The DORIS Project

Project Management Assignment

Dylan Boeholt – Flight Test Engineer & Frame Expert

Andre Bonillas – Logistics Chief & Payload Engineer

Connor Davidson – Project Manager

Jeremy Malmo – Fabrication Engineer

Michael Zielinski – Finance Manager & Electronics Engineer

Fall 2024 - Spring 2025

Project Sponsor: Boeing

Instructor/Faculty Advisor: Professors David Willy and James Clarke

Reflection

Project Management - Successes

Last semester, our team achieved several milestones in project management and communication that positively impacted the project's progress. The following list highlights specific actions and strategies that contributed to our success.

- Securing a weekly meeting location in EGR conference room 323 every Tuesday 4:00 PM to 6:00 PM
- Using When2meet, we established a group schedule when different members can meet.
- Established a team group chat to establish a streamway line to communicate.

Project Management - Room for Improvements

While there were many achievements, some areas of our project management and team communication could be refined to enhance efficiency and collaboration. Below is a list of aspects that require improvement moving forward.

- Our team needs to get better at time management, reducing “backloading” assignment course loads.
- Our team has communication methods in place but needs to be more frequent and thorough with communication.

Project Management - Action Items

To address the areas identified for improvement, we have outlined specific action items. These steps are designed to resolve challenges and streamline our project management process for the next semester.

- Establish timelines for future assignments, enabling assignments to be submitted in a timely manner.
- Establish a weekly update system to communicate what each member is currently developing or researching.

Remaining Design Efforts

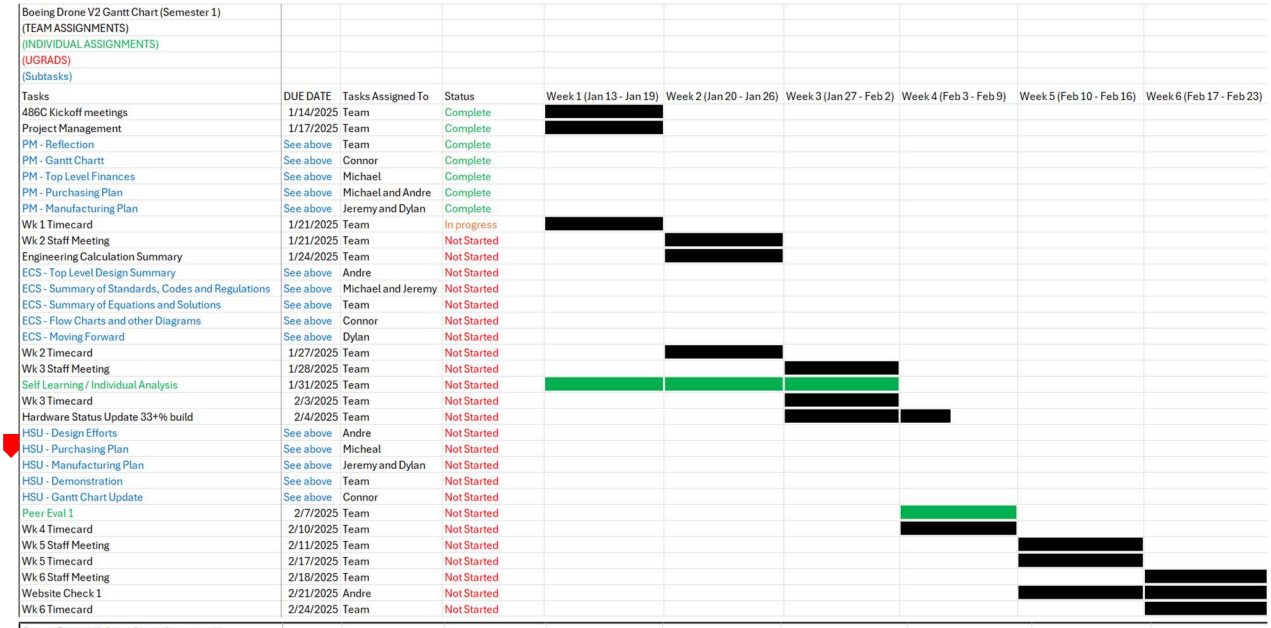
Before moving into the building phase, there are still a few design tasks that need to be finalized. The following list identifies the remaining design efforts critical to the project's success.

- Skeletonized drone frame plates to reduce overall weight.
- Redesign drone motor mounts for added stability for impacts
- Create electronics panel covers to protect power distribution.

- Test and finalize payload detachment system.
- Re-print and evaluate a lighter version of missile payload.

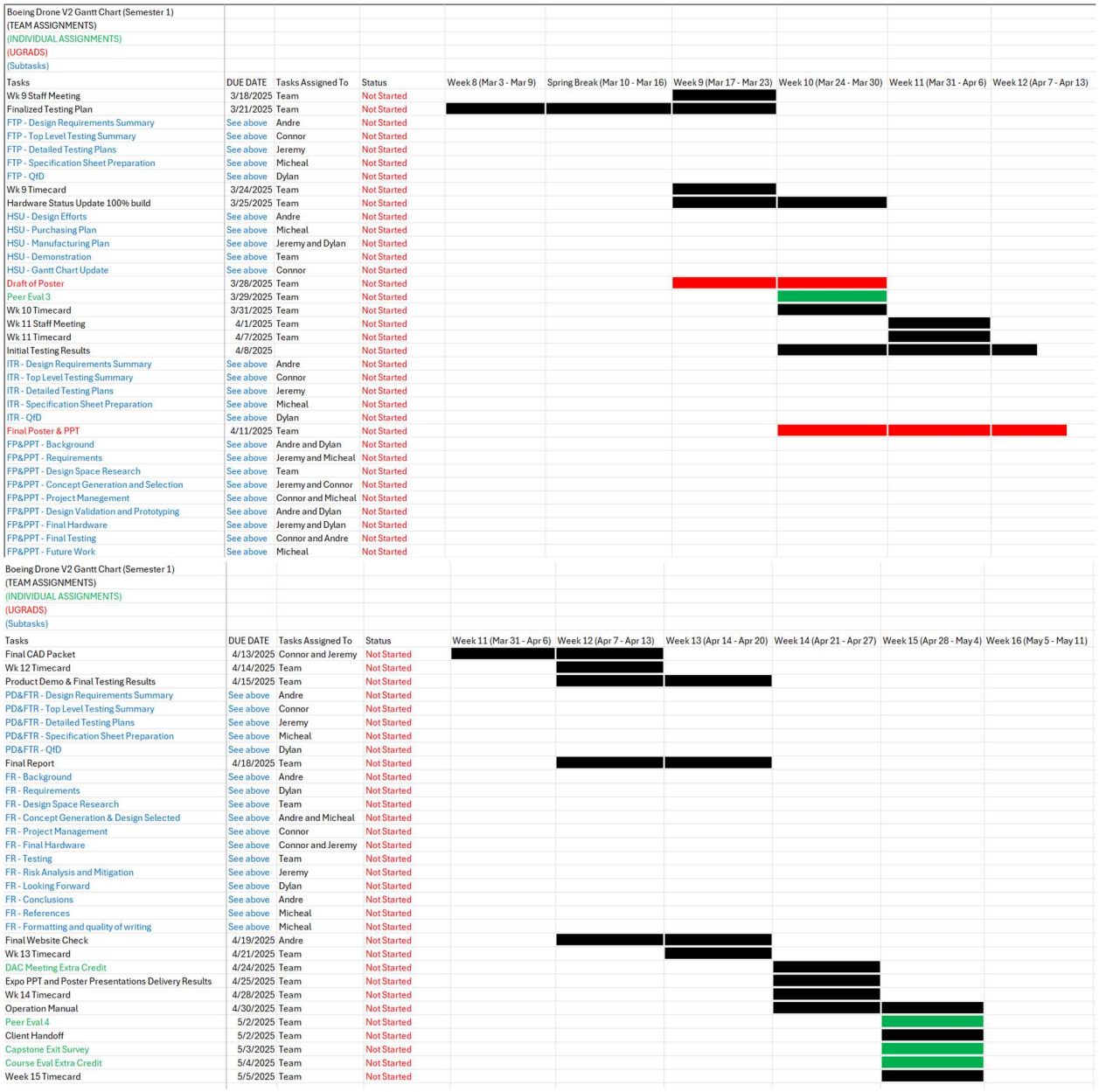
Gantt Chart

Shown below is the Gantt Chart for the entirety of the second semester. The Gantt Chart outlines each assignment, subsections of relevant assignments, due dates, who each task is assigned to, the status of each assignment, and the projected plan of completion by week. Below is also a link to the full Gantt Chart.



Boeing Drone V2 Gantt Chart (Semester 1)									
(TEAM ASSIGNMENTS)									
(INDIVIDUAL ASSIGNMENTS)									
(UGRADS)									
(Subtasks)									
Tasks	DUE DATE	Tasks Assigned To	Status	Week 1 (Jan 13 - Jan 19)	Week 2 (Jan 20 - Jan 26)	Week 3 (Jan 27 - Feb 2)	Week 4 (Feb 3 - Feb 9)	Week 5 (Feb 10 - Feb 16)	Week 6 (Feb 17 - Feb 23)
486C Kickoff meetings	1/14/2025	Team	Complete						
Project Management	1/17/2025	Team	Complete						
PM - Reflection	See above	Team	Complete						
PM - Gantt Chartt	See above	Connor	Complete						
PM - Top Level Finances	See above	Michael	Complete						
PM - Purchasing Plan	See above	Michael and Andre	Complete						
PM - Manufacturing Plan	See above	Jeremy and Dylan	Complete						
Wk 1 Timecard	1/21/2025	Team	In progress						
Wk 2 Staff Meeting	1/21/2025	Team	Not Started						
Engineering Calculation Summary	1/24/2025	Team	Not Started						
ECS - Top Level Design Summary	See above	Andre	Not Started						
ECS - Summary of Standards, Codes and Regulations	See above	Michael and Jeremy	Not Started						
ECS - Summary of Equations and Solutions	See above	Team	Not Started						
ECS - Flow Charts and other Diagrams	See above	Connor	Not Started						
ECS - Moving Forward	See above	Dylan	Not Started						
Wk 2 Timecard	1/27/2025	Team	Not Started						
Wk 3 Staff Meeting	1/28/2025	Team	Not Started						
Self Learning / Individual Analysis	1/31/2025	Team	Not Started						
Wk 3 Timecard	2/3/2025	Team	Not Started						
Hardware Status Update 33+% build	2/4/2025	Team	Not Started						
HSU - Design Efforts	See above	Andre	Not Started						
HSU - Purchasing Plan	See above	Micheal	Not Started						
HSU - Manufacturing Plan	See above	Jeremy and Dylan	Not Started						
HSU - Demonstration	See above	Team	Not Started						
HSU - Gantt Chart Update	See above	Connor	Not Started						
Peer Eval 1	2/7/2025	Team	Not Started						
Wk 4 Timecard	2/10/2025	Team	Not Started						
Wk 5 Staff Meeting	2/11/2025	Team	Not Started						
Wk 5 Timecard	2/17/2025	Team	Not Started						
Wk 6 Staff Meeting	2/18/2025	Team	Not Started						
Website Check 1	2/21/2025	Andre	Not Started						
Wk 6 Timecard	2/24/2025	Team	Not Started						

Boeing Drone V2 Gantt Chart (Semester 1)									
(TEAM ASSIGNMENTS)									
(INDIVIDUAL ASSIGNMENTS)									
(UGRADS)									
(Subtasks)									
Tasks	DUE DATE	Tasks Assigned To	Status	Week 3 (Jan 27 - Feb 2)	Week 4 (Feb 3 - Feb 9)	Week 5 (Feb 10 - Feb 16)	Week 6 (Feb 17 - Feb 23)	Week 7 (Feb 24 - Mar 2)	Week 8 (Mar 3 - Mar 9)
Hardware Status Update 33+% build	2/4/2025	Team	Not Started						
HSU - Design Efforts	See above	Andre	Not Started						
HSU - Purchasing Plan	See above	Micheal	Not Started						
HSU - Manufacturing Plan	See above	Jeremy and Dylan	Not Started						
HSU - Demonstration	See above	Team	Not Started						
HSU - Gantt Chart Update	See above	Connor	Not Started						
Peer Eval 1	2/7/2025	Team	Not Started						
Wk 4 Timecard	2/10/2025	Team	Not Started						
Wk 5 Staff Meeting	2/11/2025	Team	Not Started						
Wk 5 Timecard	2/17/2025	Team	Not Started						
Wk 6 Staff Meeting	2/18/2025	Team	Not Started						
Website Check 1	2/21/2025	Andre	Not Started						
Wk 6 Timecard	2/24/2025	Team	Not Started						
Hardware Status Update 67+% build	2/25/2025	Team	Not Started						
HSU - Design Efforts	See above	Andre	Not Started						
HSU - Purchasing Plan	See above	Micheal	Not Started						
HSU - Manufacturing Plan	See above	Jeremy and Dylan	Not Started						
HSU - Demonstration	See above	Team	Not Started						
HSU - Gantt Chart Update	See above	Connor	Not Started						
Peer Eval 2	2/27/2025	Team	Not Started						
Wk 7 Timecard	3/3/2025	Team	Not Started						
Wk 8 Staff Meeting	3/4/2025	Team	Not Started						
UGRADS Registration	3/6/2025	Connor	Not Started						
Wk 8 Timecard	3/17/2025	Team	Not Started						



Boeing Drone V2 Gantt Chart (Semester 1)									
(TEAM ASSIGNMENTS)									
(INDIVIDUAL ASSIGNMENTS)									
(UGRADS)									
(Subtasks)									
Tasks	DUE DATE	Tasks Assigned To	Status	Week 8 (Mar 3 - Mar 9)	Spring Break (Mar 10 - Mar 16)	Week 9 (Mar 17 - Mar 23)	Week 10 (Mar 24 - Mar 30)	Week 11 (Mar 31 - Apr 6)	Week 12 (Apr 7 - Apr 13)
Wk 9 Staff Meeting	3/18/2025	Team	Not Started						
Finalized Testing Plan	3/21/2025	Team	Not Started						
FTP - Design Requirements Summary	See above	Andre	Not Started						
FTP - Top Level Testing Summary	See above	Connor	Not Started						
FTP - Detailed Testing Plans	See above	Jeremy	Not Started						
FTP - Specification Sheet Preparation	See above	Micheal	Not Started						
FTP - QfD	See above	Dylan	Not Started						
Wk 9 Timecard	3/24/2025	Team	Not Started						
Hardware Status Update 100% build	3/25/2025	Team	Not Started						
HSU - Design Efforts	See above	Andre	Not Started						
HSU - Purchasing Plan	See above	Micheal	Not Started						
HSU - Manufacturing Plan	See above	Jeremy and Dylan	Not Started						
HSU - Demonstration	See above	Team	Not Started						
HSU - Gantt Chart Update	See above	Connor	Not Started						
Draft of Poster	3/28/2025	Team	Not Started						
Peer Eval 3	3/29/2025	Team	Not Started						
Wk 10 Timecard	3/31/2025	Team	Not Started						
Wk 11 Staff Meeting	4/1/2025	Team	Not Started						
Wk 11 Timecard	4/7/2025	Team	Not Started						
Initial Testing Results	4/8/2025		Not Started						
ITR - Design Requirements Summary	See above	Andre	Not Started						
ITR - Top Level Testing Summary	See above	Connor	Not Started						
ITR - Detailed Testing Plans	See above	Jeremy	Not Started						
ITR - Specification Sheet Preparation	See above	Micheal	Not Started						
ITR - QfD	See above	Dylan	Not Started						
Final Poster & PPT	4/11/2025	Team	Not Started						
FP&PPT - Background	See above	Andre and Dylan	Not Started						
FP&PPT - Requirements	See above	Jeremy and Micheal	Not Started						
FP&PPT - Design Space Research	See above	Team	Not Started						
FP&PPT - Concept Generation and Selection	See above	Jeremy and Connor	Not Started						
FP&PPT - Project Manegement	See above	Connor and Micheal	Not Started						
FP&PPT - Design Validation and Prototyping	See above	Andre and Dylan	Not Started						
FP&PPT - Final Hardware	See above	Jeremy and Dylan	Not Started						
FP&PPT - Final Testing	See above	Connor and Andre	Not Started						
FP&PPT - Future Work	See above	Micheal	Not Started						

Boeing Drone V2 Gantt Chart (Semester 1)									
(TEAM ASSIGNMENTS)									
(INDIVIDUAL ASSIGNMENTS)									
(UGRADS)									
(Subtasks)									
Tasks	DUE DATE	Tasks Assigned To	Status	Week 11 (Mar 31 - Apr 6)	Week 12 (Apr 7 - Apr 13)	Week 13 (Apr 14 - Apr 20)	Week 14 (Apr 21 - Apr 27)	Week 15 (Apr 28 - May 4)	Week 16 (May 5 - May 11)
Final CAD Packet	4/13/2025	Connor and Jeremy	Not Started						
Wk 12 Timecard	4/14/2025	Team	Not Started						
Product Demo & Final Testing Results	4/15/2025	Team	Not Started						
PD&FTR - Design Requirements Summary	See above	Andre	Not Started						
PD&FTR - Top Level Testing Summary	See above	Connor	Not Started						
PD&FTR - Detailed Testing Plans	See above	Jeremy	Not Started						
PD&FTR - Specification Sheet Preparation	See above	Micheal	Not Started						
PD&FTR - QfD	See above	Dylan	Not Started						
Final Report	4/18/2025	Team	Not Started						
FR - Background	See above	Andre	Not Started						
FR - Requirements	See above	Dylan	Not Started						
FR - Design Space Research	See above	Team	Not Started						
FR - Concept Generation & Design Selected	See above	Andre and Micheal	Not Started						
FR - Project Management	See above	Connor	Not Started						
FR - Final Hardware	See above	Connor and Jeremy	Not Started						
FR - Testing	See above	Team	Not Started						
FR - Risk Analysis and Mitigation	See above	Jeremy	Not Started						
FR - Looking Forward	See above	Dylan	Not Started						
FR - Conclusions	See above	Andre	Not Started						
FR - References	See above	Micheal	Not Started						
FR - Formatting and quality of writing	See above	Micheal	Not Started						
Final Website Check	4/19/2025	Andre	Not Started						
Wk 13 Timecard	4/21/2025	Team	Not Started						
DAC Meeting Extra Credit	4/24/2025	Team	Not Started						
Expo PPT and Poster Presentations Delivery Results	4/25/2025	Team	Not Started						
Wk 14 Timecard	4/28/2025	Team	Not Started						
Operation Manual	4/30/2025	Team	Not Started						
Peer Eval 4	5/2/2025	Team	Not Started						
Client Handoff	5/2/2025	Team	Not Started						
Capstone Exit Survey	5/3/2025	Team	Not Started						
Course Eval Extra Credit	5/4/2025	Team	Not Started						
Week 15 Timecard	5/5/2025	Team	Not Started						

Link to full Gantt Chart: ME-476C Boeing Drone V2 Gantt Chart.xlsx

Top Level Finances

The below table highlights the status of the budget including fundraising totals (acquired, spent, and left to spend) and the remaining funds from the original $3,000 from Boeing.

Total Budget:	$ 3,717.70	Total Donations:	$ 717.70
Total Expense:	$ 2,155.97	Left in SCE:	$ 1,255.32
Total Remaining:	$ 1,561.73	Left in donations:	$ 306.41

This next table breaks down the current expenses for each major subsystem of the drone and payloads prototype, including the expenses for the motor test stand that was built:

Drone Expense:	$ 1,766.31
Camera Payload Expense:	$ 16.46
Heavy Payload Expense:	$ -
Missile Payload Expense:	$ 293.54
Motor Test Stand Expense:	$ 79.66
Total Expense:	$ 2,155.97

This last table shows the expected upcoming expenses and their impact on the total budget. The expected expenses include a camera, some servos, and higher-strength materials for the drone body plates.

Expected Expenses Total:	$ 815.20
Predicted Total Budget Remaining:	$ 746.53

As of 17 January 2025, the numbers in all above tables are current.

Purchasing Plan

Our purchasing plan includes both items that we have purchased in the first semester as well as items we plan to purchase. The Bill of Materials below shows the items required to construct one unit of the DORIS drone in its current configuration. It is important that we have the BoM so that we can hand off the project to a client and they will be able to source all the parts required. The DORIS project is designed more toward allowing someone to construct their own drone from our files rather than purchase a pre-constructed unit. Because of this, the BoM includes costs for raw materials (i.e. 3D printing filament) and not

per design costs. It also excludes the make/buy column as all bought items are in the below table, and all made items are in the Manufacturing Plan section.

Purchased Item	Primary Vendor	Manufacturer	Lead Time (incl. shipping)	Qty	Cost Per Unit	Total Cost	Part Status
DRONE ONLY					**Total Cost:**	**$ 1,730.91**	
22Ah 6S LiPo Battery	Aliexpress	Tattu	2 weeks	2	$ 240.00	$ 480.00	Partial Install
Flight Controller (Pixhawk 6C)	HolyBro	HolyBro	7-10 business days	1	$ 231.46	$ 231.46	Installed
GPS/Compass (M10, included w/ FC)	HolyBro	HolyBro	7-10 business days	1	$ -	$ -	Installed
Pixhawk Wiring Kit	HolyBro	HolyBro	7-10 business days	1	$ 35.00	$ 35.00	Delivered
6-pin Molex PicoBlade to 6-pin JST-GH wire	3DR	3DR	7-10 business days	1	$ 8.76	$ 8.76	Shipped
XING 4214 660KV Motor	iFlight	iFlight	2 weeks	4	$ 62.75	$ 251.00	Installed
6-channel RC receiver	Any	Any	7-10 business days	1	$ 35.00	$ 35.00	Installed
Power Distribution Module (Sky-Drones SmartAP PDB)	Sky-Drones	Sky-Drones	7-10 business days	1	$ 90.00	$ 90.00	Delivered
Electronic Speed Controller (120A)	Amazon	ApisQueen	7-10 business days	4	$ 30.00	$ 120.00	Installed
RC Controller	Any	Any	7-10 business days	1	$ 50.00	$ 50.00	Installed
Wiring kit (12AWG, 60ft)	Amazon	NAOEVO	3 business days	1	$ 25.00	$ 25.00	Delivered
LiPo Battery Charging Kit	Amazon	SmartCharger	3 business days	1	$ 52.00	$ 52.00	Delivered
Octagonal Carbon Fiber Tubing (500mm, 4pk)	Amazon	ZSJ	2 weeks	2	$ 25.00	$ 50.00	Installed
3D Printing Filament (ABS)	Amazon	Any	3 business days	2	$ 20.00	$ 40.00	In use
3D Printing Filament (PLA)	Amazon	Any	3 business days	1	$ 24.00	$ 24.00	In use
3D Printing Filament (TPU 95A)	Amazon	Any	3 business days	1	$ 26.19	$ 26.19	In use
XT90 Connectors (10pk)	Amazon	Amass	3 business days	1	$ 14.17	$ 14.17	Partial Install
Propellers (16", tri-blade)	HQProp	HQProp	7-10 business days	4	$ 35.68	$ 142.72	Installed
Extreme Fasteners	Home Depot	Scotch	0 days	1	$ 13.03	$ 13.03	Installed
M6 100mm lag bolts	Home Depot	Any	0 days	8	$ 2.63	$ 21.04	Installed
M6 locking nut	Home Depot	Any	0 days	8	$ 0.68	$ 5.44	Installed
MDF Board (1/4" x 2' x 4')	Home Depot	Any	0 days	2	8.05	$ 16.10	Installed
MISSILE PAYLOAD					**Total Cost:**	**$ 300.62**	
Cruise Missile Design Files	AeroJTP	AeroJTP	0 days	1	$ 42.52	$ 42.52	Delivered
3D Printing Filament (LWPLA)	Amazon	PolyMaker	3 business days	2	$ 35.00	$ 70.00	In use
3D Printing Filament (PLA)	Amazon	Any	3 business days	1	$ 24.00	$ 24.00	In use
50pcs M3 12mm hex heads	Aliexpress	Manufacturer U/K	3 weeks	1	$ 5.00	$ 5.00	Delivered
10pcs 150mm extension wires	Aliexpress	Manufacturer U/K	3 weeks	3	$ 5.29	$ 15.87	Installed
1350pcs Set C Black screws	Aliexpress	Manufacturer U/K	3 weeks	1	$ 10.00	$ 10.00	Delivered
3-axis Gyro	Aliexpress	Manufacturer U/K	3 weeks	1	$ 14.26	$ 14.26	Installed
7000KV 30mm motor	Aliexpress	QX-motor	3 weeks	1	$ 23.64	$ 23.64	Installed
2g motor servo	Aliexpress	DSpower	3 weeks	3	$ 6.85	$ 20.54	Installed
2-4S 20A Brushless ESC	Aliexpress	Surpass Hobby	3 weeks	1	$ 25.10	$ 25.10	Installed
1050mAh LiPo Battery	Amazon	Tattu	3 business days	1	$ 29.25	$ 29.25	Installed
Controller/Receiver	Aliexpress	HotRC	3 weeks	1	$ 20.44	$ 20.44	Installed
REGULAR PAYLOADS					**Total Cost:**	**$ 300.00**	
GoPro/similar camera	GoPro	GoPro	7-10 business days	1	$ 220.00	$ 220.00	Not Ordered
Magswitch MagJig Magnet	Amazon	Magswitch	3 business days	2	$ 30.00	$ 60.00	Delivered
3D Printing Filament (ABS)	Amazon	Any	3 business days	1	$ 20.00	$ 20.00	In use
TOTAL OVERALL COST:						**$ 2,331.53**	

Areas Needing More Planning

- Specific hardware: more specific hardware pieces need to be decided upon for the final design (i.e. mounting bolts, nuts, etc.)
    - **Action Item #1: Standardize all hardware (currently all different sizes)**
    - **Action Item #2: Purchase new standardized sizes of hardware**
    - **Action Item #3: Install hardware**

- Links to items: website links to product pages can be provided for ease of use
    - **Action Item #1: Record all links for purchased items in budget/BoM**
- Camera System: investigating & selecting the most optimal camera
    - **Action Item #1: Research potential camera systems (GoPro or similar)**
    - **Action Item #2: Purchase camera**
    - **Action Item #3: Design camera payload holder**
    - **Action Item #4: Manufacture camera payload holder**
    - **Action Item #5: Test camera payload with drone payload system**
    - **Action Item #6: Finalize design and BoM for camera payload**
- Payload actuation: investigating & selecting the most optimal servo actuators (for magnet actuation)
    - **Action Item #1: Research potential servo motor options to utilize as actuators**
    - **Action Item #2: Purchase desired servo motor**
    - **Action Item #3: Design servo/magjig interface**
    - **Action Item #4: Manufacture servo/magjig interface**
    - **Action Item #5: Test interface with RC control**
    - **Action Item #6: Finalize design and installation**

Manufacturing Plan

The manufacturing process for the DORIS drone project is focused on delivering a strong and efficient design that meets the specified payload and performance requirements. This plan outlines the final steps necessary to bring the project to completion. Key tasks include 3D printing the payload missile and drone legs, comparing cost and material properties to make an informed decision for the drone's frame, and procuring laser-cut carbon fiber or fiberglass composite components for the frame to replace the MDF composite board. The plan emphasizes precision, cost-effectiveness, and material optimization to ensure the drone's structural integrity and functionality, while keeping the team organized and efficient. Below is a list of when each part will be printed and put together.

As stated above, the BoM already includes raw materials for purchase, so the sorted BoM here shows $0 for each part.

Manufactured Item	Vendor	Manufacturing Method	Lead Time	Qty	Cost Per Unit	Total Cost	Part Status	Deadline	Printer	Member Responsible	Manufacturing Location
DRONE ONLY					**Total Cost:**	**$ -**					
Outer Arm Mount (TPU)	In-House	3D FDM Printing	4 hours	8	$ -	$ -	Installed	-	-	-	-
Motor Mount (TPU & ABS)	In-House	3D FDM Printing	2 hours	4	$ -	$ -	Installed	-	-	-	-
Drone Legs (TPU)	In-House	3D FDM Printing	4 hours	4	$ -	$ -	Not Printed	2/4/2025	Qudi Tech	Jeremy	Personal Residence
Body Plates (MDF)	In-House	Jigsaw cutting	1 hour	2	$ -	$ -	Installed	-	-	-	-
MISSILE PAYLOAD	**** Parts can be combined on build plate for shorter lead times ****				**Total Cost:**	**$ -**					
PLA - Cable Clip	In-House	3D FDM Printing	0.25 hours	1	$ -	$ -	Printed	2/4/2025	-	Jeremy	Personal Residence
PLA - Battery cover tab	In-House	3D FDM Printing	0.25 hours	1	$ -	$ -	Installed	-	-	-	-
PLA - Fork release	In-House	3D FDM Printing	0.25 hours	2	$ -	$ -	Printed	2/4/2025	-	Jeremy	Personal Residence
PLA - Hanger Loop	In-House	3D FDM Printing	0.25 hours	2	$ -	$ -	Not Printed	2/25/2025	Bambu Lab A1	Michael	Personal Residence
PLA - Rubber Band Hooks	In-House	3D FDM Printing	0.25 hours	1	$ -	$ -	Not Printed	2/25/2025	Bambu Lab A1	Michael	Personal Residence
PLA - Rubber Band Mount Block	In-House	3D FDM Printing	0.25 hours	1	$ -	$ -	Not Printed	2/25/2025	Bambu Lab A1	Michael	Personal Residence
PLA - Wing Hinge Pin	In-House	3D FDM Printing	0.25 hours	2	$ -	$ -	Printed	2/4/2025	-	Jeremy	Personal Residence
PLA - Wing Release Plug	In-House	3D FDM Printing	0.25 hours	1	$ -	$ -	Not Printed	2/25/2025	Bambu Lab A1	Michael	Personal Residence
LWPLA - Battery cover	In-House	3D FDM Printing	2 hours	1	$ -	$ -	Printed	2/4/2025	-	Jeremy	Personal Residence
LWPLA - Elevon PORT	In-House	3D FDM Printing	0.5 hours	1	$ -	$ -	Not Printed	2/25/2025	Ender 3 V3	Michael	Personal Residence
LWPLA - Elevon STB	In-House	3D FDM Printing	0.5 hours	1	$ -	$ -	Not Printed	2/25/2025	Ender 3 V3	Michael	Personal Residence
LWPLA - Fuse 1 Battery Stop	In-House	3D FDM Printing	0.5 hours	1	$ -	$ -	Printed	2/4/2025	-	Jeremy	Personal Residence
LWPLA - Fuse 1	In-House	3D FDM Printing	5 hours	1	$ -	$ -	Not Printed	3/25/2025	Ender 3 V3	Michael	Personal Residence
LWPLA - Fuse 2	In-House	3D FDM Printing	5 hours	1	$ -	$ -	Not Printed	3/25/2025	Ender 3 V3	Michael	Personal Residence
LWPLA - Fuse 3 TOP	In-House	3D FDM Printing	3.5 hours	1	$ -	$ -	Not Printed	3/25/2025	Ender 3 V3	Michael	Personal Residence
LWPLA - Fuse 3	In-House	3D FDM Printing	4 hours	1	$ -	$ -	Not Printed	3/25/2025	Ender 3 V3	Michael	Personal Residence
LWPLA - Fuse 4 TOP	In-House	3D FDM Printing	3 hours	1	$ -	$ -	Not Printed	3/25/2025	Ender 3 V3	Connor	Personal Residence
LWPLA - Fuse 4	In-House	3D FDM Printing	4 hours	1	$ -	$ -	Not Printed	3/25/2025	Ender 3 V3	Connor	Personal Residence
LWPLA - Fuselage Pylon	In-House	3D FDM Printing	0.5 hours	1	$ -	$ -	Not Printed	3/25/2025	Ender 3 V3	Connor	Personal Residence
LWPLA - Lower Stab	In-House	3D FDM Printing	0.5 hours	1	$ -	$ -	Not Printed	2/25/2025	Ender 3 V3	Connor	Personal Residence
LWPLA - Nozzle Ring	In-House	3D FDM Printing	0.5 hours	1	$ -	$ -	Not Printed	2/25/2025	Ender 3 V3	Connor	Personal Residence
LWPLA - Upper Stab PORT	In-House	3D FDM Printing	0.5 hours	1	$ -	$ -	Not Printed	2/25/2025	Ender 3 V3	Connor	Personal Residence
LWPLA - Upper Stab STB	In-House	3D FDM Printing	0.5 hours	1	$ -	$ -	Not Printed	2/25/2025	Ender 3 V3	Connor	Personal Residence
LWPLA - Wing PORT	In-House	3D FDM Printing	6 hours	1	$ -	$ -	Not Printed	2/25/2025	Ender 3 V3	Connor	Personal Residence
LWPLA - Wing STB	In-House	3D FDM Printing	6 hours	1	$ -	$ -	Not Printed	2/25/2025	Ender 3 V3	Connor	Personal Residence
REGULAR PAYLOADS					**Total Cost:**	**$ -**					
Magswitch Attachment Plate (ABS)	In-House	3D FDM Printing	2 hours	1	$ -	$ -	Printed	2/4/2025	-	Jeremy	Personal Residence
TOTAL OVERALL COST:						**$ -**					

Areas Needing More Planning

- Printing settings: the settings for each of the different kinds of filaments on the printers used need to be recorded for the client.
    - **Action Item #1: LWPLA settings on Ender 3 V3 KE and Bambu Labs A1**
    - **Action Item #2: ABS settings on QUDI Tech 1**
    - **Action Item #3: TPU settings on QUDI Tech 1**
- Printing time: more specific printing times at the recommended settings can be recorded
    - **Action Item #1: LWPLA print times on Ender 3 V3 KE and Bambu Labs A1**
    - **Action Item #2: ABS print times on QUDI Tech 1**
    - **Action Item #3: TPU print times on QUDI Tech 1**