

Evaluation Assignment One: Website Stakeholders, Goals and Task Analysis

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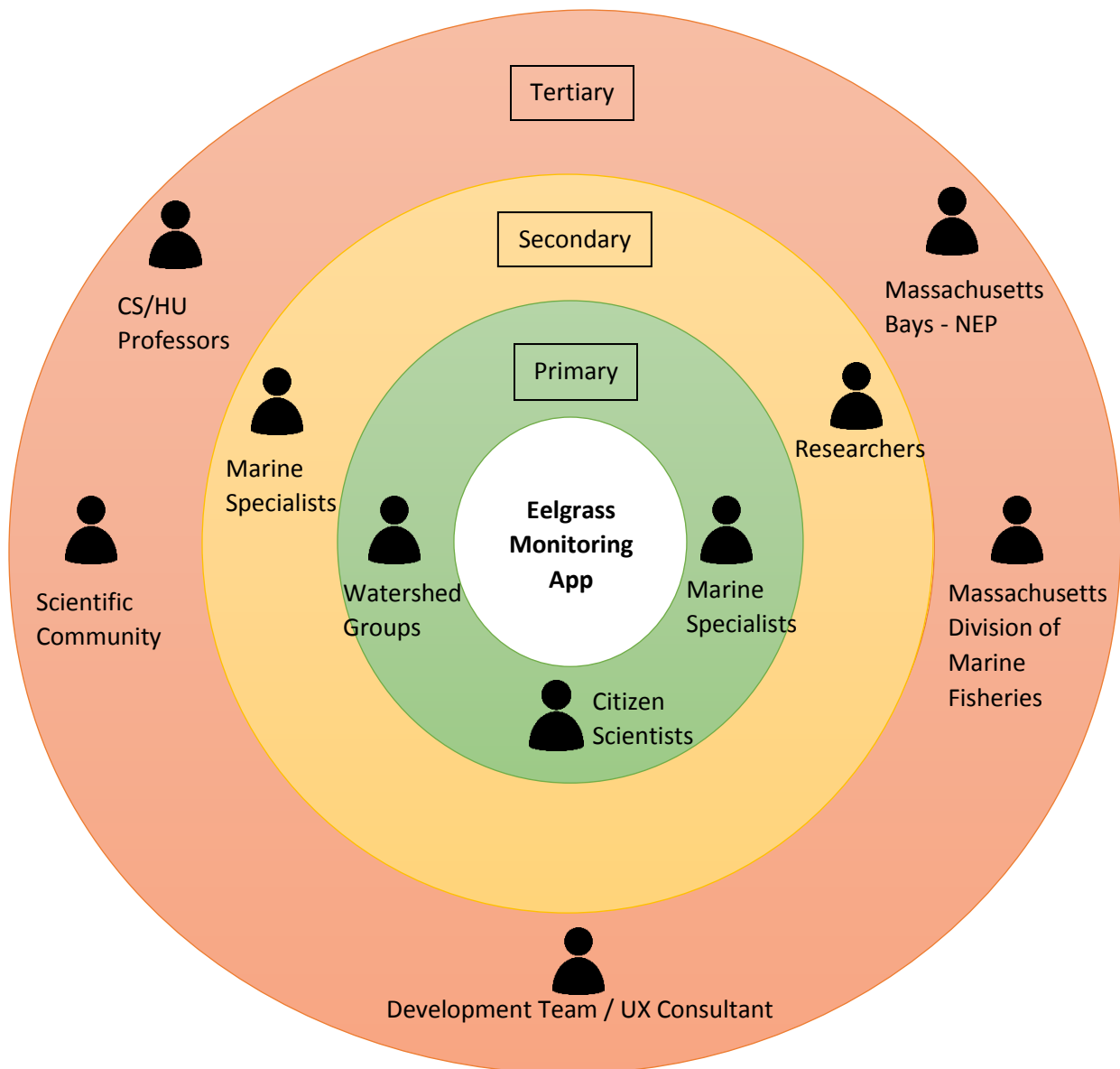
Professor: Dr. Robert Pastel

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## System Description:

The undergraduate students are working with Massachusetts state marine fisheries specialist to create an app that will replace the paper datasheets used by marine biologists and citizen scientists in the collection of eelgrass data during monitoring events. These events are used to study eelgrass which is an important marine plant that provides shelter and forage to many marine fish species. The digitization of this process would make both data collection, quality control, and analysis more efficient. The intent is to create an intuitive and user-friendly app that the users can easily navigate and record their observations, while reducing the number of errors. Finally, the app would have the ability to export the data as CSV for further study by the researchers.

## Stakeholder's Onion Diagram:



## Stakeholder's Description:

### Primary:

#### Citizen Scientists:

With a wide range of backgrounds from a large base of citizen volunteers, this group will be the largest user group of the application. They will interact with the app to monitor and record data as per the instructions given by the Marine Specialists.

#### Marine Specialists:

Marine Specialists would be familiar with the app and would train the app users. This group would primarily use the data being collected for scientific evaluations and may also participate as a user.

#### Watershed Groups:

Watershed groups are organizations that would work collaboratively with MA DMF to improve and protect the marine habitats. Like citizen scientists they will interact with the app to monitor and record data as per the instructions given by the Marine Specialists.

### Secondary:

#### Marine Specialists:

These would be the primary users of the data being collected. They would analyze and evaluate the data being collected by the primary users.

#### Researchers:

Researchers could be considered as experts in the content/topic. They will use the data for research and scientific development.

### Tertiary:

#### Development Team / UX Consultant:

In charge of development and support of the app as per the requirements set up by the Marine Specialist. The consultants would develop a user testing process like primary users of the app and would offer feedback to the development team.

#### Scientific Community:

The larger scientific community are the set of people who are interested in the data being collected. They may give inputs and suggestions on improving it.

#### Massachusetts Division of Marine Fisheries:

Organization that has developed and conducts the eelgrass monitoring program. They control the program and have direct influence on it.

Massachusetts Bays – National Estuary Program:

Organization that is funding and overseeing the data collection program. They are the primary owners of the data and would influence the program.

CS/HU Professors at Michigan Tech:

Overseeing professors of the developers and the user experience consultants. They set restrictions and guidelines for teams' projects and have influence over the projects.

### Stakeholders Goal Influence Table:

Stakeholders	Goal(s)	Influence(s)
<b>Citizen Scientists</b>	<ul style="list-style-type: none"> <li>To understand the marine habitat and contribute towards accurately completing the data collection.</li> </ul>	<ul style="list-style-type: none"> <li>Provides data to be analyzed</li> <li>Application use and feedback</li> <li>May be inexperienced or make mistakes</li> </ul>
<b>Marine Specialists</b>	<ul style="list-style-type: none"> <li>To analyze the data uploaded by the users and observe the changes over a period.</li> <li>Engage community members to actively participate in research and train them</li> <li>Create a well-defined process to collect Eelgrass data</li> </ul>	<ul style="list-style-type: none"> <li>Provide requirements for App development</li> <li>May not be able to convey the specifications to app developers accurately</li> </ul>
<b>Watershed Groups</b>	<ul style="list-style-type: none"> <li>Collaborate and help the research organizations by participating in Data collection activities.</li> <li>Accurately record and submit the data.</li> </ul>	<ul style="list-style-type: none"> <li>Provides data to be analyzed</li> <li>Application use and feedback</li> <li>May be inexperienced or make mistakes</li> </ul>
<b>Researchers</b>	<ul style="list-style-type: none"> <li>Share their feedback on collected data.</li> <li>Perform studies and deduce conclusions on the provided data</li> </ul>	<ul style="list-style-type: none"> <li>Need for better and/or more data to represent possible trends</li> <li>Influences the application to have data integrity</li> </ul>
<b>Development Team / UX Consultant</b>	<ul style="list-style-type: none"> <li>To collaborate and learn how to create a web application.</li> <li>UX consultant to help and provide feedback to developers. Also, perform usability testing.</li> </ul>	<ul style="list-style-type: none"> <li>Provide quality results and deliver the requirements on time.</li> <li>Potential inexperience or lack of time</li> </ul>

	<ul style="list-style-type: none"> <li>• Complete this project to earn good grades.</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of communication with client during development</li> </ul>
<b>Scientific Community</b>	<ul style="list-style-type: none"> <li>• Contribute towards understanding and analysis of collected data.</li> <li>• Provide feedback on the data being collected.</li> </ul>	<ul style="list-style-type: none"> <li>• Contribute towards scientific advancement.</li> <li>• Use the data from the app.</li> </ul>
<b>Massachusetts Division of Marine Fisheries</b>	<ul style="list-style-type: none"> <li>• Develop and conduct the Eelgrass monitoring study.</li> </ul>	<ul style="list-style-type: none"> <li>• Manage and provide tools and resources to ensure successful completion of program.</li> <li>• May have time and funding constraints.</li> </ul>
<b>Massachusetts Bays – National Estuary Program</b>	<ul style="list-style-type: none"> <li>• Provide funding and support the Eelgrass monitoring study.</li> </ul>	<ul style="list-style-type: none"> <li>• Oversee and control the study.</li> <li>• Manage funding,</li> </ul>
<b>CS/HU Professors at Michigan Tech</b>	<ul style="list-style-type: none"> <li>• To ensure the positive collaboration between student teams and the scientists.</li> <li>• Provide feedback and guide the student teams’ app development process to ensure they are learning along the way.</li> </ul>	<ul style="list-style-type: none"> <li>• Influences the grades and evaluation of students.</li> <li>• Relationship with client scientists.</li> </ul>

Summary of Stakeholder Goal Influence table:

**Citizen Scientists** are a large group of citizen volunteers who interact with the app to monitor and record data as per the instructions given by the Marine Specialists. They complete the data collection and submit the records. This group can consist of people who are both novice and experts. Therefore, it should be designed with simplicity and usability in mind. **Watershed groups** are another set of volunteer groups who monitor and record the data in their own areas or work with the fisheries department’s data collection projects. Since it could be used by different sets of people at different locations the app interface should be easily understandable and the app usability knowledge transfer should not be a hassle.

**Marine specialists** analyze and might participate in the data collection process. They evaluate the data collected by the primary users. The data should be presented in an easily understandable format and the app should be designed as per their specifications viewpoint. **Researchers** analyze and deduce conclusions from the collected data. They would expect the data to have integrity and completeness.

**Developers** would be responsible for designing the app as per the requirements set out by the client. They should maintain constant interaction with the client and ensure it is completed on time. **UX**

**consultant** would perform the usability testing and provide constant feedback to the developers on what can be improved.

Lastly, we have **Scientific community, Massachusetts division of Marine Fisheries, Massachusetts Bays – National Estuary Program** and CS/HU professors at Michigan Tech. While these stakeholders may not use the application directly they might affect its usage. MA-DMF, MB-NEP and Scientific community can use the data generated from the app for different types of research. They may enhance the app to support other research too.

## Personas


Primary user 1

Persona: Citizen Scientist	
<b>Picture:</b>	
<b>Fictional Name:</b>	Jean Grey
<b>Job Title:</b>	Student
<b>Demographics:</b>	Single Age: 23 Years Education: Pursuing Masters in Environmental and Ocean Sciences
<b>Description:</b>	Loves to swim. Interested in understanding the marine life and its impact on the environment. Active socially and participates in various volunteering activities. She is a tech savvy person and often uses internet to research about the flora and fauna.

Primary User 2


<b>Persona:</b>	<b>Watershed group volunteer</b>
<b>Picture:</b>	
<b>Fictional Name:</b>	Peter Parker
<b>Job Title:</b>	Certified Diver
<b>Demographics:</b>	Married Age: 35 Years Education: Bachelors in Exercise Science
<b>Description:</b>	Peter is an active volunteer at North & South rivers watershed association. He is reserved socially but is an excellent diving coach and an underwater enthusiast. Peter is highly impatient and is not a techie. He does not own a smartphone and rarely uses the Internet.

Secondary User 1

<b>Persona:</b>	<b>Marine Specialist</b>
<b>Picture:</b>	
<b>Fictional Name:</b>	Susan Storm
<b>Job Title:</b>	Marine Fisheries Habitat Specialist
<b>Demographics:</b>	Single Age: 32 Years Education: Master's in Marine Biology
<b>Description:</b>	Susan works for the Division of Marine Fisheries. She is passionate about marine life and has a special interest on seagrass habitat. She keeps herself physically fit and spends her free time in outdoor recreational

activities. She is not fond of technology and uses it at minimal level to check emails and read papers.

Secondary User 2

Persona: Researchers	
<b>Picture:</b>	
<b>Fictional Name:</b>	Dr. Charles Xavier
<b>Job Title:</b>	Environmental Data Analyst
<b>Demographics:</b>	Single Age: 45 Years Education: PhD in Marine Sciences
<b>Description:</b>	Dr. Charles is a federal researcher working for the National Oceanic and Atmospheric Administration. He is an extremely busy person and spends time analyzing the data from various websites and research journals on environmental conditions and its effect on marine habitats.

Simplified HTA

*Authentication View*

>Login

*Data Collection View*

>>Trip Information

>>>Input date

>>>Boat Name

>>>Crew Names

>>>Weather data



>>>GPS Coordinates

>>>Other (Station number)

>>Secchi Sampling

>>>Water depth (Ft/m)

>>>Time of Sampling

>>>Secchi Depths in meters (2 readings)

>>Drop frame data collection (4 Samples)

>>>Picture Taken (Yes/No)

>>>Picture Timestamp

>>>Sediment data (Choose all that apply)

>>>>Mud | Clay | Sand | Gravel | Cobble

>>>Eelgrass percent cover (Choose One)

>>>>0 | 1-10 | 11-30 | 30-75 | 75-100

>>>Notes

>>Additional Data - Indicator stations only (Eelgrass sampling – 4 Samples)

>>>Shoot 1 (Length/Width)

>>>Shoot 2 (Length/Width)

>>>Shoot 3 (Length/Width)

>>>Wasting Disease (Choose One)

>>>> (None, Low, Medium, High)

>>>Epiphyte Cover (Choose one)

>>>> (None, Low, Medium, High)

*Export View*

>>Submit the data for CSV Export (Choose One)

>>>Submit | Cancel

>Logout

*Support View*

>Help/Tutorial

## Summary of Simplified HTA:

The app opens with a login page where the user enters the authentication details. Upon successful authentication the user is transferred to the data collection view. The data collection process is divided into four stages.

In the first stage the user enters the trip information which includes Input date, boat name, crew names, weather data, GPS coordinates and other necessary information. After this the user is prompted to enter the secchi sampling details in the next stage which includes water depth (Ft/m), time of sampling and secchi depths in meters (2 readings). if eelgrass is present, in the following stage the user is asked to enter the drop frame data collection details which asks if the picture was taken (True/False) and prompts the user to enter the following details: picture timestamp, sediment data, eelgrass percent cover and any additional notes if required. This process is repeated for four samples. If this is an indicator station, In the last stage the user is asked to enter the additional eelgrass sampling data which contains length and width of three shoot samples, wasting disease and epiphyte cover. This completes the data collection process and the user is free to move between different screens to modify them if required before submitting it.

In the export view the user is prompted if they want to export the data in the CSV format. After the export is completed the user is logged out. There is a support view which gives access to the necessary help and tutorial details.

## Appendix

The appendix consists of notes from the meetings with the scientist.

### Scientist Meeting One

25 January 2019 Location: Library 112, met with scientist via Zoom

Time: 3:30-4:30pm

- Jill Carr

Works at Massachusetts fisheries commercial and recreational fish management

Working with Habitat mapping and restoration

*Question: Idea behind the project?*

- App development because paper management/rocking boat is difficult for data collection.

*Question: How do you want the data stored?*

- Data is stored in Excel. Output to Excel/CSV is required.

*Question: What are your preferences for App Interface?*

- Volunteers are collecting data. They are not highly trained. Make it simple. There is sun glare. Simpler screen and easier to use.
- Logging a GPS point for data being entered in background.
- Data is collected in specific order. Data entry should be progressive

*Question: What about authentication?*

- Single user ID is enough. Random person should not be able to download app and access it.

*Other information:*

- One station multiple teams at a time.
- Each subsection can be a screen in the app
- Station number can be alphanumeric.
- Add a photo taking feature if possible.
- Add realtime weather data if possible.

Scientist Meeting Two

1 February 2019 Location: Library 112, met with scientist via Zoom

Time: 3:30-4:00pm

*App Development platform?*

- An online web app would be used on grails instead of a mobile app.

*Question: Can you send us sample data?*

- Jill would be sending a sample CSV document so that we are on the same page.