System Engineering Milestone 1: System Requirement Specification

1 Project Scope

The 3 dimensional location information for automated robots is crucial for their tracking and control. For robots above the ground, their location information can be easily acquired from GPS. However for underwater robots, specialized tracking system needs to be developed because traditional GPS signal cannot penetrate water.

This project will focus on designing a ranging system to obtain geographical location of an underwater robot. The project will be based on a prototype from previous developer where 2 beacons are used to measure the 1 dimensional location. The expected outcome of this project will be an improved prototype that is able to measure 3 dimensional location of the underwater robot with 1 master beacon mounted on the robot and 3 smaller beacons fixed in space. More details about the scope of the project are listed below:

- **Assumptions and Constrains**
  There are a few assumptions described by clients and made in the table research. Some constrains are posed by previous developer of the prototype and some are found during the research of the project scope. Both of them are listed in appendix 1.
- **Context Diagram**
  To roughly delineate the boundary of our project, identify stakeholders, subsystems and their relationships, a context diagram is drawn in appendix 2.
- **Stakeholders List**
  A stakeholder analysis is conducted to rank all stakeholders of this project in a list which can be found in appendix 3.

2 Needs List

The description and importance of needs from high-importance stakeholders are researched and listed below:

ID	Description	Importance	Stakeholder	Notes
N1	Accessible from remote area	Essential	Patients	Remote area without access to internet should also be able to use it.
N2	Patients can use medicare via RHAS	Highly Desirable	government	Cost of medical consultations are usually high without insurance.
N3	Patients can use commercial insurance via RHAS	Desirable	insurance company	Mutual benefit for our clients and insurance company.
N4	Connect doctors and patients remotely to provide a variety of services.	Essential	Patients	No travel is needed for patients wherever they live.
N5	Be able to provide medicine prescription.	Essential	Patients	Some medicines can only be purchased after getting a prescription from doctors.
N6	Be able to purchase needed medicine.	highly desirable	medicine provider	Connect local pharmacy to patients
N7	Timely delivery of medicine.	highly desirable	medicine provider	Connect local pharmacy to patients
N8	Immediate medical consultation for emergency	desirable	patients	Some large hospital in major city have doctors 24 hours on duty.

Appendix 1 Constraints and Assumptions

Constraints

C1: This project will only focus on online services. Surgery, physiotherapy or any other medical services that requires users to meet health practitioners in person will not be designed.

C2: The designed RHAS will only serve areas where either telephone or internet is available. Otherwise, it is unrealistic to remotely contact users.

Assumptions

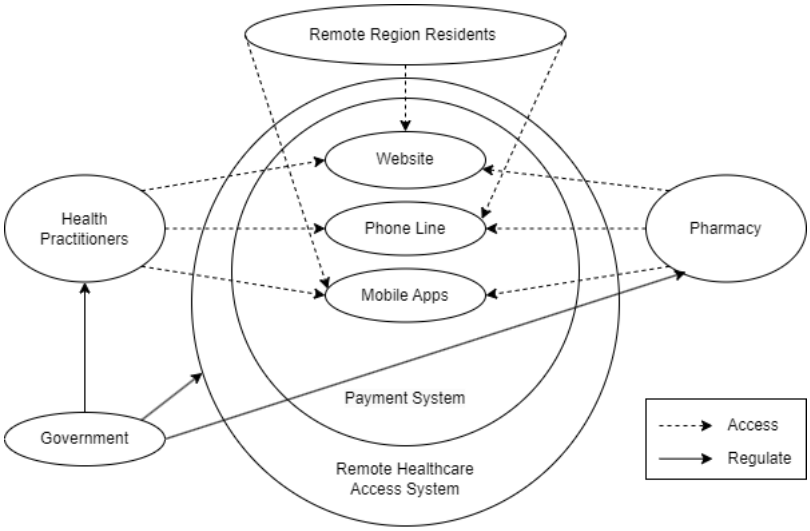
A1: The lack of healthcare resources in *rural and remote area listed in MMM standard* leads to inferior average health condition for residents there.

A2: Some of the *rural and remote area listed in MMM standard* do not have access to internet.

A3: Health practitioners working in hospitals and clinics are allowed to work in RHAS.

Appendix 2 Context Diagram

Appendix 3 Stakeholders List



Stakeholder	Power	Influence	immediacy	Vested Interest	Importance
Client	high	high	high	high	9
Australian National University	high	medium	low	low	7
Previous Developer	low	high	low	low	6
Hardware Manufacturer	low	medium	low	low	5