User Manual

Software Engineering and Project

University of Adelaide

Prospector Sea Floor Mapping System

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Date	Name	Student ID	Updates	Version
19th Oct 2016	Navdeep Singh	1660360	Added the basic structure of draft	0.1
20th Oct 2016	Liang Yuan	1679380	add detail manual	0.2

Table 1: Revision History

1 Abstract

This document is the User Manual for the Prospector Sea Floor Mapping System.User Manual will instruct how to use the GUI and the robot to survey the specific map area and show the report on GUI or export to the XML file .

2 Introduction

2.1 Overview

The Prospector SFM system enables Map exploration through remote, autonomous control of a robotic vehicle which facilitates data acquisition. The primary goals of the software platform are therefore:

- to enable a human operator to send appropriate commands to the robot via a graphical user interface (GUI) in order to initiate autonomous exploration of the survey area (and intervene when necessary); and
- extract the gathered data via the same GUI into a XML file format.

2.2 Purpose

The purpose of this document is to detail the User Manual for the Prospector Seafloor Mapping System (SFM), developed for SeaFaults. It contains the details of how to connect to robot, how to do mapping and how to use the GUI.

2.3 Scope

This document defines the User manual for the software component of the SFM system only.

2.4 Assumptions

- The Machine running the GUI will have JDK 8 Pre-installed.
- The operator will put the correct IP of the robot to get connected.

- The client's representatives have knowledge of the project domain (sea floor mapping), but not necessarily of software development or implementation.
- The project team have knowledge of software development and implementation, but not necessarily of the project domain.

3 Human Interface Design

3.1 Overview of the User Interface

The operation is on the right of the user interface. There are four buttons to control the movement of robot, and a stop button in the center of navigation buttons. The manual or automatic button determine the button is controlled manually or automatically. The "save map" stores the map which detected by sensor and "load map" button get a map input which means map is already given. The "set location" button sets the current location of robot manually. In addition, there is a text field showing the data of the current status of robot.

3.2 Detailed Design of the User Interface

The user interface is shown in Figure. It includes various parts are identified below:

- Connection field.
- Control field.
- Model change field.
- Map operation field.
- Location setting field.
- Information field.

- Map legend field.

- Map drawing field.
- setting a No Go Zone .

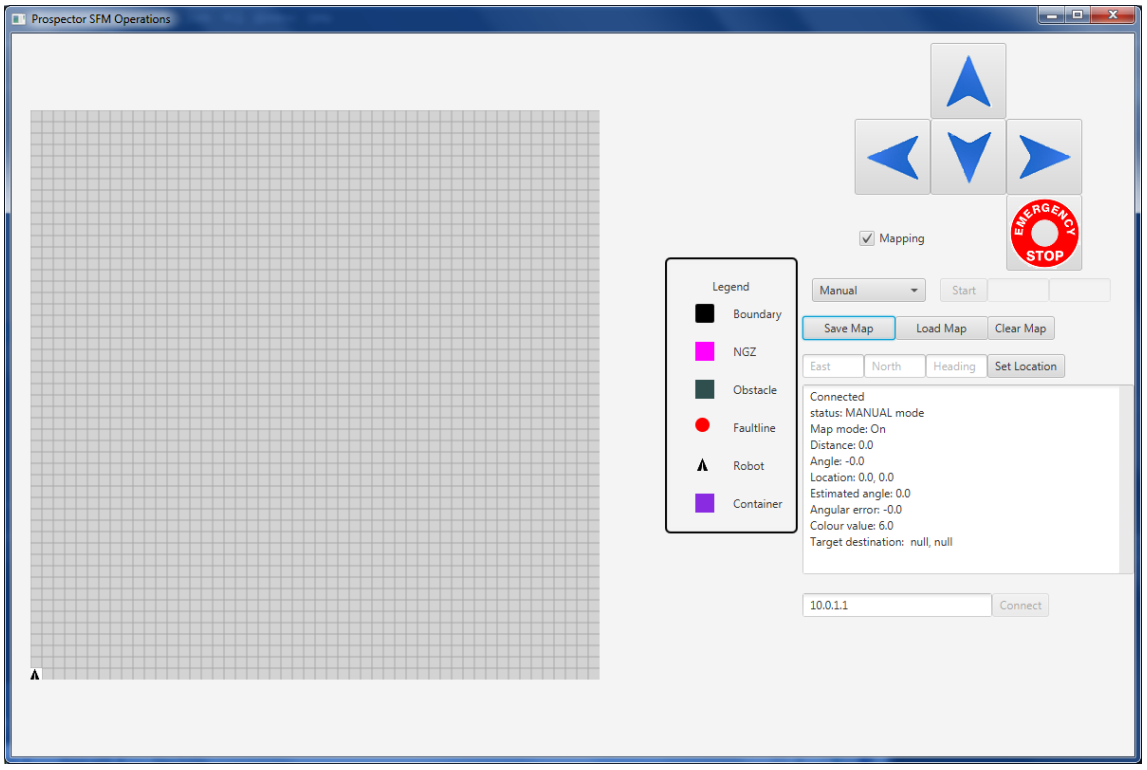

Figure 1: User interface

3.2.1 Connection field

The user interface provides an input for user to input the IP address of the robot, in order to connect to robot, show below:

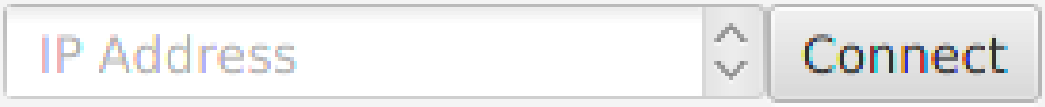

Figure 2: Connect

3.2.2 User Control

The control field shows below. There are four buttons to control the robot, and an emergency button. Users use the four button to control the robot manually, for example, press left button and right button, the robot makes left turn and right turn.

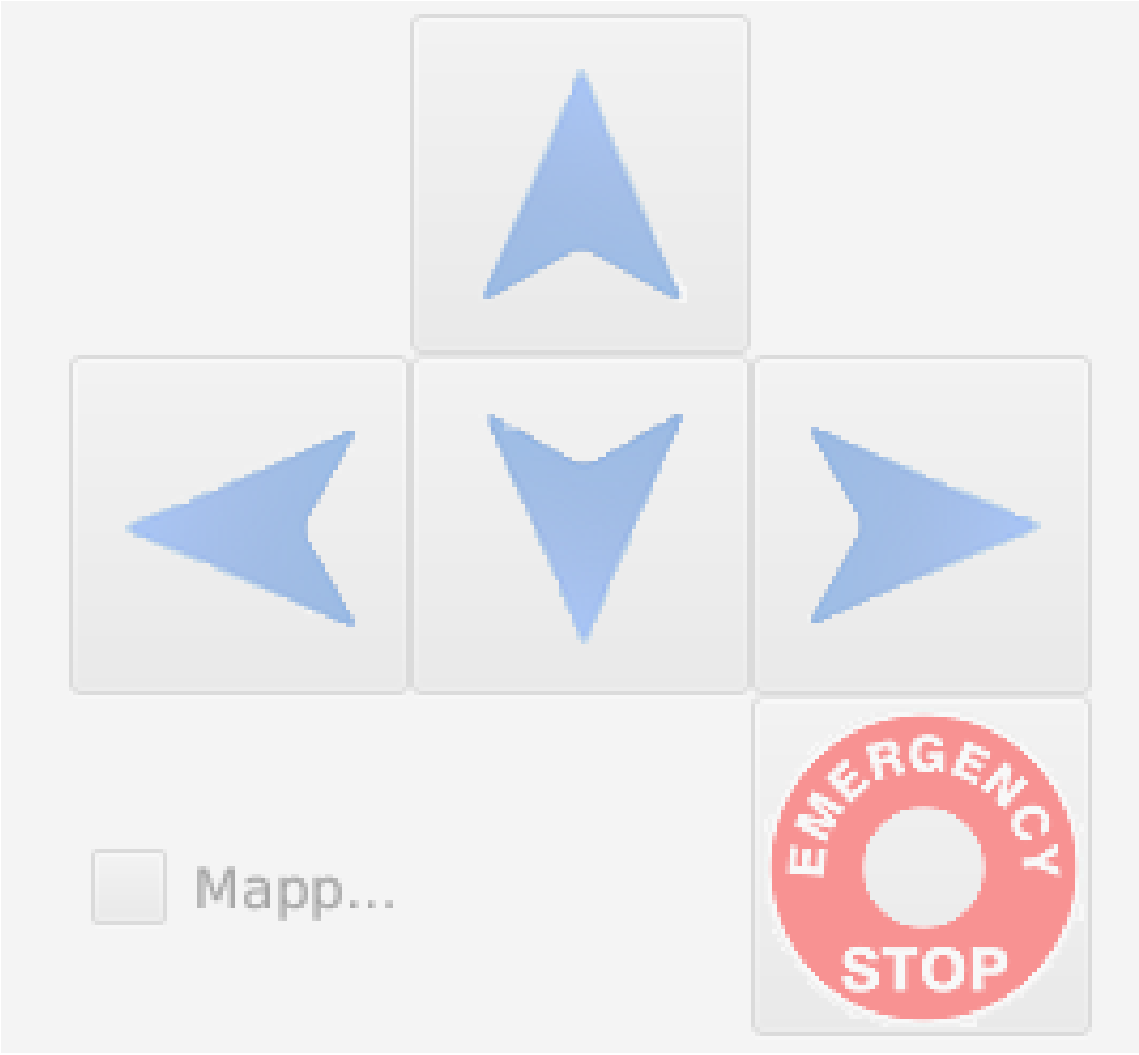

Figure 3: Direction

3.2.3 Model Change

The user interface provides the function that user can choose the control model, including automatic model, manual model and move-to-point model. When user chooses the automatic model, the four direction buttons are dim, and the emergency button is light, shows as figure 4. When user chooses manual model, all control buttons are light, shows as figure 5 . When user chooses move-to-point model, the four direction buttons are dim, the emergency button is light. In addition, user need to input the point, shows as figure 6.

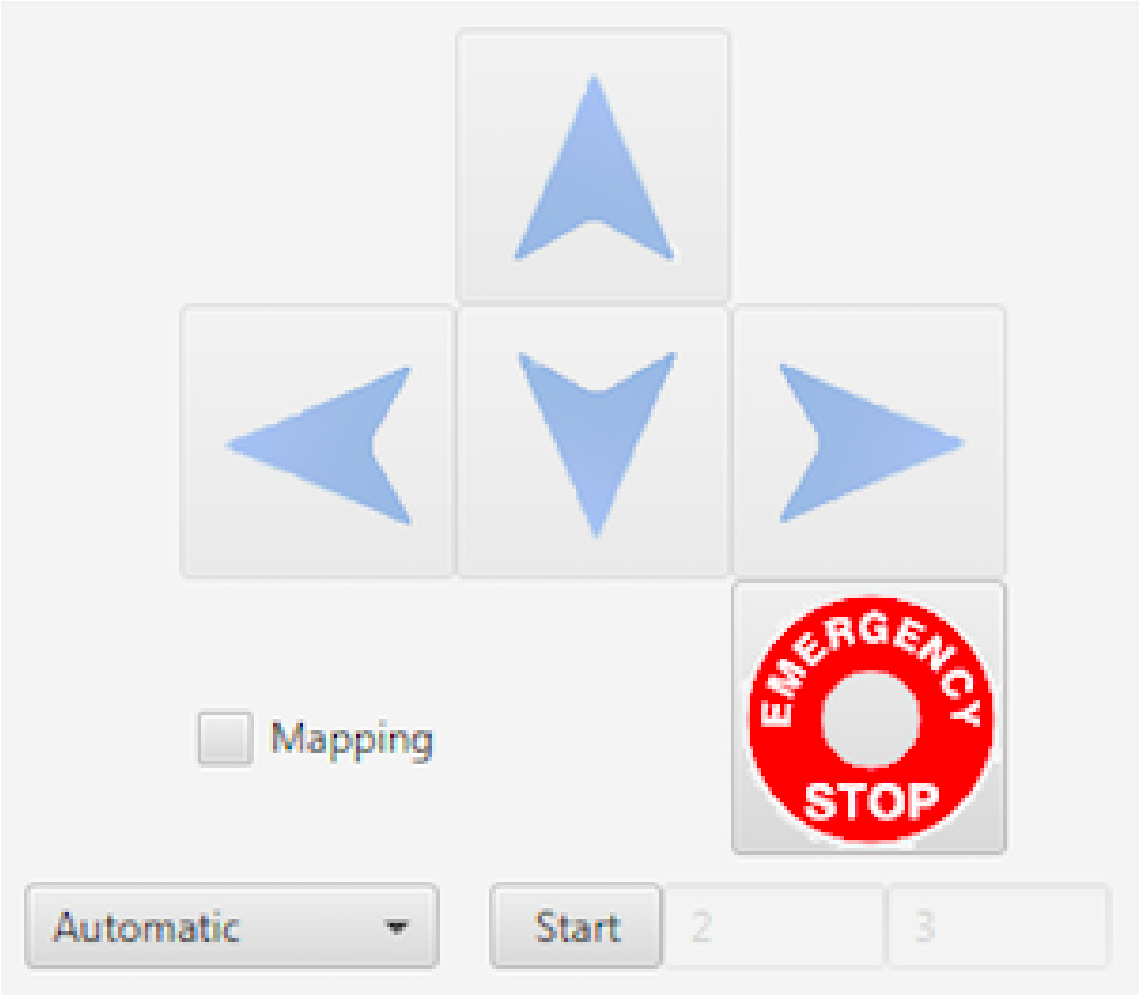

Figure 4: Automatic Mode

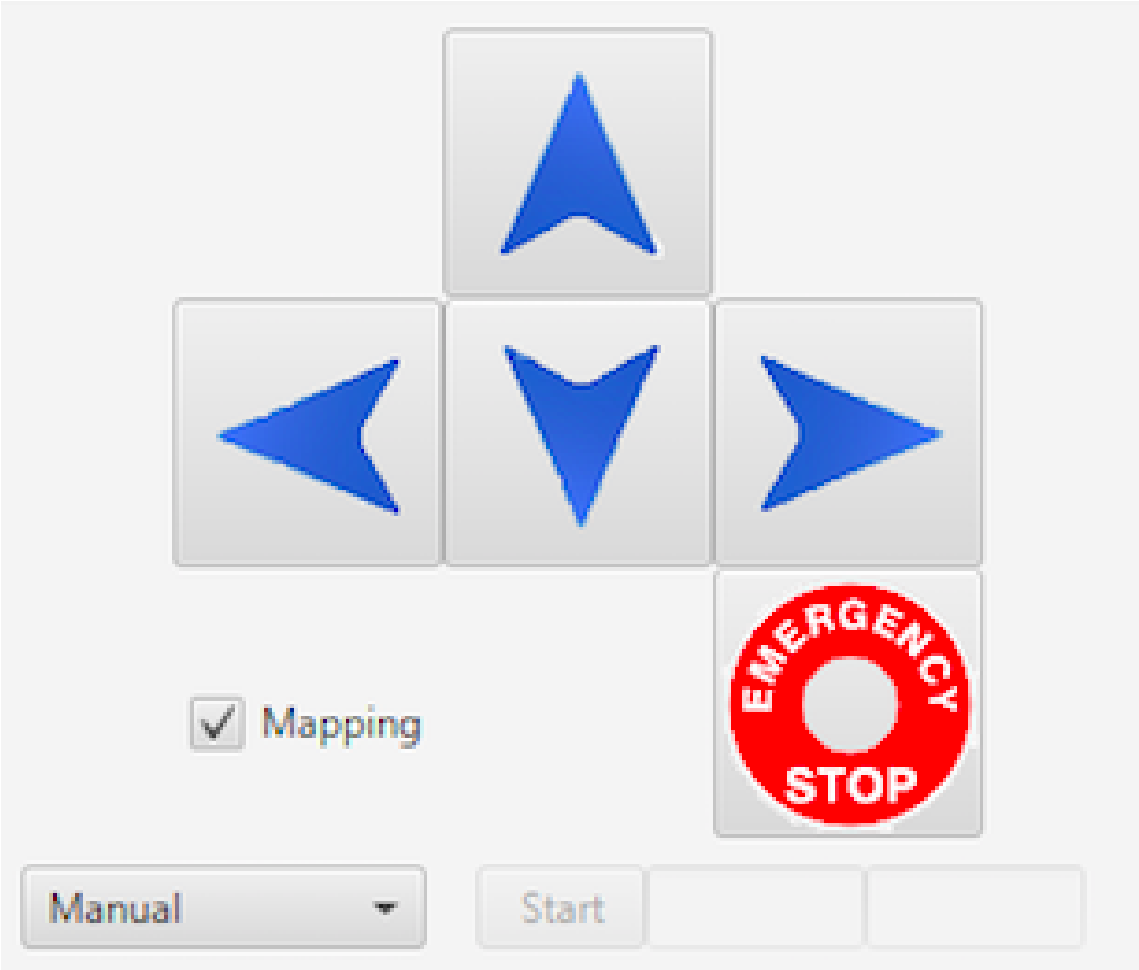

Figure 5: Manual Mode

Figure 6: Move to Point

3.2.4 Map operation

The user interface provides three buttons in terms of map operation. The "Save Map" button is to save the map that has been drawn by robot, the "Load Map" button is to load the map that has provided, and the "Clear Map" button is to the current map, show below:

Figure 7: Save Map 1

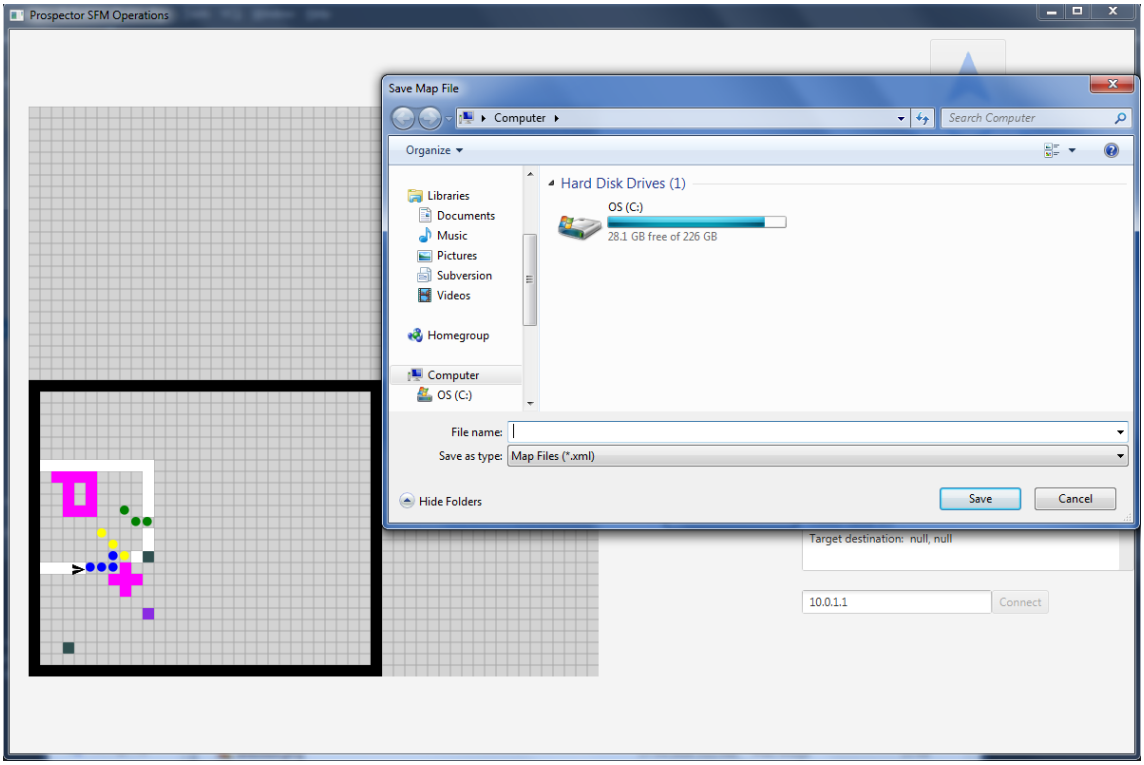

Figure 8: Save Map 2

3.2.5 Location setting

The user interface provide an input field for user to set the start location. Users need to type the location, and put the robot at that point, show below:

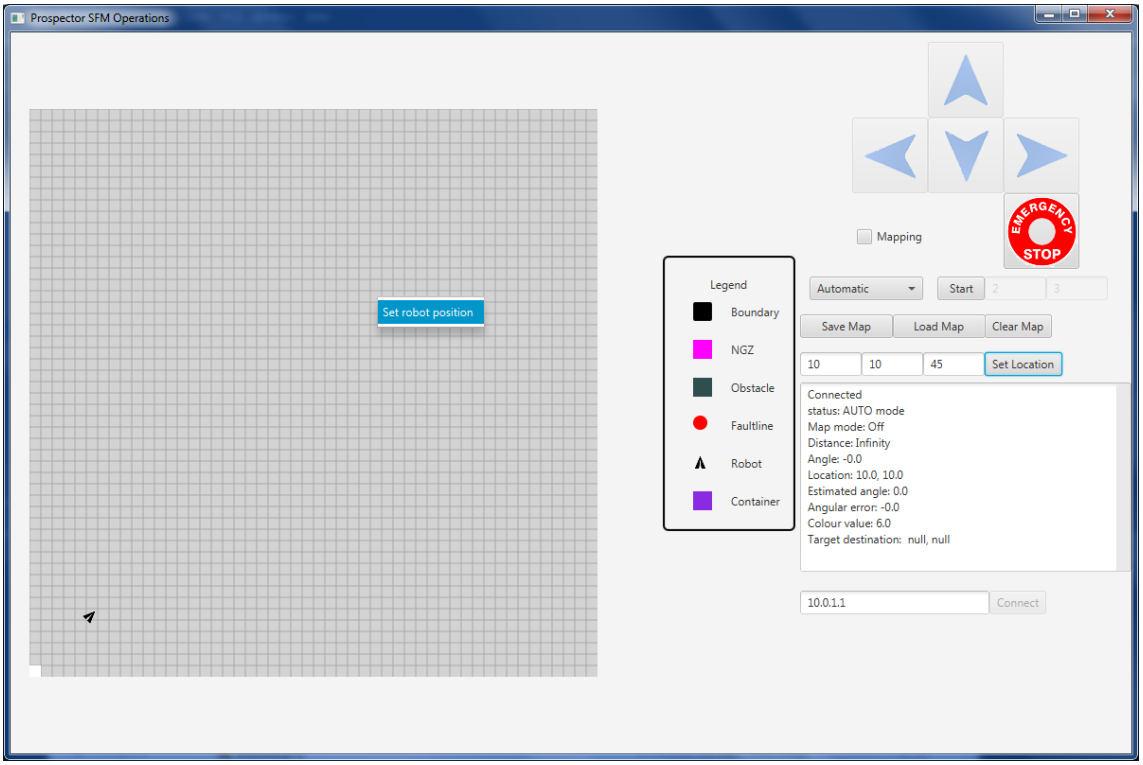

Figure 9: Location Setting 1

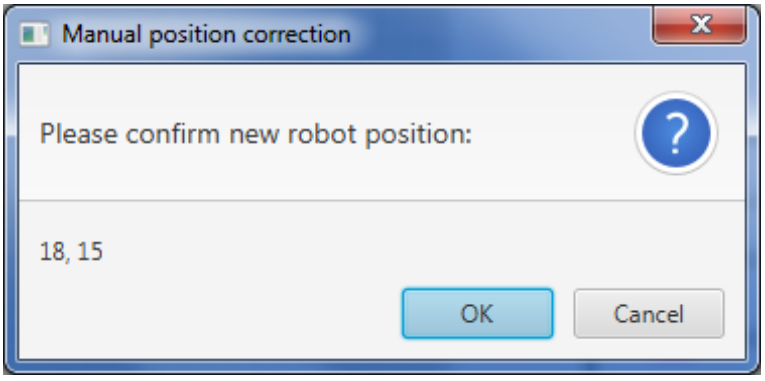

Figure 10: Location Setting 2

3.2.6 Information field

The user interface provides the information about the robot, such as whether connect, the distance between the robot and obstacle, and the current location, show below:

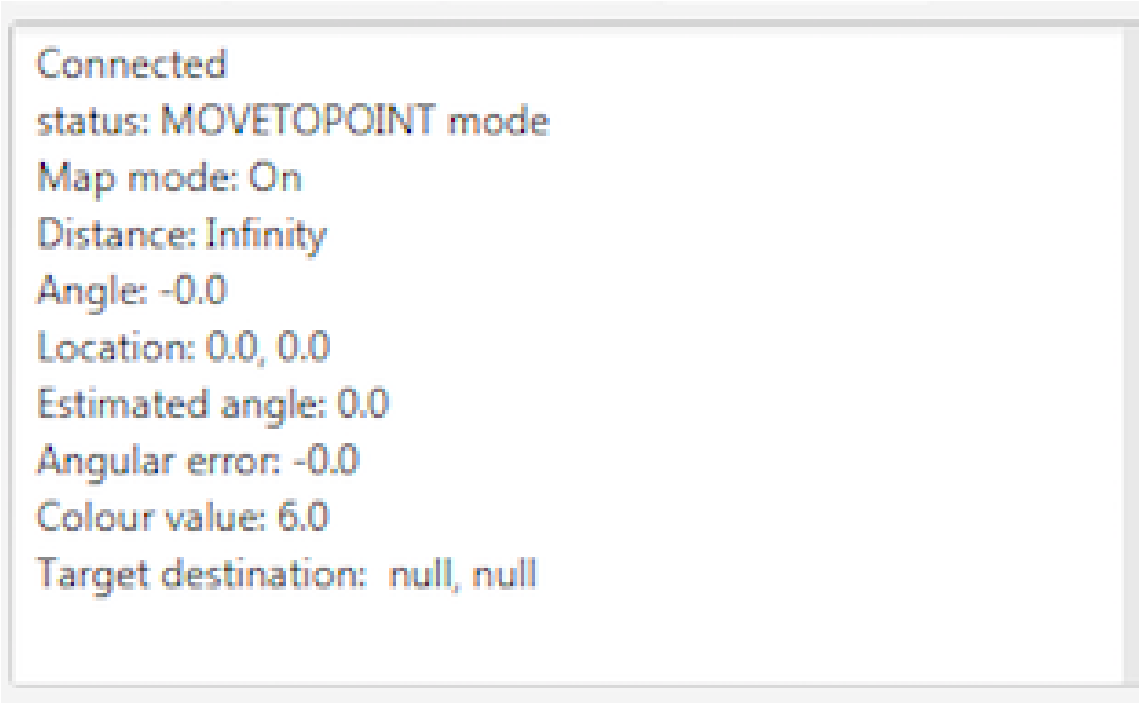

Figure 11: Information Field

3.2.7 Map legend

The user interface provides the legend to demonstrate the label, for example, the black square means the bound, the pink square mean the no-go-zone, show below:

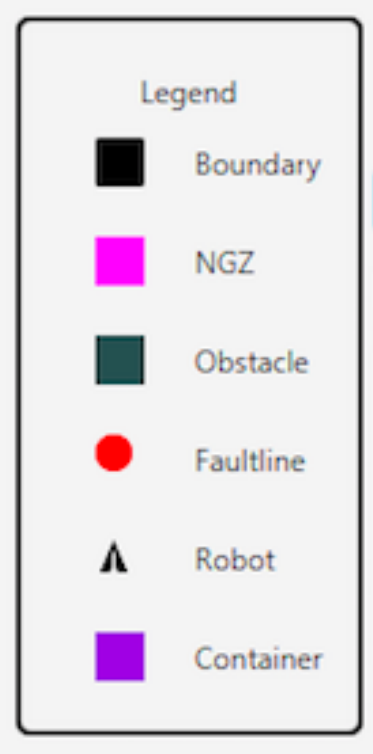

Figure 12: Map Legend

3.2.8 Map drawing

The user interface provides an area to draw the map that robot detected in real-time, the map will be show as grid, users can check the robot's work, show below:

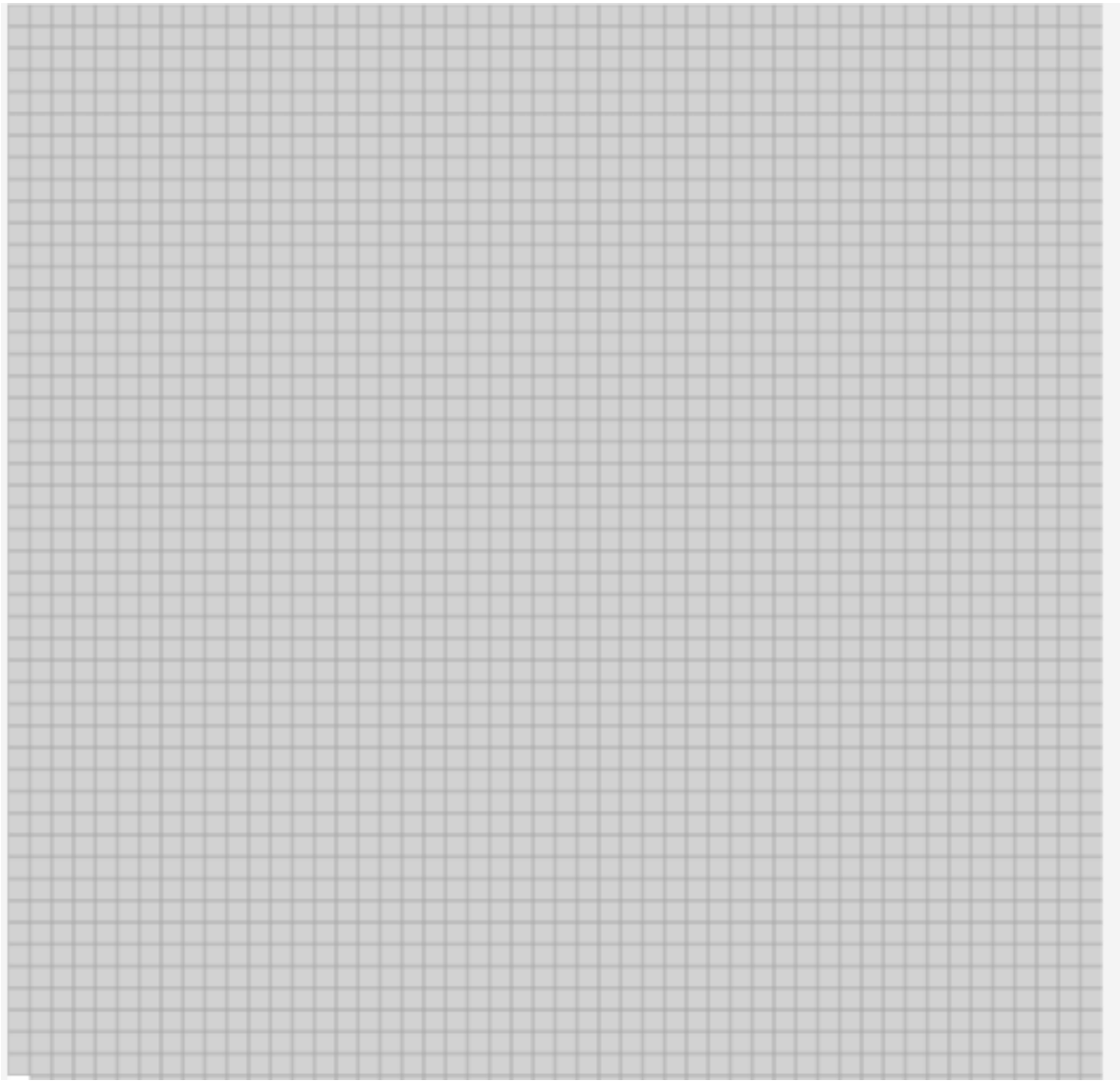

Figure 13: Map Grid

3.2.9 Setting a No Go Zone

The user interface allow user to mark a No Go Zone (NGZ) by choosing which area user want to make a NGZ. To Specify the NGZ area user just has to Select the area with right click on the Map grid and leave it will be marked as NGZ.

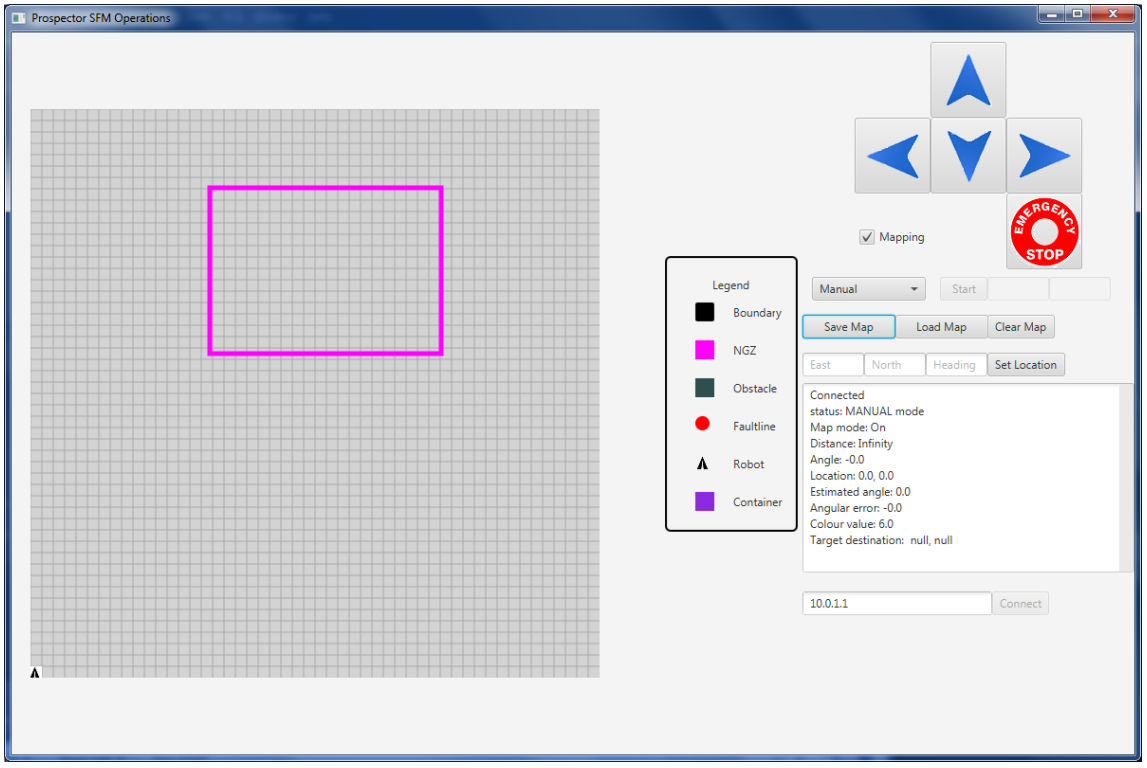

Figure 14: No Go Zone

4 References

[1] Prospector Team 2016. *Software Requirements Specification: Prospector Seafloor Mapping System*. Version 0.1 (Draft).

[2] Prospector Team 2016. *Software Design Document: Prospector Seafloor Mapping System*. Version 1.0 (Draft).