UNIVERSITY of TASMANIA

Assignment 2 Planning Report
Fast Rescue Boat (FRB) Partial Mission Simulator

KIT301 ICT Project A

FAST RESCUE BOAT (FRB) OPERATOR'S COURSE (AMCS, 2024)

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Executive Summary

This planning report outlines the development of a Partial Mission Simulator for Fast Rescue Boat (FRB) operators.The primary objective is to provide realistic training scenarios under different weather/water conditions for both trainee and certified FRB operators, enhancing skill retention and to give FRB operators the chance to train in and experience weather conditions that they might not have had the chance to experience at the AMC Beauty Point campus. The End Users encompass various roles from FRB trainees to AMC technical support staff each with distinct needs and interactions from the simulator.

System Users:

- **Trainee FRB operators:** Require user-friendly interface, realistic scenarios, and structured learning paths.
- **Certified FRB operators:** Require advanced scenarios for skill maintenance and new technique learning.
- **AMC Staff:** Require control over scenarios for teaching objectives and effective performance monitoring.
- **Technical Support Staff:** Require back-end access, detailed documentation, and quick issue resolution.

System Requirements:

The simulator must meet a diverse set of requirements which is broken down into:

- **Functional Requirements:** Include high graphical fidelity, realistic ocean and weather simulation, simulated FRB controls, and multiple mission scenarios.
- **Non-functional Requirements:** Encompass stability, reliability, modularity, intuitive user interface and the ability for expansion.

Project Schedule:

The project schedule has been broken down into 4 cycles each with their own objectives those cycles are:

- **Pre-Agile Cycle:** This involves groundwork such as setting up communication protocols, establishing version control, and preparing documentation.
- **Agile Cycle I:** Focuses on initial development, prototype creation, and testing, with roles distributed among team members.
- **Agile Cycle II:** Enhances functionality and expands features based on client feedback, with continued testing and quality control.
- **Agile Cycle III:** Finalizes development, conducts comprehensive testing, compiles documentation, and performs project review.

Risk analysis:

Major risks in the development of the Partial Mission Simulator for Fast Rescue Boat (FRB) operators include:

- **Technical Compatibility Issues:** Compatibility issues between different software components, such as Unity version, simulator controls, and operating systems, may hinder integration and functionality. Which could lead to Delays in development, compromised system functionality, and potential rework.
  We plan to mitigate this risk by conducting thorough compatibility testing, maintaining clear communication with stakeholders regarding software requirements, and implementing contingency plans for compatibility challenges.

- **Realism and effectiveness of the simulation:** Inaccurate simulation of boat handling physics and unrealistic scenarios may undermine the effectiveness of training, leading to suboptimal learning outcomes. Which would lead to Reduced user engagement, ineffective training sessions, and diminished training effectiveness. This will be mitigated by Collaborating closely with maritime experts to ensure accurate simulation of boat physics, conducting extensive testing with FRB operators to validate realism, and by iterating based on feedback received.

- **User Acceptance and Feedback Incorporation:** Misalignment between user expectations and the delivered solution, as well as challenges in incorporating user feedback effectively, may result in a solution that does not fully meet user needs. We will be mitigating this by engaging the client early and regularly throughout the development process, gathering comprehensive user requirements, and by iterating based on continuous user feedback.

Conclusion:

The planning report identifies the key objectives, system users, requirements, project schedule and risks for the development of the Partial Mission Simulator. Next steps involve executing the development cycles while actively mitigating identified risks to ensure project success.

Introduction

In the challenging realm of maritime rescue operations, the proficiency and preparedness of Fast Rescue Boat (FRB) operators is paramount. As the demand for highly skilled personnel in this field continues to grow, the need for effective training solutions becomes increasingly evident. AMC Search realised that the current training they are providing sometimes isn't the best could be provided as weather and sea conditions are outside of their control, It is within this context that our project, the development of a Partial Mission Simulator for FRB operators takes shape.

This planning report serves as a blueprint for the creation of a comprehensive training tool designed to enhance the skills and readiness of both trainee and certified FRB operators. Our objective is to provide a realistic and immersive training experience that replicates diverse weather and water conditions. By doing so, we aim to address the challenges faced by FRB operators, such as limited exposure to certain environmental scenarios, while also facilitating skill retention and competency development.

Through collaborative efforts and planning, we envision a simulator that not only meets the diverse needs of FRB operators but also excels in realism, functionality, and usability. This report outlines the key stakeholders, system requirements, project schedule, and risk analysis, laying the groundwork for a successful development journey towards delivering a cutting-edge training solution for present and future FRB operators.

System Users

End Users

Trainee FRB operators

- **Characteristics**
  This group consists of individuals undergoing training to become certified FRB operators. They likely have varying experience levels with maritime operations, from novices to those with some experience in similar environments but not specifically with FRB operations.
- **Needs**
  Trainee operators need a user-friendly, intuitive interface that requires minimal technical expertise to navigate. The simulator must provide realistic scenarios that cover a wide range of situations, from basic to advanced rescue operations, allowing for a gradual increase in difficulty to match their growing skill set.
- **Interaction with System**
  The training simulator should offer structured learning paths, feedback mechanisms to assess performance, and the ability to practise scenarios repeatedly to improve proficiency.

Certified FRB Operators

- **Characteristics**
  These users are experienced and have already obtained their certification for FRB operations. They want to maintain their skills, learn new techniques, or prepare for specific, challenging rescue scenarios.
- **Needs**
  Certified operators require access to advanced, highly realistic scenarios to test their skills under varied and challenging conditions. They also benefit from features that allow them to practise specific manoeuvres or procedures in detail.
- **Interaction with System**
  The system should provide options for customising scenarios, including environmental and emergencies, to enable targeted practice. Feedback and performance tracking are crucial for identifying areas for further improvement.

AMC Staff

Teachers and Trainers

- **Characteristics**
  This group includes AMC staff responsible for training FRB operators. They have a solid maritime operations and education background but may be varying degrees familiar with digital simulation tools.
- **Needs**
  Teachers and trainers must easily set up and customise the simulation environment to suit teaching objectives, including adjusting difficulty levels and environmental conditions. They require detailed control over the scenarios to focus on particular teaching points and the ability to monitor and assess trainee performance effectively.
- **Interaction with System**
  The simulator must include an instructor interface that allows scenario customisation without the need for deep technical knowledge of the underlying software. Readable documentation and instructor-led tutorials on using the simulator are essential to enable them to leverage the tool fully in their teaching.

Technical Support Staff

- **Characteristics**
  Technical support staff may be involved in maintaining and troubleshooting the simulator. This group has a good understanding of the technical aspects of the system, possibly including software like Unity. Still, they primarily focus on ensuring the system runs smoothly for users.
- **Needs**
  Easy access to diagnostic tools, clear and detailed technical documentation, and the ability to adjust the software or hardware quickly. They may also need tools to monitor system performance and usage.
- **Interaction with System**
  Technical support staff requires back-end access to the system, detailed logs, and a clear framework for troubleshooting and resolving issues. Their interaction is more focused on the technical maintenance and less on the educational content of the simulations.

System Requirements

Fast Rescue Boat Partial Mission Simulator RTM:

Legend:

- NFR= Non Functional Requirement.
- FR= Functional Requirement.
- NTH= Nice To Have.

Entry #	Requirement ID #	Requirement	Type	Linked Requirements
1	01	The Partial Mission Simulator will be developed using Unity and C++.	NFR	-
2	01.1	The Simulator will maintain high graphical fidelity and accurate physics modelling to provide a realistic training environment.	NFR	01
3	01.2	The simulator code will be written with modularity in mind so it can be worked on and added to in the future.	NFR	-
4	01.3	The simulator must be Stable and reliable under various operational conditions, minimising crashes or bugs to avoid disrupting training sessions.	NFR	-
5	02	The Partial Mission Simulator will be developed using a shared file repository supplied by AMC Search so after development the handover can be seamless.	NFR	-
6	03	The Partial Mission Simulator must operate on AMC's computers which primarily run on the Windows OS.	NFR	-
7	04	The Simulator must have a user-friendly user interface shown upon startup.	FR	-
8	04.1	The user interface will allow easy navigation of simulator functions, including scenario selection and	FR	04,

		environmental condition adjustments.		
9	04.2	The user interface allows setting changes to control things like boat motor volume and water ambiance volume.	NTH	04,
10	05	The simulator will simulate ocean conditions.	NFR	-
11	05.1	The Ocean conditions can be changed via the user interface ranging from flat calm water to rough seas.	FR	04, 05
12	05.2	The simulator will change weather along with the ocean conditions.	NTH	05, 05.1
13	06	The simulator will simulate a realistic outboard motor FRB.	FR	-
14	06.1	The simulated FRB will use knots to indicate speed on a speedometer.	FR	06
15	06.2	The simulated FRB will have a compass showing degrees.	FR	06
16	06.3	The simulated FRB will be affected by the weather conditions selected.	FR	05, 06
17	06.4	The simulated FRB will be controllable with the physical simulator controls (steering wheel and throttle) (See Appendix B).	FR	06
18	06.5	The simulator could also simulate a realistic Jet-propelled FRB selectable via the user interface.	NTH	04, 06
19	07	The Simulator will have multiple Mission Scenarios which are selected from the user interface.	NFR	04
20	07.1	The Simulator will simulate a Man Overboard training exercise, involving a rescue target.	FR	07

21	07.1.1	The Man Overboard Exercise will follow how the mission is conducted in a real-world scenario.	NFR	07.1
22	07.1.2	The Man Overboard exercise will be considered a failure if the FRB collides with the rescue target.	FR	07.1
23	07.1.3	The Man Overboard exercise will be considered successful if the target is safely rescued.	FR	07.1
24	07.2	The simulator will simulate a Pacing training exercise.	FR	07
25	07.2.1	The Pacing exercise will simulate real world pacing featuring a larger vessel and the FRB.	NFR	07.2
26	07.2.2	The larger vessel will have positive and negative attraction zones replicating a real vessel.	FR	07.2
27	07.2.3	The exercise will be considered a failure if the FRB fails to approach the larger vessel correctly according to the training manual.	FR	07.2
28	07.2.4	The painter cable and the lifting hook will attach when the FRB is in the correct position signifying a successful exercise	FR	07.2, 07.2.2
29	07.3	The simulator will simulate other training exercises.	NTH	07

Project Schedule:

The project timeline is articulated using Gantt charts, which depict the progression of tasks, key milestones and deliverables across three agile development cycles. The charts function as a tool to visually communicate tasks' sequence, duration and overlap while clarifying roles and responsibilities. Detailed Road Maps and Gantt chart in the appendix provide an in-depth view of each cycle, showcasing dependencies and tracking progression to ensure the project adheres to a logical and timely execution path.

Pre-Cycle: Initial Framework

The pre-cycle phases detail the groundwork before the active development phases. Activities during this phase include setting up initial communication protocols, establishing version control with GitHub, selecting a project management application, conducting preliminary wave engine research and preparing the initial documentation necessary to commence the agile cycles.

Cycle I: Initial Development & Prototype

In our project structure, while individual team members are assigned to lead specific tasks, it is crucial to note the collaborative spirit that underpins our workflow. Our small team dynamic allows for flexibility and cross-functional support, ensuring that each task benefits from the group's collective expertise. Below are the primary responsibilities, with the understanding that these are focal points within a broader team effort:

Interfaces:

Lead Team Member(s): Winston Stuart is responsible for designing and developing the user interface, ensuring it is intuitive for users with varying levels of expertise.

Functionality

Lead Team Member(s): Iurii Terentev is tasked with developing the core simulation mechanics that underpin the realistic boat's movement within the dynamic ocean environment. In addition, Iurii is also tasked with ensuring that the simulator is able to take input from physical simulator controls.

Testing and QC

Lead Team Member(s): Zac Partridge and Sebastian Brain lead the initial quality control and testing processes, conducting thorough evaluations to affirm that the simulation behaves as expected.

Team Synergy

The strength of our team lies not just in individual capabilities but in our collective action. Each lead has the autonomy to drive their task forward, but the teamwork, the shared brainstorming sessions, and the mutual support truly propel our project toward its goals. This collaborative approach ensures that we maintain a high standard of accountability and focus while fostering a supportive environment responsive to the project's dynamic needs.

Cycle II: Enhancement & Expansion

Functionality

Lead Team Member(s): Iurii Terentev is at the forefront of incorporating advanced simulation features and complex rescue scenarios, such as ‘Man Overboard’. His primary role involves the technical development of these features. However, the implementation is a concerted effort, with all team members contributing to the ideation and problem-solving process, ensuring the expanded features are robust and educationally valuable.

Testing and QC

Lead Team Member(s): Zac Partridge continues to lead the testing and quality control efforts, meticulously evaluating new features and improvements. Sebastian Brain provides essential support, organising feedback sessions and coordinating team contributions to the testing process. Together, they ensure that continuous feedback integration strengthens the product's quality.

Client Feedback

Lead Team Member(s): Sebastian Brain and Winston Stuart manage gathering and integrating client feedback. This role involves communication and negotiation to align project outcomes with client expectations. The entire team is supportive in adapting to feedback, ensuring client insights are translated into actionable development tasks.

Cycle III: Finalization & Delivery

Testing and QC

Team Effort: As we approach the final stages of the project, testing and quality control become a collaborative endeavour involving the entire core team. Zac Partridge and Sebastian Brain, who have led previous testing phases, will orchestrate this comprehensive testing effort, but all team members will perform thorough checks to ensure every aspect of the simulator meets the highest standards. Additionally, considering the importance of this phase, we may engage external testers to provide unbiased feedback, ensuring our product's quality from a new perspective.

Documentation/How to Use

Lead Team Member(s): Zac Partridge and Iurii Terentev are responsible for compiling all the documentation necessary for end-users to understand and effectively utilise the simulator. Their combined efforts in clearly articulating the usage instructions, troubleshooting guides, and best practices are essential for ensuring user accessibility and satisfaction.

Review

Lead Team Member(s): Sebastian Brain and Winston Stuart will co-lead the project's final review. They will be tasked with critically assessing every project component, ensuring that all objectives have been achieved and that client feedback has been fully addressed. This review will also involve a reflective assessment of the project process, identifying key learnings and areas for future improvement.

Risk analysis

Incompatible Unity version with the client:

Likeliness: Low Effect: Low to moderate
Summary:
There is a possibility that the team and the client are using different versions of unity and so the client will not be able to open the project and make changes to it. There are two ways of dealing with this issue. The easiest way is to have the client install the version of unity that the project is using. This would be easy and painless as all versions of unity are available online for free and don't require special equipment. However, it could also be the case that the client, for whatever reason, requires the project to be opened in a specific version of unity. In that case the unity project will have to be converted into the version the client needs. Unity does provide tools to automatically do that but they are not guaranteed to work and the success will depend on the specific version. If the version required is newer than the version used, the transition should be simple enough with only minor patching up required. If the version required is considerably older than the version used, some things may not transfer well at all and it would take some time to get the system where it needs to be. It is likely there would be resources to help with whatever issues occur but solutions are likely to be incomplete and very rigorous testing will be required to confirm no errors go unnoticed.
The decided solution:
Clarify with the client which version of unity is preferred (if any), transferring responsibility of selecting the appropriate range of versions to the client.

Unrealistic boat handling, weather, and water physics:

Likeliness: Moderate to high Effect: Low to moderate
Summary:
As the application is a simulation and will strive to be the most realistic it can be. However, it cannot be as realistic as the real training would be, no matter how much effort is put into it. It is useful for the solution to divide the problem into two degrees: completely unrealistic and cannot be handled by real sailors, and mostly realistic even though some things feel off. The former would have a moderate effect on the project. It would not stop the project from being complete but it would lower the product's effectiveness significantly. The latter would have a low effect on the project.
The decided solution:
It is decided to accept the risk of the project not being completely accurate to real life but to put most of the team's efforts into mitigating the risk as much as possible. Strategies to mitigate the risk would include testing the product both within the team and outside as well as comparing the product to real life footage as often as possible. It is also decided to have a QA duty separate from error testing that would ensure that the simulation is reasonably realistic.

Incompatible Simulator controls:

Likeliness: Low Effect: High
Summary:
It is possible for the program to not be able to make sense of the controllers used by the client. Those being the boat helm controls. If the team is not able to adapt the unity project to those controls, the project’s mission will not be achieved.
After doing some research and communicating with the client it was found out that the boat helm controls that will be used are really well handled by the Windows operating system and are automatically converted to input axes. However, two of the inputs overlap the same axis.
The decided solution:
Hooking up the controls to unity is decided to be the highest priority for the lead interfacer and the first task on the list. The lead interfacer indicated confidence in our ability to make it work. With the amount of time and resources available it is unreasonable to assume that this one task cannot be done. Once the inputs are hooked up to the simulation, the simulation will often be run using the intended controls to make sure any changes made to the program do not interfere with the controls.

Loss of files:

Likeliness: Moderate to high Effect: High
Summary:
Project files can be lost or corrupted quite easily. It is a risk all projects taking place in virtual space have to face and take seriously.
The decided solution:
Using GitHub for version control as well as saving the current best version to a hard drive weekly.

Inability to test:

Likeliness: Moderate Effect: Moderate
Summary:
There is a risk of the team not receiving the opportunity to test the app with the intended controls often enough. The client did indicate that the team will be given opportunities to test the app but it is not clear exactly how often.
The decided solution:
The team will develop the simulation that can be tested both with keyboard and mouse, and boat helm controls. The team will seize all opportunities to test the app with the intended controls.

Loss of one or more team members:

Likeliness: Low Effect: Moderate

Summary:

There is a risk of the team losing one or more team members. As of currently none of the team members intend on leaving the team, however, if a team member does leave, it could be difficult to fill in the holes they left behind.

The decided solution:

Documentation is the primary solution to mitigate the risk. Thorough but concise documentation will allow remaining team members to fill in the holes relatively easily.

Unexpected changes in the requirements:

Likeliness: High Effect: Moderate

Summary:

Most if not all IT projects go through a lot of requirement changes throughout their lifetimes. This project is in a slightly better position than most since it is a simulation and the underlying FRB rescue operations that the project is trying to simulate are unlikely to change, however, changes to scope, how operations are laid out, and changes according to feedback are to be expected.

The decided solution:

Iterative and interpretive development throughout the agile cycles as well focus on producing code that prioritises modularity and flexibility. Object diagrams will be made, updated, and peer reviewed continuously throughout the project.

Conclusion

The planning phase of our project has provided a roadmap for the development of a Fast Rescue Boat (FRB) Partial Mission Simulator. By identifying the system users, presenting system requirements, establishing a project schedule, and conducting a thorough risk analysis, we have set the stage for a focused and strategic first agile cycle.

Moving forward, our team is ready to embark on the agile development cycles with a clear understanding of our objectives and responsibilities. Through effective communication, collaboration, and diligent effort, we are committed to delivering a high-quality partial mission simulator that meets the needs of seasoned and trainee FRB operators and hopefully exceeds the expectations of AMC Search.

As we move through the development process, we remain vigilant in our risk management efforts, continuously monitor, and mitigate potential challenges that may arise. With a shared dedication to providing an excellent and innovative solution, we are confident in our ability to successfully deliver a Partial Mission Simulator that serves as a cornerstone for a more comprehensive FRB operator training.

In principle, our project represents a convergence of technology, expertise, and passion aimed at enhancing the safety and effectiveness of FRB operations. We look forward to the journey ahead and the opportunity to possibly make a meaningful impact in the maritime rescue community.

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Appendices

(Include any supplementary materials that support your report, such as detailed Gantt charts, additional risk analysis documentation, or technical specifications.)

Appendix A: Agile Cycle Graphs and Detailed Gantt Chart

Pre-Cycle

Agile - Roadmap

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Pre-Cycle

Name	Subitems	Owner	Description	Priority	Scope defined?	Timeline - Start	Timeline - End	Initiative status
Client Email Draft		Sebastian Brain	Sebastian to draft and send email to client organising meeting	High	Yes	2024-03-05	2024-03-12	Done
GitHub Setup		wgstuart@utas.edu.au	Winston to create and configure GitHub to provide version control for project	High	Yes	2024-03-05	2024-03-12	Done
Project Management App Selection		Zac Partridge	Zac to research and select platform to aid in the managing of the project	High	Yes	2024-03-05	2024-03-12	Done
Wave Engine Research		Yurii Terentev	ɔok into ocean wave patterns, as well as how to emulate said patterns in unity	High	Yes	2024-03-12	2024-03-24	Done
INITIATION REPORT + SELF AND PEER REVIEW		Zac Partridge, Yurii Terentev, Sebastian Brain, wgstuart@utas	Need to do report	High	Yes	2024-03-12	2024-03-14	Done
Unity Project Creation		Zac Partridge, wgstuart@utas.edu.au	Need to create unity project, preferably prior to start of Agile Cycle 1	Medium	Yes	2024-03-12	2024-03-19	Done
						2024-03-05	**2024-03-24**	

Cycle 1

Agile - Roadmap

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Cycle I: Initial Development & Prototype

Name	Subitems	Owner	Description	Priority	Scope defined?	Timeline - Start	Timeline - End	Initiative status
Task 1 :Basic Boat Moment and Ocean Setup	ıplement boat physics and controls, 1.2 Test boat movement in static water			High	Yes	2024-04-15	2024-04-29	Not Started
Subitems	Name	Owner	Dependency	Status	Date - Start	Date - End	Description	People
	1.1 Implement boat physics and controls	Yurii Terentev			2024-04-15	2024-04-22	le the physics engine for boat movement, including acceleration, turning, and stopping.	
	1.2 Test boat movement in static water	Zac Partridge	1.1 Implement boat physics and controls		2024-04-22	2024-04-29	'est how the boat moves in calm water, report any physics glitches or control issues.	
Task 2: Ocean Environment Setup	ıtegrate ocean rendering system, 2.2 Implement dynamic ocean conditions			High	Yes	2024-04-15	2024-04-29	Not Started
Subitems	Name	Owner	Dependency	Status	Date - Start	Date - End	Description	People
	2.1 Integrate ocean rendering system	ıuart@utas.edu.au, Sebastian Brain			2024-04-15	2024-04-22	ıe visual aspect of the ocean environment using rendering tools for realistic water graphics.	
	2.2 Implement dynamic ocean conditions	ıuart@utas.edu.au, Sebastian E	2.1 Integrate ocean rendering system		2024-04-22	2024-04-29	d dynamic behaviour to the ocean, such as waves and tides, that affects boat physics.	
Task 3: Basic Interface Development	3.1 Design interface layout, 3.2 Implement interface controls			High	Yes	2024-04-29	2024-05-13	Not Started
Subitems	Name	Owner	Dependency	Status	Date - Start	Date - End	Description	People
	3.1 Design interface layout	stuart@utas.edu.au, Yurii Terentev			2024-04-29	2024-05-06	ɾeate the initial design of the user interface, focusing on layout and user experience.	
	3.2 Implement interface controls	stuart@utas.edu.au, Yurii Terer	3.1 Design interface layout		2024-05-06	2024-05-13	Develop the controls that will be used by trainees to interact with the simulation.	
Task 4: Initial Boat and Ocean Testing	4.1 Test boat and ocean interaction, 4.2 Collect feedback and iterate			Medium	Yes	2024-05-13	2024-05-27	Not Started
Subitems	Name	Owner	Dependency	Status	Date - Start	Date - End	Description	People
	4.1 Test boat and ocean interaction	Sebastian Brain, Zac Partridge	st boat movement in static water, 2.2 Implement dynamic ocean conditions		2024-05-13	2024-05-20	duct tests to ensure the boat interacts with the dynamic ocean environment accurately.	
	4.2 Collect feedback and iterate	Sebastian Brain, Zac Partridge	4.1 Test boat and ocean interaction		2024-05-20	2024-05-27	her feedback from tests and work with developers to refine boat and ocean interaction.	
						2024-04-15	**2024-05-27**	

Cycle 2

Agile - Roadmap

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Cycle II: Enhancement & Expansion

Name	Subitems	Owner	Description	Priority	Scope defined?	Timeline - Start	Timeline - End	Initiative status
Task 5: Advanced Feature Integration	dvanced weather system integration, 5.2 Implementing 'Man Overboard' scenario			High	Yes	2024-07-22	2024-08-12	Not Started
Subitems	Name	Owner	Dependency	Status	Date - Start	Date - End	Description	People
	5.1 Advanced weather system integration	Yurii Terentev	4.2 Collect feedback and iterate		2024-07-22	2024-08-05	ɜ weather effects such as rain, fog, and varying wind speeds into the simulation.	
	5.2 Implementing 'Man Overboard' scenario	Yurii Terentev	5.1 Advanced weather system integration		2024-07-29	2024-08-12	ıe 'Man Overboard' scenario, programming the detection and rescue mechanics.	
Task 6: Interface and Feedback Enhancement	3.1 Develop advanced UI features, 6.2 Test and refine feedback mechanisms			Medium	Yes	2024-08-05	2024-08-19	Not Started
Subitems	Name	Owner	Dependency	Status	Date - Start	Date - End	Description	People
	6.1 Develop advanced UI features	wgstuart@utas.edu.au	3.2 Implement interface controls		2024-08-05	2024-08-12	Build upon the basic UI to include new features for advanced scenarios.	
	6.2 Test and refine feedback mechanisms	: Partridge, Sebastian B	6.1 Develop advanced UI features		2024-08-12	2024-08-19	e feedback provided to users during scenarios and refine based on effectiveness.	
Task 7: Scenario Testing and Refinement	7.1 Alpha testing of complete scenarios, 7.2 Iteration based on alpha testing			Low	Yes	2024-08-19	2024-09-02	Not Started
Subitems	Name	Owner	Dependency	Status	Date - Start	Date - End	Description	People
	7.1 Alpha testing of complete scenarios	: Partridge, Sebastian B	plementing 'Man Overboard' scenario, 6.2 Test and refine feedback mechanisms		2024-08-19	2024-08-26	rm comprehensive testing on complete scenarios to check for bugs and realism.	
	7.2 Iteration based on alpha testing	Yurii Terentev	7.1 Alpha testing of complete scenarios		2024-08-26	2024-09-02	ecessary changes and enhancements to scenarios based on alpha test feedback.	
						2024-07-22	**2024-09-02**	

Cycle 3

Agile - Roadmap

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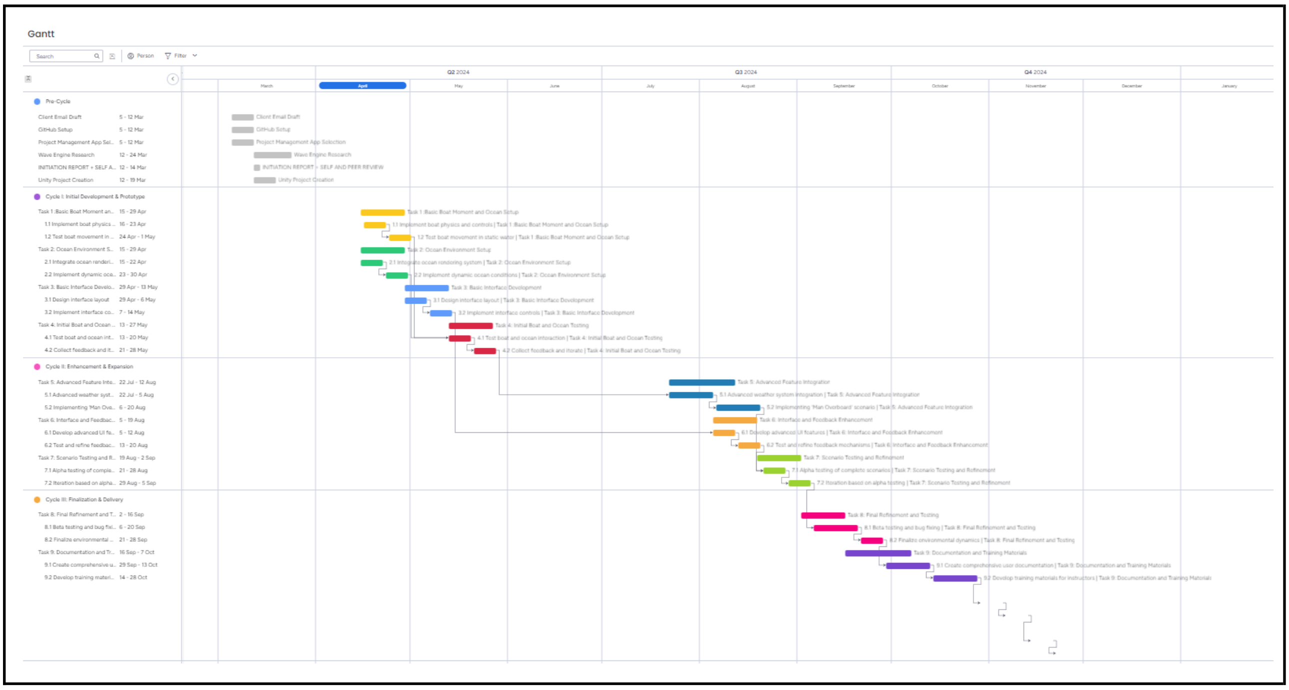
Cycle III: Finalization & Delivery

Name	Subitems	Owner	Description	Priority	Scope defined?	Timeline - Start	Timeline - End	Initiative status
Task 8: Final Refinement and Testing	8.1 Beta testing and bug fixing, 8.2 Finalize environmental dynamics			High	Yes	2024-09-02	2024-09-16	Not Started
Subitems	Name	Owner	Dependency	Status	Date - Start	Date - End	Description	People
	8.1 Beta testing and bug fixing	Sebastian Brain, Zac Partridge	7.2 Iteration based on alpha testing		2024-09-02	2024-09-16	Conduct beta testing with a wider group and fix any bugs identified.	
	8.2 Finalize environmental dynamics	wgstuart@utas.edu.au, Yurii Terentev	8.1 Beta testing and bug fixing		2024-09-09	2024-09-16	Adjust the final details of the weather and ocean dynamics for realism.	
Task 9: Documentation and Training Materials	ıte comprehensive user documentation, 9.2 Develop training materials for instructors			Medium	Yes	2024-09-16	2024-10-07	Not Started
Subitems	Name	Owner	Dependency	Status	Date - Start	Date - End	Description	People
	9.1 Create comprehensive user documentation	Zac Partridge	8.2 Finalize environmental dynamics		2024-09-16	2024-09-30	Write user manuals and documentation that explain how to operate the simulator.	
	9.2 Develop training materials for instructors	art@utas.edu.au, Sebastian Brain, Yurii Tel	Create comprehensive user documentation		2024-09-23	2024-10-07	Produce materials that will help instructors learn how to use the simulator in training.	
Task 10: Final Review and Deployment	ıal client review and feedback incorporation, 10.2 Deployment and instructor training			Medium	Yes	2024-09-30	2024-10-14	Not Started
Subitems	Name	Owner	Dependency	Status	Date - Start	Date - End	Description	People
	10.1 Final client review and feedback incorporation	Sebastian Brain	.2 Develop training materials for instructors		2024-09-30	2024-10-07	Present the final version to the client and incorporate any last-minute feedback.	
	10.2 Deployment and instructor training	Sebastian Brain	Final client review and feedback incorporation		2024-10-07	2024-10-14	Deploy the simulator and train instructors on how to use it effectively.	
Task 11: Project Closure	11.1 Conduct project review, 11.2 Officially close the project			Low	Yes	2024-10-14	2024-10-28	Not Started
Subitems	Name	Owner	Dependency	Status	Date - Start	Date - End	Description	People
	11.1 Conduct project review	Sebastian Brain	10.2 Deployment and instructor training		2024-10-14	2024-10-21	w project outcomes, document lessons learned, and confirm all objectives have been met.	
	11.2 Officially close the project	Sebastian Brain	11.1 Conduct project review		2024-10-21	2024-10-28	ìnalize all project documentation, celebrate successes, and formally close the project.	
						2024-09-02	**2024-10-28**	

Gantt



Appendix B: Images of Throttle Control Schema

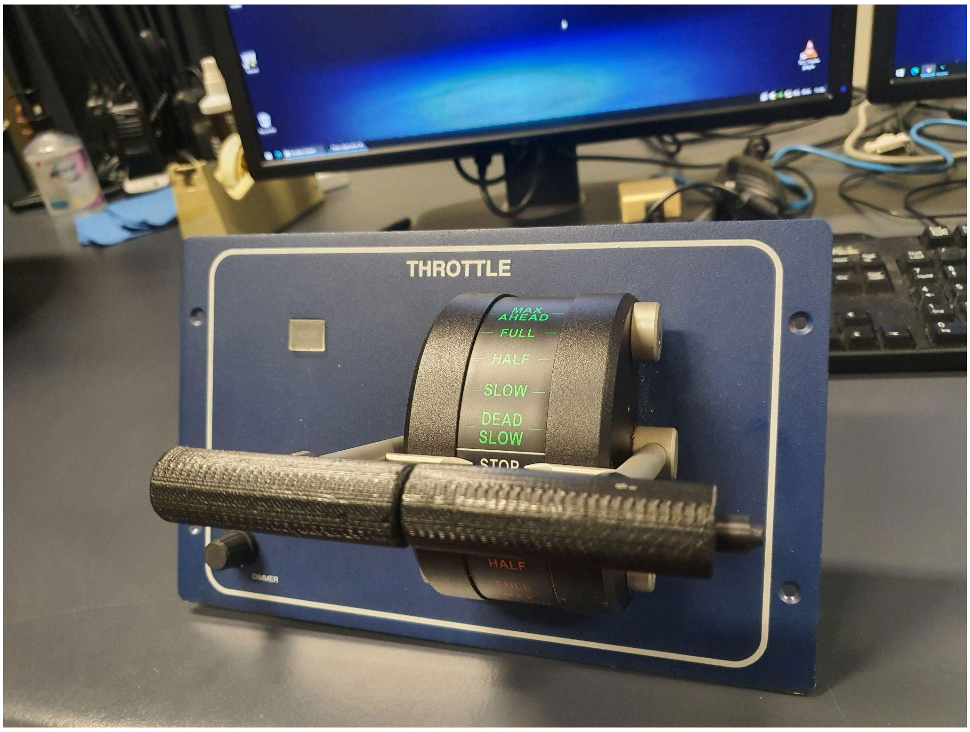


Fig. 1 - Simulator Throttle Control Panel

Fig. 2 - As above, demonstrating split-throttle control for multi-engine vessels

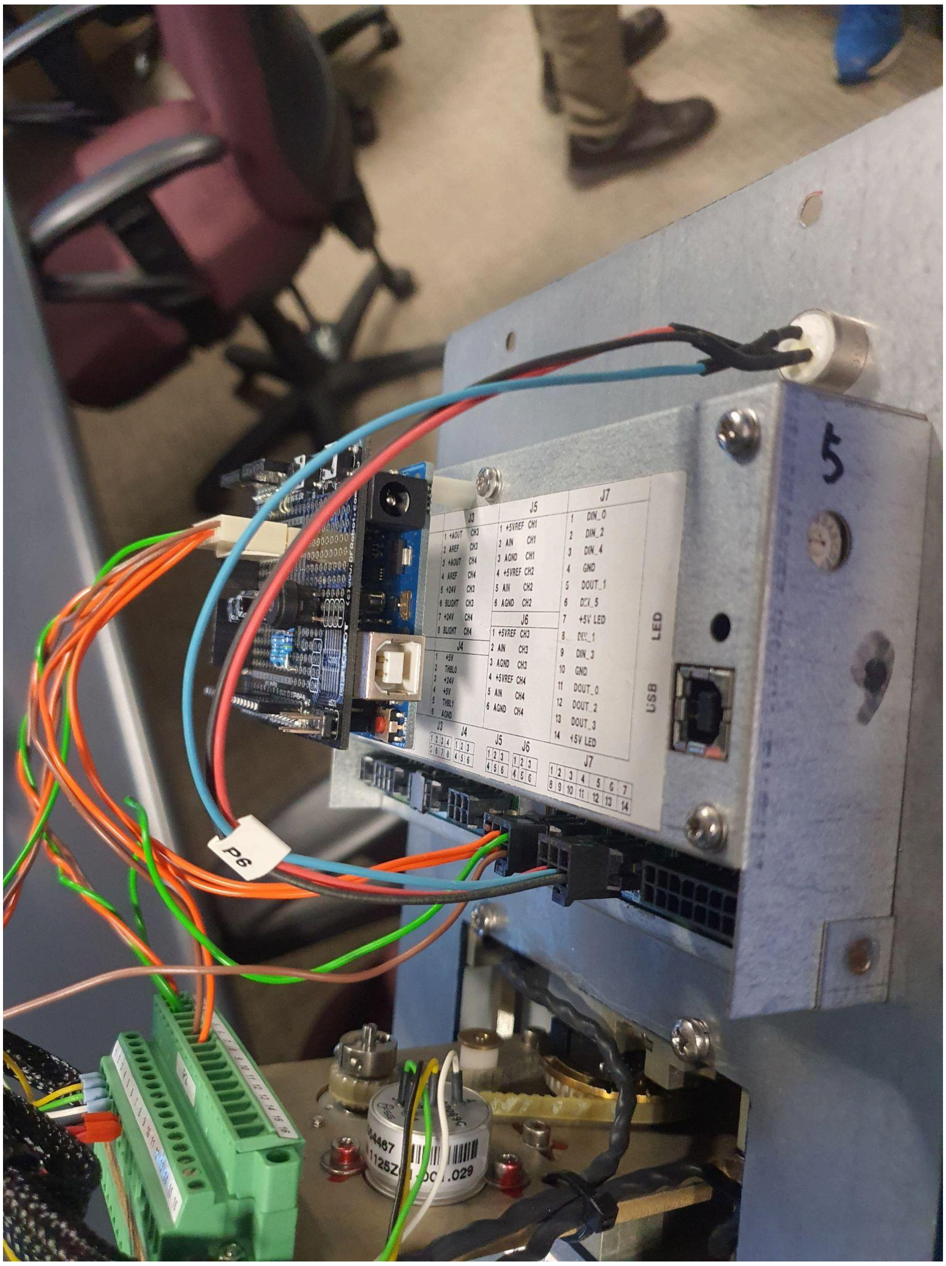


Fig. 3 - Control Panel reverse, showing hardware to allow for USB Output

Appendix C: Documentation for FRB Pacing

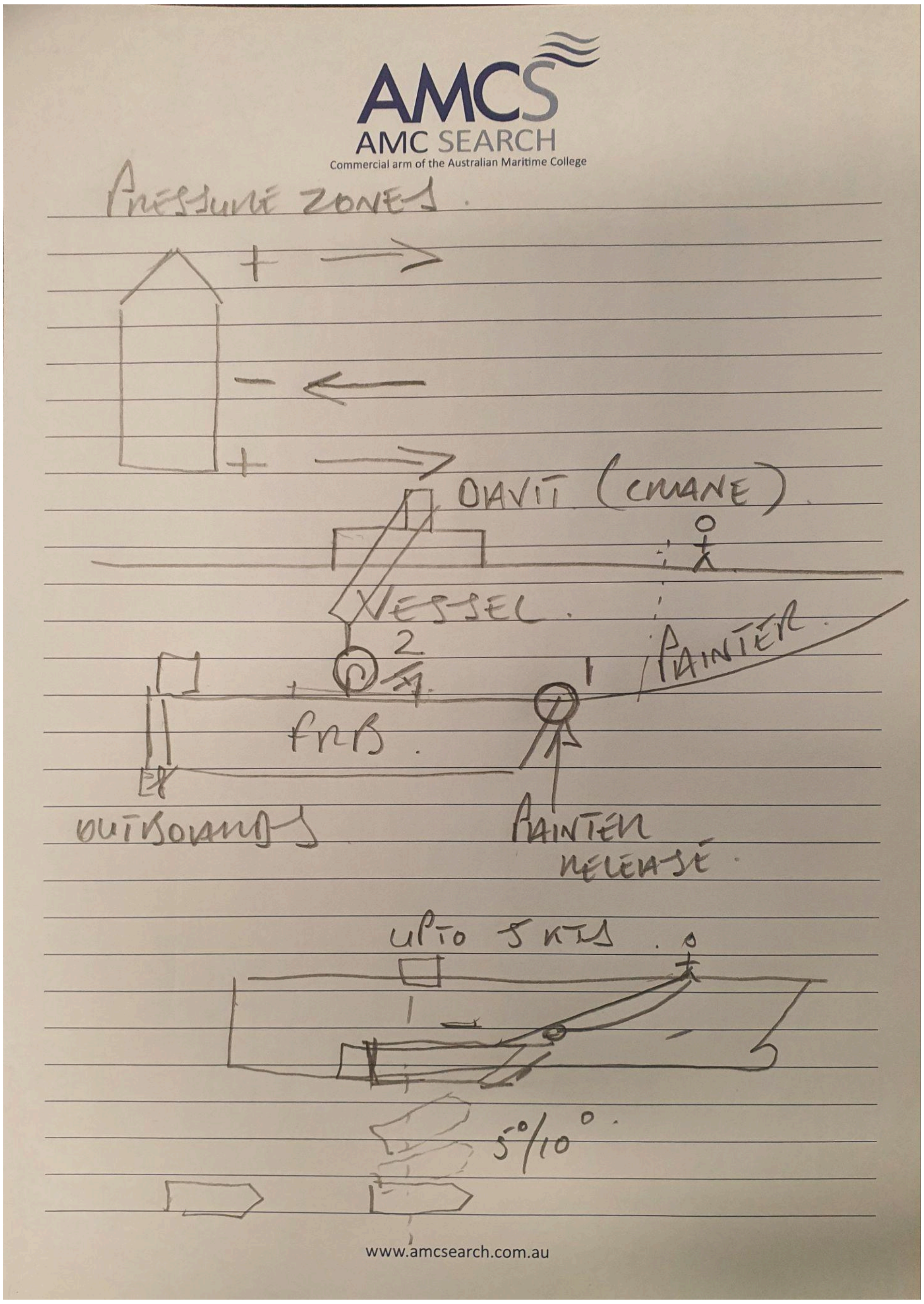


Fig. 1 - Client notes dictating how an FRC would:

- Pull alongside the vessel (approaching in 5-10° increments)
- How the FRC would be tethered to the vessel via painter (bow line)
- How the FRC would be reattached to davit and lifted
- Location of Positive and Negative pressure zones on a vessel