Nearview: Aerial Drone Mapping for Environmental Services

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Introduction

- Nearview is a company that provides aerial drone services and solutions for collecting data on natural resources. Currently, they are collecting imagery and data on intertidal vegetation (i.e., seaweed).
- We developed a web application called **CEMAP (Coastal Ecosystems Map Application Platform)** to provide an interactive mapping interface that uses Nearview's data and enables stakeholders to get information on intertidal zones.
- CEMAP displays an interactive map with navigation tools, filters for selecting areas, a window for viewing key facts & statistics based on a selected area, as well as other webpages with additional content.

Requirements

- **Develop a web-based mapping application** that allows users to:
  - click & drag,
  - zoom in/out,
  - toggle filters for selecting areas of the map,
  - view key facts & statistics on a selected area from a separate collapsible window,
  - and toggle imagery layers.
- **Host and service a website** that points to the mapping application and other webpages.
- **Develop a cloud-based backend** for hosting and servicing the application.
  - Cloud vendor of choice is AWS (Amazon Web Services).
  - Backend services should be reliable and scalable.

Contacts

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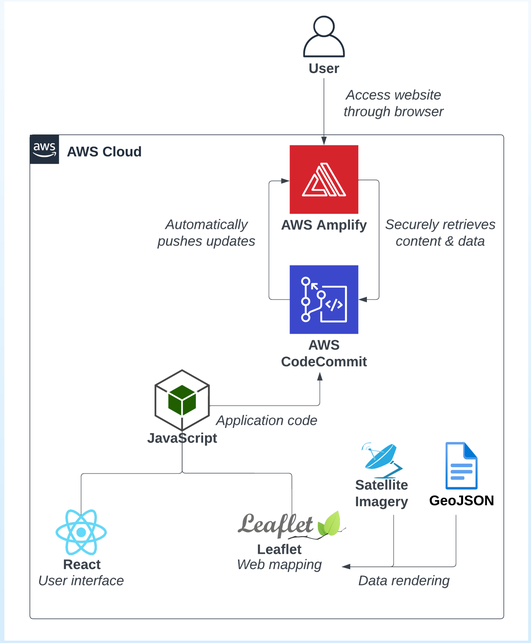
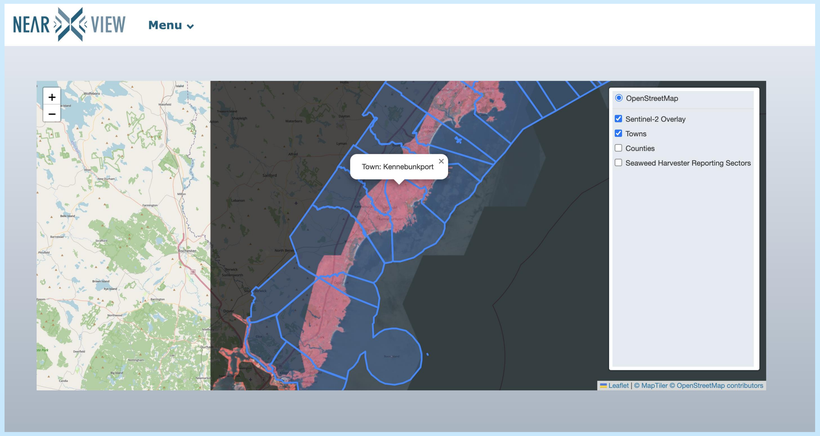
Design/Architecture

- CEMAP is hosted and serviced in the cloud via **AWS**.
- **AWS Amplify** is used to host the web application and deliver content to the user's browser via a public URL.
- **AWS CodeCommit** is used to store the application code and data files for rendering. **JavaScript** is the language that the code is written in. **React** & **Leaflet** are open-source JavaScript libraries used for building the user interface and web mapping interface, respectively.



User Interface



Results

We have been successful in delivering a prototype that contains all features listed in the requirements.

Usability testing for the prototype was conducted by the UNH Center for Business Analytics. Their findings were:

- The map page was not easily locatable from the home page
  - Suggested adding link to map on home page content
- About Us section sometimes is covered by image at certain screen sizes
- At certain screen sizes the map view selection box covers the map.
- Importance of seaweed and other educational information is easily found
- Performance is consistent on mobile devices

Conclusion

The CEMAP prototype provides an integrated mapping interface that allows for Nearview to upload and display their data. Stakeholders will be able to use this platform to gather research and make decisions that impact the sustainability of intertidal resources.

We deem this project a success as we have delivered a prototype containing all required features that will improve the availability of data in intertidal zones. User feedback also affirms that the application is interactive and functional.

Next Steps

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Now that user feedback has been obtained, Nearview will create more user stories and features to further develop the mapping platform. Priorities include:

- Implement click and drag selection functionality to get data regarding a region specified by the user,
- Implement a subscription service functionality (free tier vs paid tier),
- Break down data annually and allow for user to display data for selected year.