Feature 3: Interactive Project Map (GIS Integration)

# 1. Feature Overview

This feature introduces a live map interface displaying all projects with geographic location markers. It enhances project tracking, spatial analytics, and stakeholder transparency.

# 2. User Interface Components

- Map View Tab: Shows all projects on a dynamic map  
- Markers: Colored based on project status (e.g., Green = Ongoing, Red = Delayed)  
- Tooltip: Hovering a marker shows key project details  
- Click Marker: Navigate to project detail page

# 3. Technologies & Tools

- Leaflet.js (Frontend JS mapping library)  
- OpenStreetMap or Google Maps base layer  
- Backend fields for latitude and longitude in projects table

# 4. Database Schema Addition

ALTER TABLE projects  
ADD COLUMN latitude DECIMAL(9,6),  
ADD COLUMN longitude DECIMAL(9,6);

# 5. API Endpoints

GET /projects/map  
- Returns list of all projects with their coordinates and status  
- Used to populate map markers dynamically

# 6. Sample Data Structure

[  
 {  
 "id": 1,  
 "name": "Kyabahanga Bridge",  
 "latitude": 1.235679,  
 "longitude": 32.897654,  
 "status": "ongoing"  
 },  
 ...  
]

# 7. Benefits

- Spatial awareness of project distribution  
- Management insights on regional workload  
- Transparency for external stakeholders