System Requirements Specification

Project Name: Bradford Asset Mapping System

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1. Introduction

1.1 Purpose

This document defines the system requirements for a web-based interface that enables users to interact with a map of assets within the Bradford district. The system will integrate mapping functionalities using a JavaScript/PHP library and provide asset management features to support business visualisation.

1.2 Scope

The project will deliver an interactive web-based mapping system for City of Bradford Metropolitan District Council. Users and admins will have distinct functionalities:

Users:

- View and filter assets
- Search maps
- Export data
- Submit asset requests.
- Access departmental data
- Registration screen for user accounts

Admins:

- Manage assets.
- Update datasets
- Review logs
- Manage users.
- Set permissions.
- Approve or reject user registrations.
- Perform bulk actions such as batch approvals, rejections, or deletions efficiently.

Additionally, the system will:

- Load and display asset locations from a CSV file containing Bradford Spatial Data (Longitude and Latitude).
- Categorize and manage assets beyond the information available in the dataset.
- Create custom asset categories.
- Select and display specific assets on the map.
- Add and update asset details, including tracking activity (e.g., job logs).
- Support bulk data uploads (CSV/Excel) and manual data entry.
- Optionally integrate an API for real-time data updates with defined rate limits and error handling policies.
- Support various asset types beyond predefined datasets.

1.3 Definitions, Acronyms, and Abbreviations

Asset: A location-based object represented on the map.
CSV: File format for storing tabular data.
JS/PHP Library: A programming tool used for rendering maps.
MFA: Multi-Factor Authentication.

1.4 References

Bradford Spatial CSV Data (Longitudinal and Latitude): https://datahub.bradford.gov.uk/

2. Functional Requirements

2.1 Map Display with Asset Integration

- Integrate a JavaScript/PHP library for interactive maps.
- Load asset data from a CSV file containing latitude and longitude values.
- Display assets dynamically on the map.

2.2 Asset Management

- Enable categorization of assets beyond the provided CSV data.
- Allow users to create and manage custom category types.
- Implement asset selection and display functionalities.
- Support the addition of new assets.
- Enable logging of job counts per asset.
- Allow admins to approve or reject asset modifications.

2.3 Data Integration

- Import and parse CSV/Excel files to extract asset data.
- Store asset information and category associations in a structured database.
- Provide an optional API for dynamic data updates and external integrations.
- Specify the maximum CSV file size the system can manage.
- Clarify data validation rules (e.g., handling missing latitude/longitude, duplicates, and incorrect formats).

2.4 User Interface

- Provide an intuitive interface for asset visualization.
- Implement search and filtering capabilities with autosuggestions.
- Ensure compliance with Bradford Council's branding and colours.
- Align with accessibility standards (WCAG 2.1).
- Ensure mobile responsiveness for smaller screens.
- Include error handling for incorrect inputs (e.g., invalid asset searches or CSV format errors).

3. Non-Functional Requirements

3.1 Performance

- Optimize map rendering and data loading speeds.
- Define expected system load (e.g., number of concurrent users and assets displayed).
- Consider lazy loading or caching mechanisms to optimize performance.
- Implement database indexing and optimized queries to prevent slowdowns.

3.2 Scalability

- Ensure support for an increasing number of assets and users.

3.3 Security

- Implement authentication and authorization mechanisms.
- Secure data storage and transmission using encryption (AES-256, SSL/TLS).
- Support password reset and Multi-Factor Authentication (MFA).
- Specify session timeout durations for inactive users.
- Implement Role-Based Access Control (RBAC) with granular permissions.
- Consider audit logs for tracking admin/user actions.

3.4 Usability

- Design a user-friendly, accessible interface.
- Ensure compatibility with screen readers.

3.5 Maintainability

- Develop clean, modular, and well-documented code.
- Facilitate easy updates and maintenance.

4. Testing and Quality Assurance

4.1 Assumptions and Dependencies

- Reliance on an external JS/PHP library for map display.
- CSV files will be structured consistently

4.2 Constraints

- The system should align with gov.uk design standards.

5. Security & Compliance

- Implement robust authentication and authorization.
- Ensure compliance with data protection regulations.
- Encrypt data at rest and in transit.

6. Performance & Scalability

- System must handle high traffic and large datasets efficiently.

7. User Interface & UX Design

- Maintain usability and accessibility best practices.
- Utilize gov.uk and Bradford Council branding.
- Ensure WCAG 2.1 compliance.

8. Data Management

- Store asset data securely.
- Implement backup and recovery mechanisms.

9. Testing & Quality Assurance

- Conduct unit, integration, and user acceptance testing.
- Perform load testing to assess performance.
- Define specific testing tools or frameworks for unit and load testing.
- Ensure cross-browser compatibility testing for various devices and browsers.

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