

**Team Big Data**

# **Bea-You-Tification**

**Date: 09/21/2022**

**Team Leader:** Joseph Armas

**Team Members:** Joshua Gherman

Rhoy Oviedo

Frank Curry

Ghabrille Ampo

David DeGirolamo

**Git Repository:** <https://github.com/JosephArmas/cecs-491A-Team-Big-Data>

## Version History

### Current Version: V2

- **CHANGES:**
  - **Overview**
    - Overview is changed to address the project's change in scope.
    - Bea-You-Tification will now report **Litter, Abandoned Items, and Vandalism.**
    - **Local clean-up services** can be contacted through Bea-You-Tification.
    - Reputable users are able to create and take responsibility for clean-up events.
  - **Target Audience**
    - Changed to organizations that interested in litter, vandalism and salvaged items, in addition to people who live in California that want to keep their own communities clean
  - **Project Value**
    - Project Value has changed to address the project's change in scope.
    - Value has changed to include “**Beautification of Communities**”.
  - **Project Scope**
    - Project Scope has been modified to include new extended scope of **Abandoned Items and Vandalism.**
    - Included ability to contact **Local clean-up services.**
    - Include a **Reputation System** to allow eligible users to create events.
    - **Clean-up Events** are the user’s responsibility and are a pin on the map.
  - **Product Scope**
    - Product Scope has been modified to include ability to report Abandoned Cars and Vandalism.
  - **ALL App Features and Future Features have changed to show SCOPE**
  - **App Features**
    - Events
    - Reputation System

- Services
- **Vision**
  - Future Features
  - Reward System
  - 3D map
  - Mobile support
- **References have been added [1]**
- **Name Change**

**Previous Versions: V1**

## **Table of Contents**

### **Page:**

1. Cover Page
2. Version History
4. Table of Contents
5. Overview
5. Target Audience
5. Project Value
6. Project Scope
8. Product Scope
12. Product Projection
13. Competitors
14. Vision
16. Glossary
17. References

## **Overview**

Kab.org reported in their 2020 National Litter Study that there were 152 items of litter for each U.S. resident [1]. Every piece of that litter negatively affects the surrounding environment and takes away the beauty of a community. Bea-You-Tification, developed by Team Big Data, aims to provide its users a map to report litter, abandoned items, and vandalism along with a list of local clean-up services that can properly handle the report. Local clean-up services can use Bea-You-Tification to be alerted by their specified reports and set up community events for California residents to volunteer and help. This can lead communities to create a cleaner and healthier environment.

## **Target Audience**

People at the age of 14 and over that live in California are targeted to use Bea-You-Tification to help their community lead to a cleaner environment. Environmental organizations will have better access to finding accurate polluted areas, vandalism hot spots and abandoned items through the Bea-You-Tification map.

## **Project Value**

Team Big Data aims to connect California residents and their local clean-up services to help in the beautification of their communities. Team Big Data provides a platform for California residents to assist in locating and addressing: litter, abandoned items, and vandalism.

## **Project Scope**

Team Big Data will create Bea-You-Tification, a single page web application that maps user reports and lists local clean-up services. Research and development of the website will be done by Team Big Data. The project will be completed no later than May 10, 2023 as a functional web application with its source code posted on Team Big Data's Github. **AWS** will host Bea-You-Tification. Users will get a product that provides: Functional login, logout, and user management; Interactive **litter map** of California to add, delete, and update pins of a report on a specific location; Reports of litter, abandoned items, and vandalism pins will be dated, timed, and have the option to include images of the area; Lists local clean-up services corresponding to reported pins; Local clean-up services will be able to add their services to the list or users with recommendations; Customizable notifications for local clean-up services and alternative solutions to be alerted by their specified pins in a given area; A reputation system to check for users eligibility to create events; Lastly, reputable users can set up clean-up events that they are completely responsible for and will be a pin on the map.

## **Language**

The supported language we will be delivering is **en-us**.

## **Units**

Support for **Imperial System** units.

## **Supported Clients**

Users will need to use a web browser to access the application.

Recommended: Chrome 104.x (64 bit)

## **Targeted Audience**

Users have to be at least 14 years of age and a California residence to create an account.

## **Time Zone**

The displayed time zone will be in *PST*.

## Timeline

Task	Due Date	Milestone
Business Requirements Doc	October 5, 2022	
High-level Design	October 5, 2022	1
Project Plan	October 5, 2022	
	November 9, 2022	2
	December 15, 2022	3
Final Product release	May 10, 2023	

## **Product Scope**

Our Bea-You-Tification stands alone as the sole provider of California's first **litter map**. The product provided would be the first community-driven litter map able to accurately pinpoint places of interest in California that are health hazards to the environment. Moreover, communities can participate by reporting salvaged vehicles and vandalism.

### **Common Components:**

**Login** - Allows users to access their account on Bea-You-Tification. Users can access their account with the proper credentials (a valid email and 8-32 character password) submitted to the login prompt.

**Logout** - Allows users to exit their account on Bea-You-Tification. A logout button is provided for users to exit their account.

**User Management** - Allows for users to create, recover, update, and delete their account. Users will be prompted to input a valid email address when registering an account following a password of their choice. In cases where a user forgets their password, users will be able to reset their password by inputting their email address that was used in registering an account. After creating an account, users have the option of updating their profile.

**User Access Control** - Ensures the user's account has the authorization to do the action they want. These actions include logging in, logging out, adding a pin to a litter site, uploading photos of litter, and clearing pins.

**Logging** - This feature will keep a trail of records when users are interacting with the web applications and are pinning to the map and marking areas that have been cleaned up. Every pin will consist of global coordinates, date and time when a user adds, deletes or marks as clean. Events created by users will be logged with the time, date.



**Log Archiving** - The logging will be archived using Microsoft **SQL Server** 2019.

**Error Handling** - Errors are likely to come from the input of the user. These could include any kind of information inputted into the map or login information. Errors with the Login feature will display “Password is invalid” when input incorrectly and “Email is not found” when a user improperly inputs their email. When a runtime error occurs the application will halt and the user will be prompted with a warning that an error occurred. The error will be sent to the log for the active session it occurred in. A user feedback feature will allow the users to report any form of errors that arise when using the application.

**Analytics** - Keep track how long a user is on Bea-You-Tification and how often a user is interacting with the website counting the number of uploaded images and dropped pins within a week.

## **App Features:**

**Show a Map of Littering in the Area** - Displays a map of hot spots for litter, abandoned items, and vandalism. This feature adds to the value of the project by being the source of user interaction and data logging.

### **Scope:**

- Users are able to filter the map by pin type.
- Users are able to filter by zip code.

**Upload Pictures** - Users uploading a picture with its corresponding pin helps to visually understand how to address the pin.

### **Scope:**

- Able to configure file type.
- Able to configure file size.
- Uploader is able to access all uploaded pictures.

- Uploader is able to manage read and write access.
- Uploader is able to remove read and write access.

**List Pins** - Shows a list of specified pins and used to drop and mark on the map.

**Scope:**

- Users are able to drop a pin on the map.
- Users are able to remove / mark a pin on the map.
- Users are able to configure pins by type.
  - Litter pins - User pins indicating areas of high litter areas.
  - Group Event pins - Organized events would be shown.
  - Junk Item pins - Usable items dropped off on the side of the roads or in public spaces
  - Abandon item pins - pin used for relatively large items like a salvaged vehicle
  - Vandalism pins - User pins indicating an area that has been vandalized
- Uploader is able to access all previous pins dropped.
- Uploader is able to see who deleted/marked a pin.

**Alerts** - Notifies users of pins they have specified to be alerted to.

**Scope:**

- Users are able to opt in nearby pin drops by zip code.
- Users are able to configure to opt in to the type of pins.
- Uploaders will ping opt in users within the zip code of pin drop.

**Reputation System** - Users can rate one another to gain reputation and credibility.

**Scope:**

- Users gain and lose reputation based on report and event pins.
  - Based on 0-5 star system
- Users can read their own rating and contribution.
- Reporter is able to access previous submitted reports

**Events** - The value added by having events is by allowing environmental communities to form through events created for the beautification of California.

**Scope:**

- Users can join a clean-up event through the event pin on the map.
- Users will have only read access to events.
- Uploader can configure the option to display user headcount in attendance.
- Users will be able to apply for cleaning events.
- Uploaders will display a menu of event details.

**Services** - Services will enable users to have access to a list of cleaning services leading to alleviate California's litter, vandalism, junk or abandon items

**Scope:**

- Users are able to upload unlisted services.
- Uploader is able to be configured by company name and number.
- Uploader is able to be configured by a website link.
- Uploader is able to access previous services listed.
- Uploader is able to modify.
- Uploader is able to delete service.
- Uploader is able to specify a service with a particular area code.

## **Project Projection**

### **Risks**

A potential risk of the application would be the liability of trespassing on any private property that had been mislabeled as public. In addition, users may lead to a conflict when arriving at the same time at a location of a listed junk item with another user who is also interested in the junk item. On the other hand, there is a risk of users entering misinformation on reports and events. Users who create an event will be responsible for any risks. Score integrity will be based on the users and whether they entered the correct data.

### **Timeline**

The planning for the project would end on January 1, 2023. The project would, at the latest, start on January 1, 2023 and be completed by May 10, 2023.

### **Costs**

The main cost of Bea-You-Tification is free since we will be using **AWS** to host the IIS Web Server.

### **Resources**

Resources needed for Bea-You-Tification: Visual Studio Code as the **IDE** using JavaScript and C# languages; AWS to host our **Windows IIS Web Server**; SQL as the Database; Lastly, Team Big Data will be the developers for the project.

## **Competitors**

### **CalRecycle**

As our leading competitor, CalRecycle's value and what they add for the environmentalist community is that they provide a way for their users to find the nearest recycling center. CalRecycle uses government funding to provide a map of recycling centers, but that is all they do for the public. [2] CalRecycle does not provide the litter map that we are providing. CalRecycle, being a government website, is unlikely to implement a litter map since doing so would require sufficient propositions to enact the research of data. Our Bea-You-Tification collects data for the litter map straight from individuals and does so for free.

### **Facebook**

Facebook is a potential competitor, in regards to event planning. A feature that Facebook has is planning events for any purpose [3]. Since Facebook has a large user base, 2.93 billion users according to Statista [4], they can attract more attention to causes such as beach clean-ups. However, our product provides more than event planning. The main value of our product is the litter map, something that Facebook is unlikely to provide. Facebook is unlikely to create a litter map similar to our application because the percentage of their user base that would use the feature would be very small.

### **Litterati**

A similar product to ours, Litterati is a mobile app that shows users a map of dirty areas [5]. When the user picks up trash they can label where they found the trash. The app does not provide the map freely as ours will. The data would have to be requested from the company to see the impact. Litterati finds value in using the idea of picking up trash as an art form. Their goal is to collect data on specific localized trash in locations rather than creating an actual publicly available litter map [6].

## **Vision**

### **Future Scope**

Aside specifically just in California, we aim to influence the rest of the United States to keep the world a cleaner place. We would like to collaborate with established government organizations to set up volunteer work for areas with high litter, vandalism and help contribute to take of large abandoned items. In the future robots can be developed to automatically clean up littered areas marked in Bea-You-Tification.

### **Future Features**

**Filter by State** - With the possible expansion of the application, it would limit the range of which you can find pins, events, and receive notifications.

#### **Scope:**

- User is able to select one or multiple states to filter
- User is able select states they do not reside
- Able to work in tandem with distance limiter
- User has access to all supported states
- Uploader will add more states as they are supported
- Uploader will provide different services for users in line with state legislation

**User Rewards** - Users are rewarded for the work that they accomplish either through reputation or through participation in events. The goal is to entice a cleaner community.

#### **Scope:**

- Users are provided with discount options
- Users can have activity tracked to show impact
- Valid Users will be emailed coupons

**Mobile Support** - Increasing the presence of the application with native support on mobile operating systems. This would improve our value by reaching a larger audience of potential users

**Scope:**

- Able to access everything on web application
- User can enable GPS for better geotag
- Users are able to use accounts on both mobile and browser
- Uploader formats map to have functional touch controls
- Users will be able to find Bea-You-Tification app on Google Play store and App Store

**3D Map** - Adjusts the map to work with an additional axis. The value of the feature is more precision for placing pins and better visual clarity.

**Scope:**

- User is able to move the map along the z-axis
- User can reorient the map
- Uploader implements touch controls for mobile

## **Glossary**

**AWS** - Amazon Web Services which provides on-demand cloud computing platforms and APIs.

***En-us*** - This annotation refers to the English language using United States colloquialism.

**Google Maps JavaScript API** - Google developed code to implement Google Maps onto the website.

**Imperial System** - Using measurements of feet, inches, pounds, ounces, etc.

**Litter Map** - A geographical map of waste found on the streets.

**SQL Server** - A database management system, specifically developed by Microsoft.

**PST** - Pacific Standard Time.

**IDE** - Integrated Development Environment.

**Windows IIS Web Server** - Windows Internet Information Services Web Server aim to host a website.

**Android** - Operating System used in Android phones.

**iOS** - Operating System used in Apple iPhones.



## **References**

<https://github.com/JosephArmas/cecs-491A-Team-Big-Data>

- [1] “2020 National Litter Study Summary Report: May 2021.” Keep America Beautiful.  
[https://kab.org/wp-content/uploads/2021/05/Litter-Study-Summary-Report-May-2021\\_final\\_05172021.pdf](https://kab.org/wp-content/uploads/2021/05/Litter-Study-Summary-Report-May-2021_final_05172021.pdf)
- [2] “Beverage Container Recycle Centers.” CA.gov.  
<https://www2.calrecycle.ca.gov/BevContainer/RecyclingCenters/>.  
(accessed Sept. 16, 2022).
- [3] “Facebook.” Facebook.com. <https://www.facebook.com/events>.  
(accessed Sept. 16, 2022).
- [4] “Number of monthly active Facebook users worldwide as of 2nd quarter 2022.”  
statista.com. <https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/>. (accessed Sept 16, 2022).
- [5] “Download the Litterati App and Fight Litter with Data.” Keep Massachusetts Beautiful.  
<https://keepmassbeautiful.org/what-we-do/litter-prevention-cleanup/use-the-litterati-app-to-target-litter-hotspots.html>. (accessed Sept 16, 2022)
- [6] Ted. This app makes it fun to pick up litter. (Dec. 2016). Accessed: Sept. 17, 2022.  
[Online Video]. Available:  
[https://www.ted.com/talks/jeff\\_kirschner\\_this\\_app\\_makes\\_it\\_fun\\_to\\_pick\\_up\\_litter](https://www.ted.com/talks/jeff_kirschner_this_app_makes_it_fun_to_pick_up_litter).