

SW Engineering CSC648/848 Summer 2019

EnvironMate

Team 01

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## **1. Executive Summary:**

A clean environment is essential for healthy living. The more the environment gets neglected and trashed, the more the air and water become polluted with toxins and contaminants, which have a serious impact on our health and the health of our children. EnvironMate is an application that helps fight this global issue. Our application will serve as a platform to With the help of the public, we can come together as one and keep the environment clean and maintain a balance which is necessary to sustain life on this planet in the long run. An individual cannot change the world; however, if the community comes together as one, we provide a platform in order to make a difference, and truly change the world!

EnvironMate provides an application to the community to where if you see an environmental defect, you can post it to our website. A defect can be anywhere from a large amount of garbage on the floor, oil spills, hazardous materials, unusual smell, etc. A user can take a picture of the incident or even give a brief description and location and submit it on our application. Once submitted, the incident is immediately sent to city officials who will review the defect and take care of the issue in a promptly manner. Users can search for incidents by location and see incidents in their nearby areas to avoid potential encounters. While viewing other incidents, they can check the status of the posts, whether it is received (open), in progress, or complete. EnvironMate provides a fast, easy to use, and robust user experience. Our product is unique because we provide a user friendly interface which caters to any type of user, regardless if they are an expert or a novice in using online software.

EnvironMate has a motivated team of highly trained software engineers from the prestigious San Francisco State University. They all have a deep interest in keeping our environment safe and healthy. Their focus is to provide the user an efficient experience, while keeping things simple and easy to use. Join us, to make the planet a better place.

## 2. Personae and Use Cases:

### Personae

Karen: mother & full-time employee

- A. Works at a start-up
- B. Plays a big role in her community
- C. Kids play outside/ at park most of the day
- D. Ensures to make sure safety is fundamental when her kids go out at play
- E. Takes young child for a stroll in the park every so often
- F. Avid googler
- G. Knows how to search for topics
- H. Reports incidents to neighbors whether it be trivial or not
- I. Spends a-lot of time outside
- J. Is on team soccer league with her coworkers

Bob: recreation and parks worker

- A. Outdoor enthusiast
- B. Loves to rock climb
- C. Spends time with friends on mountain ranges rock climbing
- D. Also loves to slack-line
- E. Is head of group with friends therefore likes calling to make sure parks are free of debris
- F. Has experienced being cut with glass on the floor of the park in the past.
- G. Not an avid googler but very tech proficient in this app strictly because he is a big park/outdoors person
- H. Works at REI
- I. Goes to school for geology part time
- J. Likes to feel like he's making a contribution to the community.

Patrick: the dog walker

- A. Full time student
- B. Part time dog walker
- C. Lives in san francisco
- D. Spends as much time as he can working to pay rent
- E. Not too big on tech but his coworker told him about this website to report incidents
- F. Usually takes the group of 4-6 dogs on park and likes to ensure parks are glass/debris free
- G. Typically has a good amount of free time to plan where he's going to take the dogs next
- H. Aside from hanging out with the dogs, he likes to use that time to explore for himself.
- I. Calls parks to check if area is good for walking dogs, often left on hold and unsatisfied

John: recreation and parks manager

- A. Park enthusiast
- B. Hard worker
- C. Active social media user
- D. Pays great attention to details
- E. Loves children
- F. Writes blogs about the environment.
- G. Dislikes people who post false information online
- H. Have a dog named Pat who he spends a lot of time in parks with.
- I. A veteran
- J. Wrote some code when he was in college

## Use Cases

Case 1: Karen, single mother (Moderate tech skill)

Karen is a single, environmentally conscious mother who regularly strolls through her local park. She has a moderate understanding of technology because of her social media usage. Her respect for nature urges her to report any environmental issues she runs into at the park. She goes to EnvironMate to see if anyone else has reported this issue but quickly finds no **incidents** match. She takes a picture of the incident and with some short description tries to upload it, but is prompted to **login**. Karen is easily able to use her email and use her password. The **incident** is now on the site and marked **received**.

Case 2: Bob, recreation and parks worker (Experienced user)

Bob works for SF Recreation & Parks and is sent to specific parks for the day. Bob checks EnvironMate to insure the more dire **incidents** are attended to. As a regular user, Bob is already accustomed to the interface of the site and can swiftly login to his **admin** account. He is then able to search for today's park, mark the **incidents** as **reviewed** and get to working on them. After completing the tasks, Bob can now alter the **statuses** to **resolved**.

Case 3: Patrick, dog walker (Minimal tech knowledge)

Patrick walks dogs for a living. He utilizes the EnvironMate web app to ensure the park he picks for the day is safe for him and his clients. Though only having minimal technical skills when it comes to web browsing, Patrick simply browses the latest **incidents** on the front page as an **unregistered user** of EnvironMate and finds a suitable park to walk.

Case 4: John, recreation and parks manager (Experienced user)

Part of John's desk duties as a parks manager is to monitor the **incidents** posted to EnvironMate for irrelevant **incidents**. As an **admin** user he deletes the irrelevant **incidents** ensuring his team focuses on important **incidents**. When John verified that an incident is valid, he uses his mobile device to update its status from received to **reviewed** set a task force to handle the matter. After 48 hours of the issue being in **reviewed** status, John once again use his mobile device to mark the incident as **resolved** once the incident has been fix.

### 3. **Data Items:**

- Unregistered users (no data saved)
- Registered User Requirements:
  - Email (identify city workers by domain name)
  - Name
  - Date Of Birth (legal reasons)
- Admin (city employees):
  - Email
  - Name
  - Admin level (ability to delete or just change status etc.)
- Incidents:
  - Location
  - Date/time reported (automatic generation)
  - Type of incident:
    - Chemical spill (oil, gasoline, etc)
    - Hazardous waste (used needles, feces, etc)
    - Animal (wild, stray, etc)
    - Damage (general damage: potholes, broken/dangerous equip)
    - Others (user specified)
  - Photograph of incident
    - Could be multiple photographs, min 1.
  - Status of incident:
    - Received (not yet seen)
    - Reviewed (seen and in progress)
    - Resolved (completed)
  - Last status update (date and time) (Received, Reviewed, Resolved)
  - Archived (after resolved for X days so it is no longer on active issues page)

#### **4. Functional Requirements:**

1. System shall allow 3 types of users; unregistered user, registered user, admin user.
2. Unregistered user shall be able to view all the incidents.
3. Unregistered user shall be able to search incidents by zip code.
4. Unregistered user shall be able to search incidents by location.
5. Unregistered user shall be able to filter incidents by multiple locations.
6. Unregistered user shall be able to filter incidents by types of incidents.
7. Unregistered user shall be able to filter incidents by status.
8. Registration form: required for users to register. Contains name , e-mail and Date Of Birth. Stored in the database.
9. Unregistered user shall be able to register.
10. Registered user shall be able to perform all functions of unregistered users.
11. Registered user shall be able to edit their profile information.
12. Registered user shall be able to login.
13. Registered user shall be able to logout.
14. Registered user shall be able to create incidents; with one or more photographs, location, type and description.
15. Registered user shall be able to view the incidents created by them.
16. Registered user shall be able to edit incidents that are not in resolved status.
17. Registered user shall be able to delete their own profile.
18. Admin user shall be able to perform all functions of registered users.
19. Admin user shall be able to change the status of an incident.
20. Admin user shall be able to archive an incident if it is identified as inappropriate or has been in resolved status for X days.

## **5. Non-Functional Requirements**

- 1. Application shall be developed, tested and deployed using tools and servers approved by Class CTO and as agreed in M0 (some may be provided in the class, some may be chosen by the student team but all tools and servers have to be approved by class CTO).**
- 2. Application shall be optimized for standard desktop/laptop browsers e.g. must render correctly on the two latest versions of two major browsers**
- 3. Selected application functions must render well on mobile devices**
- 4. Data shall be stored in the team's chosen database technology on the team's deployment server.**
- 5. No more than 50 concurrent users shall be accessing the application at any time**
- 6. Privacy of users shall be protected and all privacy policies will be appropriately communicated to the users.**
- 7. The language used shall be English.**
- 8. Application shall be very easy to use and intuitive.**
- 9. Google analytics shall be added**
- 10. No email clients shall be allowed**
- 11. Pay functionality, if any (e.g. paying for goods and services) shall not be implemented nor simulated.**
- 12. Site security: basic best practices shall be applied (as covered in the class)**
- 13. Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development**
- 14. The website shall prominently display the following exact text on all pages "*SFSU Software Engineering Project CSC 648-848, Summer 2019. For Demonstration Only*" at the top of the WWW page. (Important so as to not confuse this with a real application).**



## 6. Competitive Analysis:

Features	EPA	SFDPH	311	EnvironMate
Website Reporting	+	-	+	+
Easy access to Reporting Features	+	-	+	+
Easy Use of Reporting Features	+	-	+	+
Focuses on Local Issues	-	+	+	+
Focuses on Environmental Issues	+	+	-	+

There are a couple other websites that offer similar functions as EnvironMate, currently. The most notable ones include the US Government's EPA website, and San Francisco County's Department of Public Health website which redirects to the 311 reporting site. EnvironMate would distinguish itself from the competition by focusing on local issues, and offering a more seamless, user-oriented experience. The EPA's protocol for reporting issues through their website involves reporting the name of the suspected violator and location of the incident, details about the incident, and optional photographs of the incident. While, EnvironMate would include a similar form for reporting incidents, EnvironMate would focus on local incidents, under the jurisdiction of the San Francisco County government. San Francisco County's Department of Public Health offers a means for reporting local environmental issues. However, the process of doing so is confusing and inconvenient, providing ample opportunities for the user to give up before being able to report their concerns. The Department of Public Health's website provides users with the options of traversing a long automated phone call or using a broken weblink to 311's reporting features. Neither one of these options provides the user with easy access for reporting issues. The diligent user may find that they can navigate the 311 website for reporting concerns. However, 311 does not focus on environmental issues. Of the total number of categories for reporting issues, only a fraction of them are centered on environmental concerns. While 311 does provide an outlet for reporting these concerns, the outlet is limited and not focused on environmental issues. EnvironMate would make the usability of the platform a top priority to allow for easier reporting than the current options. We would also like to narrow the scope of received reports to those involving local governmental issues.

7. **High Level Architecture/Software used:**

- Server host:
  - AWS EC2
- Operating System:
  - Ubuntu
- Web application framework:
  - Express
- Server-side programming language:
  - Node.js
- Front-End frameworks:
  - Bootstrap
  - EJS
- Database:
  - MySQL
- APIs :
  - Google analytics
  - Google maps
- Supported browsers:
  - Google Chrome
  - Firefox
  - Safari

**8. Team:**

**Team Lead, Document Master:** Michael Gilbert

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