Team Big Data

U-tification

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

Version History

Current Version: V3

- **CHANGES:**
  - **Name change to U-tification**
    - Changed all from Bea-You-Tification to U-tification
  - **Core Components**
    - Deleted Error handling
    - **Core components combined in App features**
  - **App Features**
    - Login - scope added
    - Logout - scope added
    - User Access Control - added details on user access regarding authorization and scope added
    - Logging - scope added
    - Feature added: Authentication - scope and value
    - Pins - added to scope: authentication, number of pins dropped, text description
    - Log archiving - scope added
    - Analytics - scope added
    - Upload picture - added to scope: authentication
  - **Reference**
    - Vatanak Vong - Title name

Previous Versions: V2

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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. U-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 U-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 U-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 U-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 U-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 U-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, 202==	
	==November 9, 2022==	==2==
	==December 15, 2022==	==3==
Final Product release	May 10. 2023	

Product Scope

Our U-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.

App Features:

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

Scope:

- User is able to access their account
- User must input a valid email and password
- User is informed when login fails (Wrong email / password)
- User is granted a valid key and moved from guest to account holder

Logout - Allows users to exit their account on U-tification. A logout button is provided for users to exit their account.

Scope:

- User is moved from account holder to guest.
- User is allowed to login again

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, uploading photos, and clearing pins. Each user has their own individual account and is able to make any changes with proper authorization. Admins of the system can remove the account from the application.

Scope:

- User able to login and logout
- User able to configure pins
- User able to configure photos
- Other Users able to update pin
    - Marking as cleaned
- System admins are able to remove accounts from system
- Require authentication

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.

Scope:

- Uploader able to see previous pins drop
- Users are able to see time, date, location of pins dropped
    - Zip, global coordinates, city
- Pin uploader able to see time, date of a marked cleaned or deleted
- Pin uploader able to see which user marked
- Users are able to see time, date, location of created events
- Users are able to see previous attended events
- Event uploader able to see previous created events
- Uploaders able to see time and date of previous recommended services
- System admin able to see time and date of created account
- System admin able to see time and date of deleted account

- Users and system admins are able to see star rating on users
- Users and system admins are able to see reviews on users account
- User and system admins able to see time and date of gaining or losing a star

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

Scope:

- Log files automatically submitted to SQL Server
- System Admin is able to view log archives
- System Admin is able to remove log files

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

- **Scope:**
  - System admin able to see how active are users
    - Number of uploads
    - Number of pins dropped
- System admin able to see total number of users

Authentication - user agrees that their account is indeed verified, trusted, genuine and valid to participate in app features. Users can be held accountable.

Scope:

- User able to configure with personal email or phone number

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.
- Require authentication
  - User is required to be logged in
  - User is only able to upload pictures to their respective account

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.
  - Require authentication
- 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 able to see number of dropped pins
- Uploader is able to see who deleted/marked a pin.
- Uploader is able to configure additional text description

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 U-tification is free since we will be using *AWS* to host the IIS Web Server.

Resources

Resources needed for U-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 U-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. Literrati 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].

<u>Vision</u>

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 U-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 U-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

<mark>Glossary</mark>

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.

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