-tools-professional-uas-operators>

**Notes**

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**3003 — Visual Anchoring Peach repairs**

**Content**

As a VA team member I want to build a reliable plane.

**Definition of Done**

[] Fix the motor power issue.

[] Fix transmitter freeze.

[] Try to increase signal strength.

[] Make a ballast weight for gimbal operation.

**Notes**

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**3004 — Visual Anchoring move onto Peach**

**Content**

As a VA team member I want to have a backup plane for VA.

**Definition of Done**

Pear can be used for visual anchoring.

**Notes**

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**3004 — Visual Anchoring move onto Peach**

**Content**

As a VA team member I want to have a backup plane for VA.

**Definition of Done**

Pear can be used for visual anchoring.

**Notes**

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**3017 — Setup Continuous Integration Tool → Research a tooling architecture**

**Content**

As a member of the software team, I would like to figure out what the architecture of the continuous integration and continuous deployment system would look like.

**Definition of Done**

[ ] Research step by step process of setting up the ci/cd pipeline through Gitlab and github

**Notes**

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**3018 — Setup Continuous Integration Tool → Figure out hosting options at UW**

**Content**

As a member of the software team, I would like to figure out what the hosting options we have at UW

**Definition of Done**

[ ] Research step by step process of what hosting options we have that we can use at UW to run the ci/cd pipeline

**Notes**

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**3019 — Setup Continuous Integration Tool → Figure out LARI requirements for ci/cd pipeline**

**Content**

As a member of the software team, I would like to figure out what the requirements needed from LARI to run the ci/cd pipeline

**Definition of Done**

[ ] Research step by step process of what tech stack LARI uses and see what requirement GITLAB CI needs to run the pipeline and testing

**Notes**

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**3020 — Visual Anchoring move onto Pear**

**Content**

As a VA team member I want to have a backup plane for VA.

**Definition of Done**

[] Pear can be used for visual anchoring.

[] Altimeter is calibrated.

**Notes**

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**3021 – LARAMID Manual update for Samwise, Frodo and Merry**

**Content**

As a LARAMID member, I would like to update Frodo and Samwise aircraft manual by adding components, specification and CAD files.

**Definition of Done**

[] Update specs of Frodo, Merry and Samwise

[] Upload modified docking frame design

[] Upload Stall speed data in Frodo and Merry manual

[] Upload Samwise pitch angle data

[] Update recent photo

**Notes**

Save file in FlightOperations\UAS\Frodo and Samwise

**3022 – LARAMID System Full Configuration CAD**

**Content**

As a LARAMID member, I would like to combine Samwise and Frodo as a one CAD file to illustrate.

**Definition of Done**

[] Make assembly file with Samwise, Docking frame and Frodo

[] Check the design measurement

[] Update docking frame document

[] Update LARAMID Docking Frame.docx

[] Make necessary CAD file and upload it in perforce as a full configuration

**Notes**

Save file in LARAMID\Research\LARAMID Docking Frame.docx

Save file in LARAMID\Research\Full Config.pdf

**3023 – LARAMID Ground Test with new Mounting Structure**

**Content**

As a LARAMID member, I would like to test mounting structure for truck test.

**Definition of Done**

[] Put Samwise and Frodo on top of mounting structure and test stability

[] Test vibration during the motor thrust

[] Fix the mounting structure to resist vibration adding wood plate

**Notes**

**3029 — Visual Anchoring flight test result process**

**Content**

As a VA team member I want to create scripts for best flight test result interpretation.

**Definition of Done**

[] We can generate plots of radii, control input

[] We can explain aircraft behavior, vision radius errors

[] Do a correction on camera image nonsymmetry

**Notes**

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**3030 — Visual Anchoring flight test result presentation**

**Content**

As a VA team member I want share the results of the flight test

**Definition of Done**

[] Meaningful slides for short presentation created

[] Maybe a video

**Notes**

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**3031 — Visual Anchoring controller study**

**Content**

As a VA team member I want to make controller more responsive in the wind

**Definition of Done**

[] Model outer and inner loop controllers in Matlab

[] Make correction as needed

**Notes**

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**3032 – C# GUI Tutorial (copy)**

**Content**

Copy of User Story 2607 – C# GUI Tutorial

**Definition of Done**

Copy of definition of done from User Story 2607 – C# GUI Tutorial

**Notes**

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**3040 — Perforce Visual Client (copy)**

**Content**

Copy of user story 002

**Definition of Done**

[ ] Copy of definition of done from user story 002

**3041 — Perforce Visual Client (copy)**

**Content**

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**3042 — Perforce Visual Client (copy)**

**Content**

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**3043 — Perforce Visual Client (copy)**

**Content**

Copy of user story 002

**Definition of Done**

[ ] Copy of definition of done from user story 002

**3044 — Visual Anchoring plane and computer preparation**

**Content**

As a VA team member I want to have airworthy planes and computer

**Definition of Done**

[] Do extensive ground testing of Pear and Papaya

[] Move VA from Condor onto AFSL05

**Notes**

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**3045 — Visual Anchoring controller study (copy)**

**Content**

As a VA team member I want to make controller more responsive in the wind

**Definition of Done**

[] Model outer and inner loop controllers in Matlab

[] Make correction as needed

[] Make bank angle limiter

[] Get Inner and outer loop controller parameters accessible within mission planner

[] Improve control law

**Notes**

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**3046 — Visual Anchoring Documentation**

**Content**

As a VA team member I want to make sure anyone who continues the project gets all the current knowledge.

**Definition of Done**

[] Make document describing all the codes, software and hardware for VA operation

[] Describe problems and solutions

**Notes**

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**3047 — Visual Anchoring Promo Video**

**Content**

As a VA team member I want to create a video about a project.

**Definition of Done**

[] Make a video describing VA problem and how we solved them.

[] Put a demonstration of VA flight and operations

**Notes**

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**3059 — Visual Anchoring flight test aircraft prepare**

**Content**

As a VA team member I want to have a reliable plane for VA.

**Definition of Done**

[] Solve Peach, Pear transmitter signal loss and safe mode problems.

**Notes**

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**3061 – LARI Development Environment Setup (copy)**

**Content**

Copy of User Story 2969 – LARI Development Environment Setup

**Definition of Done**

Copy of definition of done from User Story 2969 – LARI Development Environment Setup

**Notes**

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**3062 – C# GUI Tutorial (copy)**

**Content**

Copy of User Story 2607 – C# GUI Tutorial

**Definition of Done**

Copy of definition of done from User Story 2607 – C# GUI Tutorial

**Notes**

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**3063 – Potential Flight Path Planning**

**Content**

As a member of the Chelan Land Trust Project I would like to plan potential flight paths for the initial surveys.

**Definition of Done**

[] Plan potential flight areas

[] Plan flight paths over potential flight areas in Pix4D, keeping the following potential concerns in mind:

[] Flight time <20 min

[] Number of grid passes reasonable

[] Double grid vs. single grid

[] Not encroaching on surrounding properties

[] Altitude clear of surrounding vegetation

**Notes**

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**3064 – Vehicle & Sensor Research**

**Content**

As a member of the Chelan Land Trust Project I would like to examine potential sensors that could be used for this project.

**Definition of Done**

[] Assess the feasibility of LiDAR

[] Do we have/can we get/use a green light LiDAR?

**Notes**

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**3065 – AFSL Condor Repairs**

**Content**

As a member of the lab I would like to diagnose and fix the computer affectionately known as Gary.

**Definition of Done**

[] Figure out why AFSL Condor will not turn on

[] Fix the problem

**Notes**

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**3066 – 2019 Safety Survey**

**Content**

As a member of the lab I would like to coordinate and be responsible for this year’s EH&S Safety Survey.

**Definition of Done**

[] Prepare the lab for the survey

[] Meet with EH&S at the time of the survey, show them the lab, and answer questions about our procedures and facilities

[] Take the lead on responding to any elements of the lab that are not up to code

**Notes**

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**3067 – Flight Training Program – Multi-Rotor (copy)**

**Content**

As a future sUAS pilot, I would like to complete the AFSL required training to become eligible to fly the lab’s multi-rotor aircraft.

**\*\*Flight training must be taken seriously. At some point you could be asked to safely takeoff, fly and land a $10,000 sensor in less than ideal weather, so you need to be ready to meet this challenge whenever it arises\*\***

**Definition of Done**

[x] Before anything else, read the training information located here: **\FlightOperations\Operators\Training\MultiRotorFlightTrainingInformation.docx**

[ ] Discuss reading with Hannah Rotta before moving on.

[ ] Log at least three hours of productive simulator time on PhoenixRC on the computer nearest the door. Please use a multi-rotor model. Additional time may be spent on other airframes, but a minimum three hours on a multi-rotor are required. This includes the following:

[ ] Log at least three hours here in the gray section of this document: **\FlightOperations\Operators\Training\FlightTrainingRecords.xlsx**

            [ ] Practice takeoffs

            [ ] Practice hovering/loitering and other basic maneuvers

            [ ] Practice reverse orientation flying

            [ ] Perform 15 safe landings on a Dead Calm day (weather can be adjusted in the settings)

            [ ] Perform 15 safe landings on a Brisk day

            [ ] Perform 15 safe landings on a Fair Wind day

[ ] Demonstrate to a lead pilot proficiency on takeoff, cruise, reverse orientation and landing

[ ] Fly MARV with buddy box system in the field and complete or show proficiency in the following:

            [ ] Three successful takeoffs (in whatever mode is deemed best for training by instructor pilot)

            [ ] Reverse orientation

            [ ] Flight in manual mode

[ ] Flight in loiter mode

[ ] Flight in any other common modes

[ ] Proficiency in switching into and out of auto mode

            [ ] Three successful landings (in whatever mode is deemed best for training by instructor pilot)

[ ] Log all time here in the blue section of this document: **\FlightOperations\Operators\Training\FlightTrainingRecords.xlsx**

[ ] Receive sign-off for multi-rotor solo flight

**3068 – Flight Training Program – Fixed Wing (copy)**

**Content**

As a future sUAS pilot, I would like to complete the AFSL required training to become eligible to fly the lab’s aircraft.

**\*\*Flight training must be taken seriously. At some point you could be asked to safely takeoff, fly and land a $10,000 sensor in less than ideal weather, so you need to be ready to meet this challenge whenever it arises\*\***

**Definition of Done**

[ ] Before anything else, read the training information located here: **\FlightOperations\Operators\Training\FlightTrainingInformation.docx**.

[ ] Read through and understand the Airworthiness Directives located: **\FlightOperations\Operations\AFSLFlightOperations\AFSLFlightOperationsManual.docx**

[ ] Log at least three hours of *productive* simulator time on PhoenixRC on the computer nearest the door. Please use the **Multiplex EasyStar AFSL\_Skywalker\_Trainer** model (listed under the favorites – this is important because the version that doesn’t say AFSL\_Skywalker\_Trainer does not have ailerons). Additional time may be spent on other airframes, but a minimum three hours on the EasyStar are required. This includes the following:

[x] Log at least three hours here in the gray section of this document: **\FlightOperations\Operators\Training\FlightTrainingRecords.xlsx**

            [ ] Practice flying a basic traffic pattern

            [ ] Practice reverse orientation flying

            [ ] Perform 15 safe landings on a Dead Calm day (weather can be adjusted in the settings)

            [ ] Perform 15 safe landings on a Brisk day

            [ ] Perform 15 safe landings on a Fair Wind day

[ ] Demonstrate to a lead pilot proficiency on takeoff, cruise, reverse orientation and landing

[ ] Fly Anakin with buddy box system in the field and complete or show proficiency in the following:

            [ ] Three successful takeoffs

            [ ] Reverse orientation

            [ ] Cruise in manual mode

            [ ] Cruise in stabilize mode

            [ ] RTL mode

            [ ] Three successful landings

[ ] Log all time here in the blue section: **\FlightOperations\Operators\Training\FlightTrainingRecords.xlsx**

[ ] Receive approval for fixed wing solo flight

**3069 – Part 107 Test Preparation (copy)**

**Content**

As a researcher, I would like to prepare for and take the FAA Part 107 Commercial Remote Pilot Certification test.

**Definition of Done**

[ ] Take the online course offered by the FAA

[ ] Take the three practice tests on the network drive

[ ] Study all topics identified as weak when taking practice tests

[ ] Take the part 107 test

[ ] Do the paperwork to get the license from the FAA

[ ] Do the paperwork to get reimbursed for test

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**3070 thru 3075 – Engineering Discovery Days**

**Content**

As a lab member, I would like to volunteer to staff the lab’s booth at Engineering Discovery Days

**Definition of Done**

[ ] Help with set up and take down if you are assigned to either of those shifts

[ ] Answer questions about what the lab does, UAS technology, and aerospace engineering

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**3080 – Docking Frame Extension Build**

**Content**

As a LARAMID member, I would like to build an extension for the docking frame

**Definition of Done**

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**3081 – Landing Gear Rebuild**

**Content**

As a LARAMID member, I would like to rebuild the landing gear for Samwise

**Definition of Done**

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**Notes**

**3083 – Visual Anchoring thesis Presentation**

**Content**

As a Visual Anchoring lead developer I want to defend my thesis work.

**Definition of Done**

[ ] Presentation ready for required date and covers all the research, length 20-30 min.

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**3084 — Load Components**

**Content**

As a member of the LARI team, I would like to load the associated components of systems into the component table.

**Definition of Done**

[ ] Have the components show up on the components table in the components tracker in LARI

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**3085 – Load Components (copy)**

**Content**

Copy of User Story 3084 – Load Components

**Definition of Done**

Copy of definition of done from User Story 3084 – Load Components

**Notes**

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**3086 – Load Components (copy)**

**Content**

Copy of User Story 3084 – Load Components

**Definition of Done**

Copy of definition of done from User Story 3084 – Load Components

**Notes**

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**3087 — Perforce Visual Client (copy)**

**Content**

Copy of user story 002

**Definition of Done**

[ ] Copy of definition of done from user story 002

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**3088 – Load Components (copy)**

**Content**

Copy of User Story 2827 – Populate Components (copy)

**Definition of Done**

Copy of definition of done from User Story 2827 – Populate Components (copy)

**Notes**

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**3089 – Load Components (copy)**

**Content**

Copy of User Story 2827 – Populate Components (copy)

**Definition of Done**

Copy of definition of done from User Story 2827 – Populate Components (copy)

**Notes**

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**3090 — Close Window on Apply**

**Content**

As a member of the LARI team, I would like to load the associated components of systems into the component table.

**Definition of Done**

[ ] Make the pop up window for Edit Component, etc. close on Apply click.

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**3091 – Close Window on Apply (copy)**

**Content**

Copy of User Story 3090 – Close Window on Apply (copy)

**Definition of Done**

Copy of definition of done from User Story 3090 – Close Window on Apply (copy)

**Notes**

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**3092 – Close Window on Apply (copy)**

**Content**

Copy of User Story 3090 – Close Window on Apply (copy)

**Definition of Done**

Copy of definition of done from User Story 3090 – Close Window on Apply (copy)

**Notes**

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**3093 – Close Window on Apply (copy)**

**Content**

Copy of User Story 3090 – Close Window on Apply (copy)

**Definition of Done**

Copy of definition of done from User Story 3090 – Close Window on Apply (copy)

**Notes**

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**3094 — Create Crash History object [Backend]**

**Content**

As a member of the LARI team, I would like to define the Crash History that will be used in the Components.

**Definition of Done**

[ ] Load the backend of the code (UWSDK/UWLARI)

[ ] Create the Crash History object, and create fields that correspond to the SQL database

(Summary, Description, DateTime, Component)

[ ] Include unit tests

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**3095 — Create Notes object [Backend]**

**Content**

As a member of the LARI team, I would like to define the Notes that will be used in the Components.

**Definition of Done**

[ ] Load the backend of the code (UWSDK/UWLARI)

[ ] Create the Notes object, and create fields that correspond to the SQL database

(Summary, Description, Component)

[ ] Include unit tests

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**3096 — Change Component Implementation [Backend]**

**Content**

As a member of the LARI team, I would like to change the Component object to encapsulate the CrashHistory and Notes. I would like to add a Name field to the Component.

**Definition of Done**

[ ] Load the backend of the code (UWSDK/UWLARI)

[ ] Replace the relevant fields with an ordered collection of both crash history and notes.

[ ] Refactor all implementations that use Components in both backend and frontend

[ ] Include unit tests

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**3097 — Add startDate to AFSLSystem [Backend]**

**Content**

As a member of the LARI team, I would like to update the AFSLSystem to include a start date field that represents when the system was first created/used in the lab.

**Definition of Done**

[ ] Load the backend of the code (UWSDK/UWLARI)

[ ] Add the startDate as a field

[ ] Change all existing implementations/usages of AFSLSystem to include startDate

[ ] Include unit tests

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**3098 — Make all data objects comparable [Backend]**

**Content**

As a member of the LARI team, I would like to update all data objects to be comparable. That is, I would like to create the appropriate equals, compareTo, and hashCode methods.

**Definition of Done**

[ ] Load the backend of the code (UWSDK/UWLARI)

[ ] Add the comparable methods to every Data object

[ ] Include unit tests

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**3099 — Update Equipage with Crash History and Notes [Backend]**

**Content**

As a member of the LARI team, I would like update Equipage.cs to use and store the crash history, etc. in the necessary places.

**Definition of Done**

[ ] Load the backend of the code (UWSDK/UWLARI)

[ ] Add CRUD methods for both crash history and notes

[ ] Include unit tests

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**3100 — Speed Up Fleet Access in Equipage [Backend]**

**Content**

As a member of the LARI team, I would like to update the fleet object on the fly rather than reloading all objects when the get method is called.

**Definition of Done**

[ ] Load the backend of the code (UWSDK/UWLARI)

[ ] Update the fleet object appropriately in every method of the Equipage.cs class

[ ] Include unit tests

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**3101 — Repairing Gary**

**Content**

As a member of the lab, I would like to help repair AFSL Condor, the computer affectionately known as Gary.

**Definition of Done**

[ ] Figure out why Gary will not turn on

[ ] Fix Gary

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**3102 — Multirotor Flight Training – Simulator Time**

**Content**

As a future sUAS pilot, I would like to complete the AFSL required training to become eligible to fly the lab’s multi-rotor aircraft.

**\*\*Flight training must be taken seriously. At some point you could be asked to safely takeoff, fly and land a $10,000 sensor in less than ideal weather, so you need to be ready to meet this challenge whenever it arises\*\***

**Definition of Done**

[x] Before anything else, read the training information located here: **\FlightOperations\Operators\Training\MultiRotorFlightTrainingInformation.docx**

[ ] Discuss reading with Hannah Rotta before moving on.

[ ] Log at least three hours of productive simulator time on PhoenixRC on the computer nearest the door. Please use a multi-rotor model. Additional time may be spent on other airframes, but a minimum three hours on a multi-rotor are required. This includes the following:

[ ] Log at least three hours here in the gray section of this document: **\FlightOperations\Operators\Training\FlightTrainingRecords.xlsx**

            [ ] Practice takeoffs

            [ ] Practice hovering/loitering and other basic maneuvers

            [ ] Practice reverse orientation flying

            [ ] Perform 15 safe landings on a Dead Calm day (weather can be adjusted in the settings)

            [ ] Perform 15 safe landings on a Brisk day

            [ ] Perform 15 safe landings on a Fair Wind day

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**3103 — Repair battery packs**

**Content**

As a member of the lab, I would like to help repair the battery packs that have broken connectors

**Definition of Done**

[ ] Fix all battery connectors that are broken

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**3109 — Setup continuous integration tool (copy)**

**Content**

See user story 2667.

**Definition of Done**

[ ] Complete user story 2667

[ ] Create documentation so that another lab member can continue this

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**3110 — Get Samwise Flight Ready**

**Content**

This will involve making sure there are no lasting effects from when LARAMID was using Samwise. Probably reverting the parameter to an older version and then taking it to a flight test to make sure it is stable. Making sure the airframe structure is solid and secure, wires all secure and away from props. If possible locate the fourth foot. Could have multiple users working on it.

**Definition of Done**

[ ] Airframe is secure

[ ] Aircraft is flight ready

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**3111 — Fix Inspire**

**Content**

This will involve an initial cost analysis of the repairs and replacement parts. Once replacement parts are either purchased of fabricated if need be (i.e. 3D Printing), integrate them into the airframe.

**Definition of Done**

[ ] Airframe is secure

[ ] Aircraft is flight ready

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**3112 — Integrate MicaSense RedEdge into Samwise**

**Content**

This will involve reading the MicaSense Rededge 3 User Manual and Integration Guide located on the MicaSense website. Fabricate a mount that is able to securely and safely hold the camera to the aircraft. If necessary contact Blue Skies Drone Rental (MicaSense retailer in Seattle area) for integrations questions, contact Chris Hayner before you do). If you are feeling especially adventurous then look into mounting the RedEdge on a gimbal. The RedEdge must:

* be able to provide a reasonably quick stream of all five sensors
* the integration must not adversely affect the flying characteristics of the drone

This user story will most likely need more then one user to complete.

**Definition of Done**

[ ] The RedEdge can be successfully mounted on Samwise

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**3113 — Integrate MicaSense RedEdge into the Inspire**

**Content**

This will involve reading the MicaSense Rededge 3 User Manual and Integration Guide located on the MicaSense website. Fabricate a mount that is able to securely and safely hold the camera to the aircraft. If necessary contact Blue Skies Drone Rental (MicaSense retailer in Seattle area) for integrations questions, contact Chris Hayner before you do). If you are feeling especially adventurous then look into mounting the RedEdge on a gimbal. The RedEdge must:

* be able to provide a reasonably quick stream of all five sensors
* the integration must not adversely affect the flying characteristics of the drone

This user story will most likely need more then one user to complete.

**Definition of Done**

[ ] The RedEdge can be successfully mounted on the Inspire

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**3114 — Research into the software to be used to control the Drone during SAL missions**

**Content**

This will involve coordinating with the Chelan County Sheriff’s department to determine their specific needs for the drone. Look for a program that is able to (semi)-autonomously control the drone. This will include but not limited to, flight action control, analyzing a live IR videos feed for warmer objects, utilizing the AGL (above ground level) of the aircraft and the number of pixels taken up by the object to get a rough estimate for the size of the object, create a custom flight path, and the integration of Multi-Functions I/O Ports. If you have any questions on the functionality needs, refer to Chris Hayner. It also must be reasonably user friendly as non tech savvy people will be operating it.

**Definition of Done**

[ ] Several suitable software candidates are selected

[ ] Summary of findings in database

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**3115 — Use Pix4D to analyze data taken off of the RedEdge**

**Content**

This will involve looking at the documentation provided on the Micasense website about using Pix4D in this way and then implementing it with some sample imagery from the camera. Might involve taking sample imagery if none can be found. Ideally should be able to recognize a person.

**Definition of Done:**

[ ] Whether or not Pix4D is able to analyze data from RedEdge

[ ] Small summary of findings in database

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**3116 — Creation of a database of project related material**

**Content**

This will involve creating spreadsheets of relevant UAV specifications:

* Cost of UAV and other support related equipment (chargers, controllers, batteries, computers, software, antenna and WIFI accessories, control station, carrying case, any other relevant equipment)
* Payload Capacity
* Range of Battery
* Range of antenna
* Altitude limit
* Other relevant information

Setup on a shared google drive folder so all members have ease of access. Make a clone on perforce and update regularly (once a week). Also include relevant manuals for Micasense camera and any research related to the project.

**Definition of Done:**

[ ] Existence of a database

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**3117 — Research the FAA Regulations around SAL Drone Missions**

**Content**

This will involve researching the relevant laws and regulations surrounding search and locate missions. One thing to look for in particular is what is needed to obtain a 24/7 emergency permit for BVR (Beyond Visual Range) missions.

**Definition of Done:**

[ ] Summary of findings in database

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**3118 — Planning for SAL Flight Test**

**Content**

Plan for SAL flight test. Involve getting together as a small group and brainstorming locations.

**Definition of Done:**

[ ] Planned for SAL flight test

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**3119 — Review MAPPS project**

**Content**

This will involve finding the MAPSS gimbal used to hold the Micasense and Flir cameras. Also review all the relevant documentation and research, especially there final paper, on the MAPSS tab in Perforce. Determine if and what modifications are needed to use there gimbal for our payload.

**Definition of Done:**

[ ] A short summary of results

[ ] If possible, finding the gimbal

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**3120 — Get FPV working**

**Content**

Get our FPV system up and running for potential flight tests. Investigate integrating and using the Fat Shark along with the Mobius Camera and Gimbal.

**Definition of Done:**

[ ] Fat Shark is up and running

[ ] Mobius is up and running

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**3121 — Creation of CDLT Site Data Spreadsheet**

**Content**

Create a spreadsheet of the different parcels of land that comprise the CDLT. Must include type of air space (see SkyVector), type of terrain (rocky, hilly, grassy, mild brush, trees, etc...), any notable differences in elevation if applicable.

**Definition of Done:**

[ ] Spreadsheet exists

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**3122 — Get Argo Flight Ready**

**Content**

Review and adjust parameters as needed. Integrate compass.

**Definition of Done:**

[ ] Argo is flight ready

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**3123 — Design and Manufacture Radar Mounts**

**Content**

Design and manufacture radar mounts using CAD.

**Definition of Done:**

[ ] Mounts exist

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**3124 — Tuning PixHawk 2**

**Content**

Tune PixHawk 2.

**Definition of Done:**

[ ] Argo is flight ready

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**3126 — Python Development**

**Content**

Development of the Python script for use with SAL missions. Specifically look into sending a livestream of the video into the code and have it analyze it in real time. In addition look into how to analyze thermal imagery from Flir camera. Generate a dataset of imagery from existing SAL flight tests for use with training a model for machine learning.

**Definition of Done:**

[ ] Python Script is able to identify individuals

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**3127 — MATLAB Development**

**Content**

Development of a Machine Learning based MATLAB model for use with SAL missions. Specifically investigate sending a livestream of the video into the code and have it analyze it in real time. In addition find out how to analyze thermal imagery from Flir camera. Flir has documentation for this. Research various datasets to use for training a model.

**Definition of Done:**

[ ] MATLAB model is able to identify individuals

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**3128 — CDLT Presentation**

**Content**

As a member of the Chelan Douglas Land Trust project, I would like to create a slideshow presentation that includes the results of the project as well as information about the procedures of our flight tests and modeling.

**Definition of Done:**

[ ] Presentation contains all information pertinent to the CDLT

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**3129 — Research Pix4D Alternatives**

**Content**

As a member of mapping-related projects, I would like to research alternatives for the Pix4D software, particularly options with faster processing speeds.

**Definition of Done:**

[ ] Spreadsheet provides a side-by-side comparison of available drone mapping software

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**3130 — Make SAL Presentation**

**Content**

As a member of the SAL project, I would like to make a presentation of what a SAL mission will look like.

**Definition of Done:**

[ ] Existence of Presentation

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**3131 — Receive live video feed off of a UAS**

**Content**

As a member of the SAL project, I would like to research and implement a method to get a live video feed off of a UAS (Pixhawk or DJI based) so that the video feed can be used with a real-time machine learning model. Take a look at how they did it in Visual Anchoring with the Mobius cam.

**Definition of Done:**

[ ] Live video from UAS

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**3130 — Install YOLO on lab computer**

**Content**

As a member of the SAL project, I would like to install YOLO on a lab computer (nicest one).

**Definition of Done:**

[ ] Existence of YOLO on computer

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**3131 — Fixing and tuning quadrotor controller for simulation**

**Content**

As a member of the risk assessment team, I will get the controller of the quadrotor able to account for wind and get the controller properly tuned.

**Definition of Done:**

[x] Quadrotor follows flight path in windy condition

[x] Quadrotor controller gains are tuned for performance and minimal transients while turning

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**3132 — Setting up automated simulation infrastructure**

**Content**

As a member of the risk assessment team, I will prepare the simulation to run through multiple failure scenarios automatically

**Definition of Done:**

[x] Creating specific file and scenario to control process

[x] Wind model and failure conditions are set to switch automatically

[x] Simulation runs multiple failure scenarios automatically

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**3133 — Develop saving and visualization infrastructure**

**Content**

As a member of the risk assessment team, I will add saving a visualization functionality to our simulation results

**Definition of Done:**

[x] Histogram data and pictures are saved as .mat files

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**3134 — Final Report and Documentation Rough Draft**

**Content**

As a member of the risk assessment team, I will help finish the rough draft of the risk assessment final report documentation

**Definition of Done:**

[x] Final Report rough draft is done and ready to be sent to Airbus for review and recommendations

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**3135 — High Quality Radio Transmission Product Research**

**Content**

As a member of the SAL team, I will research a transmitter receiver combo that is able to support 4k video as well as thermal imaging over a large area while mounted on a UAS. If you have any questions or run into issues, slack Chris Hayner. Possibly talk with NDCL as they seem to have some good radio set-up’s.

**Definition of Done:**

[ ] A short summary of findings on the Product Research tab in the SAL database

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**3136 — Neural Networks Research**

**Content**

As a member of the SAL team, I will research the best uses for Deep Learning and Neural Networks in integrating an Active Learning functionality into YOLO. In addition I will research the best hardware to use with specifically YOLO, specifically the best GPU’s, whether its beneficial to use multiple GPU’s, and whether it is best to use an AMD or Intel based CPU.

**Definition of Done:**

[ ] A short summary of findings on the Product Research tab in the SAL database

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**3136 — Give MAPSS gimbal Pitch and Yaw Control**

**Content**

As a member of the SAL team, I will integrate manual pitch and yaw control into the MAPSS project.

**Definition of Done:**

[ ] Gimbal is able to pitch and yaw with human input

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**3136 — Integrate RTK GPS system onto ARGO**

**Content**

As a member of the GPR team, I will the Picksi RTK GPS onto ARGO.

**Definition of Done:**

[ ] Picksi is integrated onto ARGO

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**3137 — Initial Research into Integrating Exaustive Search into SAL**

**Content**

As a member of the SAL Team, I would like to begin researching how to integrate Dr. Lum’s Exhaustive Search algorithms into SAL operations. This will involve reading Dr. Lum’s paper on exhaustive search as well as potentially contacting Dr. Lum about it.

**Definition of Done:**

[ ] Summary of Research in Database

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**3137 — Get Mobius Gimbal Up and Running**

**Content**

As a member of the SAL Team, I would like ensure that the Mobius Gimbal is operational and able to be integrated into using with SAL missions.

**Definition of Done:**

[ ] Gimbal is operational

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**3138 — Make or Find a XT90 Charging Cord**

**Content**

As a member of the GPR Team, I would like to make or find a XT90 charging cord to charge the Turnegy Multistar 10000 mAh 6S 22.2V batteries. The cord should be compatible with the Ultrapower UP120AC Duo charger.

**Definition of Done:**

[ ] Existence of Cord

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**3139 — Troubleshoot FPV system**

**Content**

As a member of the SAL team I would like to increase the range of the FPV system. This would involve trouble shooting the interference that was occurring at the 8/10 flight test. A place to start might be to replace the power cords with a thicker gauge wire. Another might be to try to distance the transmitter antenna from the antenna’s of the Phantom 3. This should involve testing with the P3 and different setups with the FPV system.

**Definition of Done:**

[ ] FPV system performs at least as well as it did for visual anchoring or reason for it underperforming

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**3140 — Investigate New Drone Platforms (SAL)**

**Content**

As a member of the SAL team I would like to investigate new multirotor drone platforms. The criteria is that the total cost must be around 1K (frame, motors, esc, etc…)

**Definition of Done:**

[ ] New drone platforms are selected

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**3141 — Investigate New Drone Platforms (GPR)**

**Content**

As a member of the GPR team I would like to investigate new multirotor drone platforms.

**Definition of Done:**

[ ] New drone platforms are selected

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**3142 — Familiarize with the Velodyne PuckLite**

**Content**

As a member of the Geospatial Fires team, I would like to know how to operate the Velodyne Pucklite.

**Definition of Done:**

[ ] I can operate the Velodyne Pucklite

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**3142 — SciTech paper**

**Content**

As a member of the SAL team, I would like to enter the SAL paper into SciTech.

**Definition of Done:**

[ ] Existence of Paper

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**3142 — Investigate External Dataset Manufacturing**

**Content**

As a member of the SAL team, I would like to investigate the use of two of the desktops in David Shean’s lab for training YOLO with a dataset. In addition I wish to investigate the use of UW’s Hyak Supercomputer for training YOLO.

**Definition of Done:**

[ ] Summary in SAL Database

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**3143 — Integrate Velodyne Pucklite onto Argo**

**Content**

As a member of the Mapping team, I would like to reintegrate the Velodyne Pucklite on Argo.

**Definition of Done:**

[ ] Velodyne Pucklite is on Argo

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**3144 — AFSL Waiver Research**

**Content**

As a member of the SAL team, I would to investigate using our existing Night Waiver to fly SAL missions at night. In addition I would like to investigate the prospect of obtaining a BVLOS waiver.

**Definition of Done:**

[ ] Summary of findings in the SAL Database

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**3144 — Computer Vision/ YOLO introduction**

**Content**

As a member of the SAL team, I would to introduce myself to computer vision and YOLO. This will involve understanding the basics of computer vision and perusing the YOLO website (specifically the CSE455 classpage, <https://pjreddie.com/courses/computer-vision/>) as well as reading the papers relevant to YOLO.

**Definition of Done:**

[ ] I understand the basics of computer vision

[ ] I can install and use YOLO on a variety of computers

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**3144 — Thermal Imaging analysis with a Neural Network**

**Content**

As a member of the SAL team, I would to investigate the use of a Neural Network (YOLO) to analysis imagery coming from a FLIR Duo Pro R.

**Definition of Done:**

[ ] A short summary of research on google drive

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**3145 — Location/Fabrication of MAPSS gimbal mount to Argo**

**Content**

As a member of the SAL team, I would to locate the previously used mount for Argo used on the MAPSS project. In the event that I cannot find the gimbal then I will CAD and fabricate (most likely 3D print) a mount.

**Definition of Done:**

[ ] The existence of a working MAPSS mount for Argo

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**3146 — Creation of SAL related documentation for Perforce**

**Content**

As a member of the SAL team, I would to create documentation related to SAL operations to be uploaded onto Perforce.

**Definition of Done:**

[ ] The existence of SAL documentation on Perforce

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**3146 — Research into new tools/lab equipment**

**Content**

As a member of AFSL, I would like to make a list of new tools/lap equipment for the lab.

**Definition of Done:**

[ ] The existence of excel spreadsheet of the tools/equipment list