Situational Awareness 2.0 Web Application Documentation

Table of Contents

1. Introduction

Overview

The Situational Awareness 2.0 Web Application is a stack replacement of its predecessor built and hosted on Esri's Experience Builder infrastructure. It provides emergency support through data visualization, real-time mapping, and situational awareness. It includes a weather extension for real-time forecasts.

Key Features

- Weather Data
- Real-time spatial data visualization
- User-friendly interface
- Query and export spatial data

2. Requirements

The base requirements for the situational awareness 2.0 web app development are as follows:

- An Esri account with access to
  - Experience Builder
  - ArcGIS Dashboard

3. User Guide

Navigation

- Main Page: Map overview, attribute tables, map tools, layer accessibility, access to dashboard with live data
- Layers: Toggle operational layer visibility
- Buffer Analysis: Export data for further analysis with feature attributes includes

Features and Functions

- Map Interactions: Zoom, pan, layer popup window, click to view layers.
- Search: Locate features, find addresses or places
- Emergency Management: Add, remove, edit, and update data to be displayed.
- Analysis Dashboard: Tells the status of traffic at any given time and location as well as showing real-time traffic incidents on the map
- Weather Forecast: Get real-time weather forecast for the day

- Precipitation Viewer: Access 3-hour radar rain data
- Select: Highlight map data of interest via clicking on map or through attribute table

Best Practices

- Regularly update data layers
- Verify emergency incident locations for accuracy

3.1 Weather Extension Guide

Weather Extension

Overview

The weather extension provides access to real time weather forecasts and global precipitation radar information.

Features

- Current Weather: Displays the current weather information for selected city locations.
- Precipitation information: Real-time radar data is displayed for a 3-hour period.
- 3-hour Forecast: Displays weather information for the entire day in a 3-hour time frame.

How to use

- Access weather extension: In the navigation bar, click on the weather link to be redirected to the weather extension web application.
- Get current weather information: Search for any city in the search bar to access weather information for that location.
- View rain radar data: Click the precipitation viewer button to access the Rainviewer web application. Click the rainy cloud icon to start the weather animation in the top right corner of the page weather animation.

3.2 Situational Awareness Dashboard

Overview

The spatial analytics dashboard provides traffic data in real-time with a 5 second data refresh/update rate sourced from Esri. It provides access to traffic incidents occurring and an estimated end time for said incidents from critical to low impact incidents.

Features

- Map Interaction: Pan and Zoom around the map to see community services within the area of choice. Access map legend for better context of features on the map.

- Aggregate Analysis: View counts of and access graphical information of feature counts.

4. Developer Guide

App Architecture

- Main App Frontend and Backend: Built with Esri's Experience Builder
- Analysis Dashboard Frontend and Backend: Built with ESRI's ArcGIS Dashboard
- Weather extension Frontend: Built with Html, CSS, and JavaScript
- Weather API: Gotten from OpenWeatherMap

Codebase

- Index.html and design.css: Contains the front end and design specifications of the weather extension
- Weather.js: Contains the JavaScript that requests and pulls weather data from OpenWeatherMap
- Rainview.html: Contains webpage design and JavaScript functionality for radar data precipitation map.

API Documentation

- RainViewer API Documentation: [Link to API Documentation](#)
- OpenWeatherMap API Documentation: [Link to API Documentation](#)

5. API Reference

API Reference

- Authentication: The Open Weather API is free but requires an API key to gain access to data that is returned in Json format.
- API Call Limit: The Open Weather API allows for 1,000 calls per day for its free API version, with a 0.0015 USD charge per call over the daily limit.

6. Troubleshooting

Common Issues

- Map partially loading or not loading at all: Refresh page and wait a few minutes. Change basemap and reload.
- Weather extension not responsive: Verify the API key and check for daily rate limit.
- Dashboard cannot connect to data: Verify the linked data's status within the portal. If broken or missing, create data and link to dashboard.

- Blank weather app background: Usually a source issue (Unsplash.com) and will be rectified by the source.

7. FAQs

- Can I create custom widgets?
  - Unless you have an Experience Builder developer's account, this is not possible.
- Can the buffer area be moved after being set?
  - Unfortunately, no. This feature does not exist yet.
- How often is the traffic data updated?
  - Different layers are updated on the map at different intervals. The traffic incidents are updated every 3 seconds, and the traffic status every 5 seconds.
- The map is not showing up on the screen. What should I do?
  - Refresh the page and wait for a few minutes. If the problem persists, change the basemap to something else and reload.
- How often is the weather forecast data from Open Weather Map updated?
  - By the hour.
- How accurate is the Radar data?
  - The data is sourced from numerous sources and uses the ECMWF (European Centre for Medium-Range Weather Forecasts) Model. It is believed to be at least 80% accurate.

8. Maintenance

Situational Awareness 2.0 requires little maintenance to be carried out. Since the bulk of its development has been done with Esri's Experience builder, the Esri dev will handle any maintenance and updates on tools and widgets deployed in the application. The weather extension will only need to be monitored once per day if a lot of requests are being made to prevent exceeding the API's call limit.