

# Small Watercraft Monitoring Pilot Project

Recommendations for the Development and  
Implementation of a Web Based Application.

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## **INTRODUCTION**

During the summer of 2014, I had some initial discussions with Curtis Douglas and other key members of the staff in the Small Watercraft Division of the Ministry of Tobago Development (MTD) about various issues in the fishing industry and possible technological solutions. As a result of these discussions this proposal is in response to a request for a proposal from the MTD to assist with implementing a comprehensive solution that would allow the MTD to collect data about the industry in order to make informed policy decisions. The recommendations in this proposal are based on the broad outlines of what we discussed and steps already taken by the MTD.

## **ISSUES**

The fishing industry in Tobago is considered artisanal. It consists of small boats that are manned by one or two people and do not venture too far from the shore. One of the motivations for this project was the concerns by fishermen that the size of their catch has diminished because of the oil company that is using explosives while exploring for oil off the island. Neither the fishermen nor the Ministry of Tobago Development (MTD) has any data to validate these claims.

Some of the issues and requests discussed and addressed in this proposal:

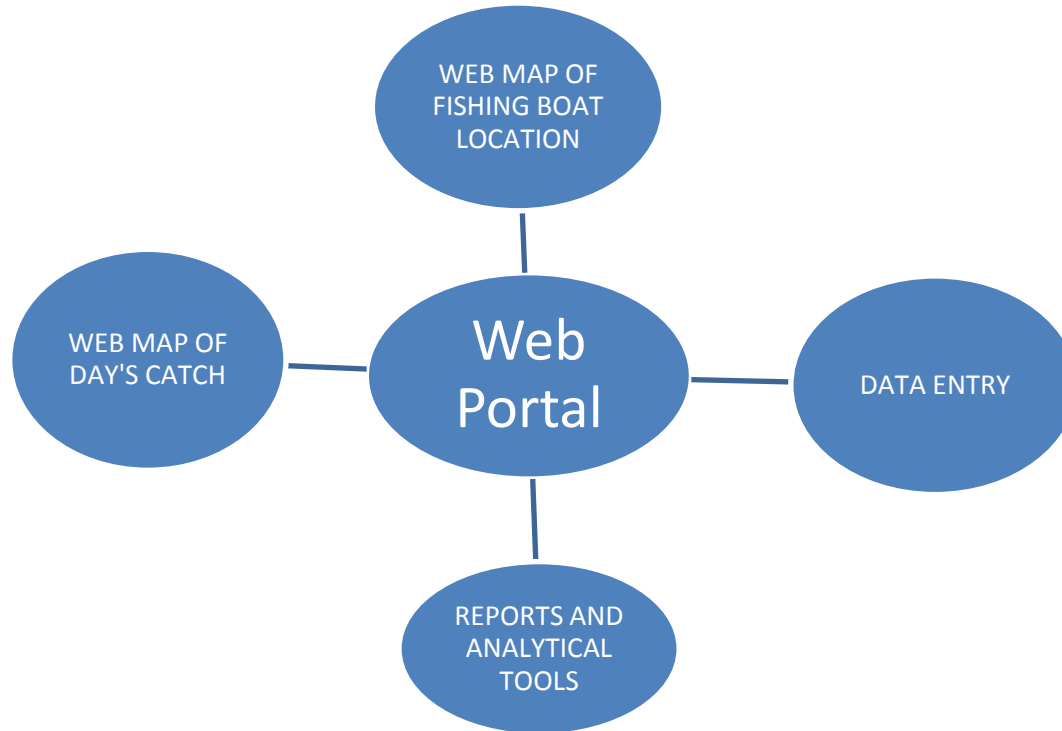
- ❖ **Identification of fishing grounds i.e. where the fishermen frequently fish**
- ❖ **Safety of the fishermen while at sea**
- ❖ **Quantity and species of fish caught daily**
- ❖ **Management of overfishing**
- ❖ **Expansion of the fishermen's market**
- ❖ **Impact of oil exploration on the fishermen's catch**

## **RECOMMENDATIONS**

Based on my technical research, it is my professional opinion that the best solution to address the issues and gather the necessary data, is to create a web based application in the form of a web portal. Such an application would take advantage of the latest technologies to efficiently, and cost effectively collect, manage and analyze the data from and about the various areas of the fish industry.

This portal will consist of 4 web interfaces:

- 1. A web interface for tracking the fishermen while at sea.**
- 2. A web interface for data entry of the day's catch and any other information about the fishing industry.**
- 3. A web interface of a map for displaying landing sites of the day's catch.**
- 4. A web interface for reports and data analysis.**



**GRAPHIC OF WEB PORTAL**

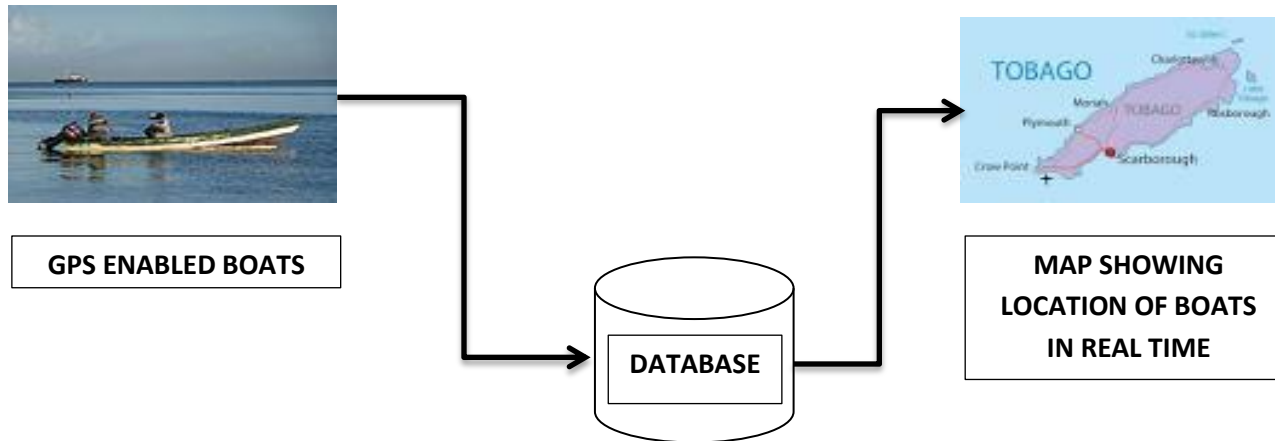
**Figure 1**

## **DISCUSSION OF WEB INTERFACES**

### **1) A web interface for tracking the fishermen while at sea:**

Use of technology to track fishermen while at sea and display location of the fishing boats in real time on a web map.

- a) This will identify the areas (fishing grounds) the fishermen fish at most frequently
- b) This can confirm whether search for oil is affecting the size of catch
- c) This will assist in the safety of the fishermen



**GRAPHIC OF GPS TRACKING OF FISHERMEN AT SEA**

**Figure 2**

**2) Web interface for data entry of the day's catch and any other information about the fishing industry:**

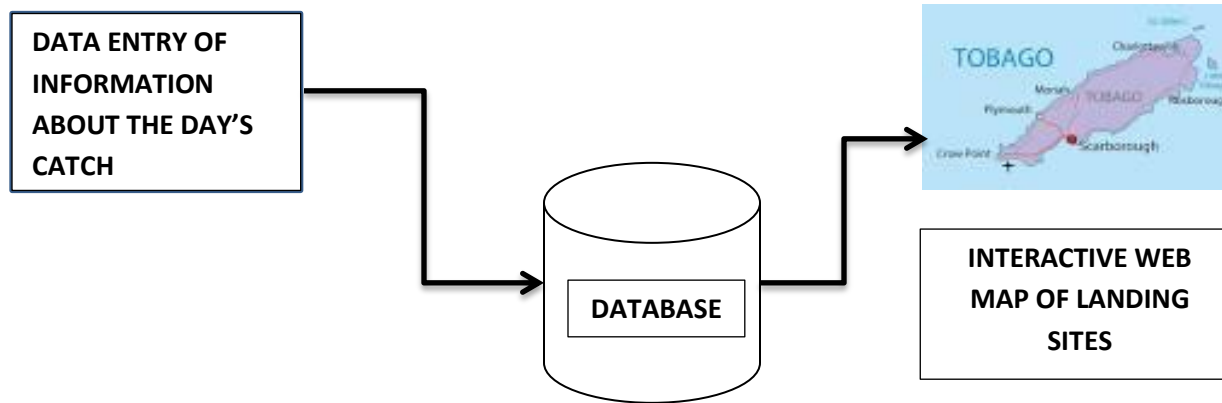
a) This will assist with managing over fishing and identifying the most popular species.

**3) A web interface of a map for displaying landing sites with the day's catch:**

This is an interactive web map that displays landing sites and the day's catch information.

a) This will expand the market for the fishermen and anyone in the country would be able to see what fish is available.



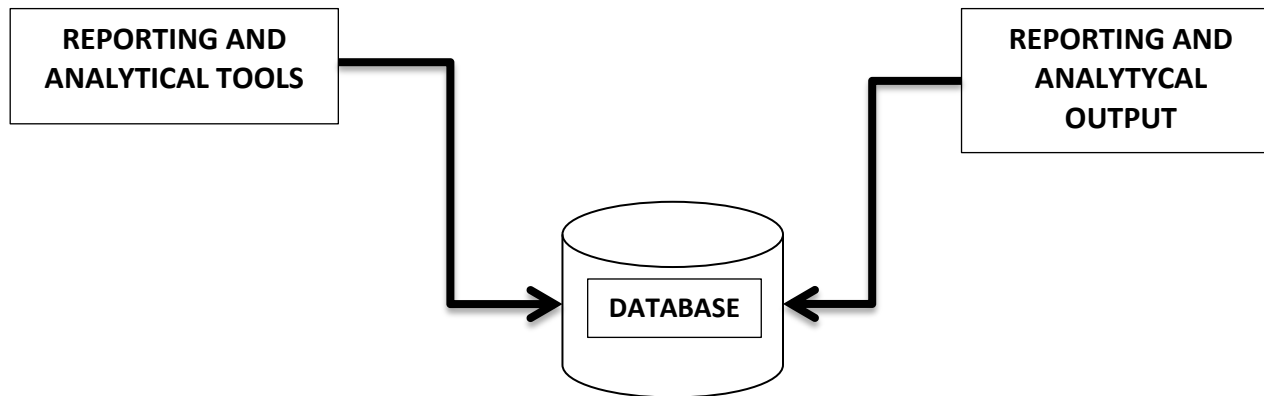


**GRAPHIC OF INTERACTIVE WEB MAP OF LANDING SITES WITH THE DAY'S CATCH**

**Figure 3**

**4) Web interface for reports and data analysis.**

a) This will allow for the creation of tables, reports and downloadable data sets.



**GRAPHIC OF REPORTING AND ANALYTICAL TOOLS**

**Figure 4**

## **APPLICATION DEVELOPMENT AND IMPLEMENTATION PLAN**

The Web Portal will be developed and implemented in 4 phases:

### **Phase 1 – GPS tracking software and web map:**

- ❖ The acquisition, installation and configuration of GPS tracking software in a cloud account
- ❖ The creation of a web map that displays real time location of fishing boats

### **Phase 2 – Data collection:**

- ❖ The development and implementation of a web interface for data entry of the day's catch and any other information

### **Phase 3 – Catch of the day web map:**

- ❖ The development and implementation of an interactive web map that displays the landing sites and info about the day's catch and contact info of the fishermen and landing site

### **Phase 4 – Reporting and Analysis:**

- ❖ The development and implementation of a web interface for reporting and analysis

## **MAINTENANCE AND TECHNICAL SUPPORT**

- ❖ 3 year maintenance, technical support and training.

## **BACKEND INFRASTRUCTURE**

Due to the lack of the technical skills and to lessen the burden of purchasing, configuring and maintaining the hardware and software being used for this application on the Ministry's I.T. staff, the development and implementation of this application will be outsourced as much as possible. To this end, the application will be hosted in the cloud; the GPS tracking software will be installed, configured and maintained by the provider; and the web interfaces will be created and maintained by a web developer. Though the data are from multiple sources, it will be stored in a single database allowing for seamless integration and analysis.

## **PROJECT TIMELINE**

To be determined by the MTD and Consultant after approval of the Development and Implementation plan.

## **PROJECT BUDGET**

To be determined by the MTD and Consultant after approval of the Development and Implementation plan.