

Environmental Issue Reporter

SW Engineering CSC648/848 Section 01 Spring 2018

Team 05

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1.0	Initial Design Documentation	2/28/18
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Executive Summary

In this day and age, environmental issues should be prioritized as we progress as a society. Our web application offers a solution to getting regular citizens and elected officials involved in working together to troubleshoot the environment in a familiar way. We use social media everyday to speak to our loved ones, find second hand materials, and seek criticisms of local restaurants and businesses. Why not provide a social media way to save the planet? Our platform allows people to communicate issues in a way people are already familiar with about environment hazards with each other and also to get in contact with city officials on ways to resolve complaints that would otherwise pile high on an unpaid intern's inbox in city hall.

Most government environmental reporting websites feel like a chore to utilize, difficult to navigate through, and look like they were designed in 2005. We aim to build a visually appealing web application that will incentivize its users to visit on a daily basis by gamifying being active in the community by mimicking a social network scheme, something most internet users today are already familiar with. Instead of giving the users a chore with the feel of doing government paperwork, users shall be able to post quickly and easily to provide the government information about the environment and get in contact with city officials. Furthermore, users shall be able to search for results relevant to their communities and shall be given an opportunity to comment on local issues or subscribe to environmental news local to their area. Lastly, users shall be given an opportunity to personalize their own profile and get to know other community members and leaders in their neighborhood that they would otherwise never interact with.

Our team of environmentally conscious software engineers is a top notch group of seniors from San Francisco State University. We are based in the Bay Area and understand the need for attention to the environment. It is not enough to implement top down solutions such as a ban on plastic bags or a tax on unclean vehicles. We want to provide a means for a bottom up solution from within the community. This web application shall allow citizens to take responsibility for the earth in their own hands and work together to keep our planet clean.

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1. Use Cases

1. Browsing through the website to search for environmental issues as nonregistered user

George is looking for alternative sources of income and decides to invest a new home to rent out. He decides that he wants to find a nice place in California. Unsure of where to look, he searches online for areas where the environment may be favorable for renting out and finds a website that displays a list of environment issues with filters that target the areas he's interested in living in and a nice user interface. After browsing the list of environmental issues and history, he takes notes of areas that have bad environmental issues using the sites heatmap and places that might cause trouble in the future for his home.

2. Posting about environmental issues as a registered user

Martha is a mother of two and decides to take her children to the park one afternoon. At the park, she is immediately in disgust after seeing industrial waste dumped on the playground from the nearby factory. She takes a photograph, goes home, heads to the environmental issues website she is already registered in, and begins writing a post about what she saw. Martha writes a paragraph about the park's issues, includes the address of the park, and uploads a photograph to prove what she saw. After she posts, other people on the website can view the current condition of the playground.

3. Updating the status on an environmental hazard as a city official

Edward is a city official that wants to be more hands on with his community members. He registers for an environmental issues website and is able to email his credentials to a site admin in order to verify that he is a city official. Edward notices a post about industrial waste at the local park from a nearby factory. He promptly begins a city investigation into punishing the factory for tarnishing a beloved neighborhood playground. He is able to report on the post about the city's current progress in making sure the factory dumps its industrial waste in a more appropriate manner.

4. Admin moderating the site

Joseph works for the site, and a city official has emailed asking to be given a City Official account. They are not allowed to create one themselves, so Joseph adds a City Official account to the database, and emails them the login information. The city official is now able to login to their account and change their password to their liking.

Removing reported posts?

2. Data Definitions

Avatar	A small image used to depict a user profile in posts and comments that may be a preset provided by the website or a custom uploaded image.
Ban	A status applied to a user that will limit their ability to use features of the website that registered users normally have. This status is applied to users that violate the site rules or show abusive behavior.
Bio	A section of the user profile that displays text input by the user that describes them.
Captcha	Used to deter bots from accessing site features. It is a small puzzle in which the user is asked to verify that they are human by the task of transcribing an image of words into text.
City Official	Special account for a city official or a representative of a city official. Can make official announcements.
Comment	Text submitted by users to provide extra information or their opinions on posts.
Filter search	An advanced search that will query results limited by keywords, date, original poster, or location.
Message	private text sent from registered user to another registered user.
Post	A environmental issue submitted to the site by a registered user that contains images, posts, and location of the issue.
Profile	Page for each user that displays user information, posts, comments, bio, and other information.
Registered user	A user with an account, not necessarily logged in.
Report	Users notify the site of inappropriate posts by choosing to report.
Subscribe	Users can subscribe to posts or areas, allowing them to receive in-site notifications or emails of new posts.

3. Functional Requirements

1. Unregistered Users

Unregistered users are users who are without an account, but are still capable of browsing posts on the site

- 1.01 Users shall be able to register
- 1.02 Users shall be able to sign up using email, FB, or Google
- 1.03 Users, who sign up using email login, shall be required to use complex password
- 1.04 Users shall be required to create a name and a username
- 1.05 Users shall be required list the general area they live in the profile
- 1.06 Users shall be required to agree to age restriction of 13+
- 1.07 Users shall be required to agree to TOS
- 1.08 Users shall be able to browse
- 1.09 Users shall be able to filter search by area
- 1.10 Users shall be able to filter search by issue type - tag
- 1.11 Users shall be able to filter search by date - chronologically, or specific date
- 1.12 Users shall be able to filter search by person
- 1.13 Users shall be able to filter search by keyword in post - limited to area/timeframe
- 1.14 Users shall be able to filter search by pages
- 1.15 Users shall be able to browse a heatmap of issues

2. Registered Users

Registered users are users who have an account with the site, and login to perform higher functionality than unregistered users

- 2.01 Users shall have capabilities as unregistered users
- 2.02 Users shall be able to post about environmental issues
- 2.03 Users shall be able to include images and location in posts
- 2.04 Users shall be able to comment on posts
- 2.05 Users shall be limited to 100 characters in comments
- 2.06 Users shall be able to become verified users
- 2.07 Users shall have a profile page
- 2.08 Users shall be able to create a bio, max-limit of 500 chars.
- 2.09 Users shall be able to create avatars or use one of the preset avatars
- 2.10 Users shall be able to plug in their social media: FB, Twitter, Instagram & LinkedIn
- 2.11 Users shall be required to specify the location
- 2.12 Users shall be required to list tags that relate to the environment issue - limited
- 2.13 Users shall be able to upload pictures, max-limit of 4 pictures
- 2.14 Users are required to write a description, max-limit of 300 chars
- 2.15 Users shall be able to disable comments
- 2.16 Users shall be able to comment on posts

- 2.17 Users shall be able to flag posts
- 2.18 Users shall go through captcha to send a message
- 2.19 Users shall be able limited messages from an area
- 2.20 Users shall be limited in messaging text only
- 2.21 Users shall be able to report messages they receive
- 2.22 Users shall not be allowed to message City Officials
- 2.23 Users shall be able to subscribe to comments, but only if their own post
- 2.24 Users shall be able receive email updates on new comments
- 2.25 Users shall be able to receive notification on site on new comments
- 2.26 Users shall be able to subscribe to areas by area code, city, county
- 2.27 Users shall be able to subscribe to any new post or weekly/daily updates
- 2.28 Users shall receive a strike if their post is reported and removed
- 2.29 Users shall be banned if they receive 3 or more strikes

3. City Official

City Officials are special accounts run by a city official or a representative, and has special posting abilities

- 3.01 Users shall have capabilities as registered users
- 3.02 Users shall be able to link official environmental report website
- 3.03 Users shall not receive messages from other users
- 3.04 Users shall have extra information on a unique profile
- 3.05 Users shall be able to post official statements that stand out from regular posts
- 3.06 Users shall be given a city official account by a site admin

4. Admin

- 4.01 Admin shall provide City Official accounts for city officials
- 4.02 Admin shall ban users who's bio contains inappropriate text
- 4.03 Admin shall ban users who post inappropriate posts
- 4.04 Admin shall ban users who post inappropriate comments

4. 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 all major browsers: Mozilla, Safari, Chrome.
3. Application shall have responsive UI code so it can be adequately rendered on mobile devices but no mobile native app is to be developed
4. Data shall be stored in the team's chosen database technology on the team's deployment server.
5. Application shall be media rich (at minimum contain images and maps)
6. No more than 50 concurrent users shall be accessing the application at any time
7. Privacy of users shall be protected and all privacy policies will be appropriately communicated to the users.
8. The language used shall be English.
9. Application shall be very easy to use and intuitive.
10. Google analytics shall be added
11. No e-mail clients shall be allowed
12. Pay functionality, if any (e.g. paying for goods and services) shall not be implemented nor simulated.
13. Site security: basic best practices shall be applied (as covered in the class)
14. Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development
15. The website shall prominently display the following exact text on all pages "SFSU Software Engineering Project, Spring 2018. For Demonstration Only" at the top of the WWW page. (Important so as to not confuse this with a real application).

5. Competitive Analysis

	Nextdoor	EPA	Broward	OEHHA	Our Product
Map - Heatmap	+	-	-	+	+
Map - Show posts	-	-	-	-	+
Browse	+	-	-	-	++
Post	++	+	+	-	++
Comment	+	-	-	-	+
User account	+	-	-	-	+
Profile	+	-	-	-	++
Notifications	+	-	+	+	+
Likes on posts	+	-	-	-	?
Polls	+	-	-	-	-
Helpful resources	+	+	+	+	-
Refer users	+	-	-	-	-

The advantage of our website over existing government websites for reporting environmental issues is that ours is more of a social media platform rather than a reporting system. Users can subscribe, post, and comment about issues and have their own profile, much like Nextdoor. This will incentivize the users to be more active in the community and to use the website more often as it resembles social media platforms that they have already adopted. In addition to gamifying the process of reporting hazards, we are also providing a way for verified city officials to interact with their constituents in a more hands on manner. This shall allow the city officials to react to environmental concerns more quickly and to bring public attention to the current progress of any ongoing city action on environmental hazards.

6. High-Level System Architecture

- Amazon Web Servers - EC2
- Amazon Linux
- Amazon Relational Database Systems
- MySQL 5.6.37
- Python 3.6
- Django 2.0.2
- Google Analytics
- Supported browsers: Google Chrome, Firefox, mobile
- Google Maps API
- Google Captcha

Utilizing Amazon's AWS services and Elastic Cloud Computing, we shall host the web application on an Amazon Linux machine. In addition, all of our databases will also be stored on Amazon's Relational Database Systems. Our backend architecture will run on Python 3.4 utilizing Django 2.0.2 as a web framework that will easily allow us to implement Bootstrap as a front end architecture. Furthermore, to keep track of website metadata from users, we will implement Google Analytics as a solution. In order to reach the larger share of the market, we shall support Google Chrome, Firefox, and mobile browsers. In order to display a visual component of the environmental hazards in an area to users, we shall implement a Google maps component in our website. Lastly, to deter bots from utilizing our web services for malicious needs, a Captcha puzzle will be required for certain actions.

7. Team

Name	Role
James Quintero	Team Lead
Stanley Liu	Front End Lead
Danielle Nunez	Back End Lead
Tumar Temirova	Front End
Alex Hernandez	Back End
Jianhao Zhong	Back End

8. Checklist

Checklist Item	Status
Time slot to meet	Done
Github master chosen	Done
Agreement on SW Tools and Deployment Server	Done
Backend Framework	Done
Frontend Framework	Done
Final M1 Agreement/Understanding	Done