# Gazetteer Project: System Overview & 2‑Week Work Plan

**Version 0.1 — 1 Jul 2025**

## 1. Vision & Goals

Build a **mobile‑first, single‑page “Gazetteer” web app** that profiles every country via an interactive map, aggregating demographic, climatic, geographic and other open data. Users should enjoy the same smooth experience on phones, tablets, and desktops.

## 2. Core Functionality

* **Auto‑detect user location** and highlight their country (navigator.geolocation).
* <select> loaded with all ISO‑listed countries from countryBorders.geo.json via PHP.
* **Leaflet map** featuring:
  + Border polygon of the selected country.
  + Marker layers for capital, major cities, POIs, earthquake history, etc. (GeoNames & more).
  + Clustering (Leaflet.markercluster) and utility buttons (EasyButton / ExtraMarker).
* **Modal / off‑canvas info panel** with tabs:
  1. *General*: Country name, capital, ISO codes, flag, population, area.
  2. *Weather*: Current & 3‑day forecast (OpenWeather).
  3. *Currency*: Live exchange rate vs EUR (Open Exchange Rates).
  4. *Explore*: Wikipedia summary + links, GeoNames POIs.
* **Search & filter tools**: quick‑find a country, toggle overlay layers.
* **Loader spinner** during initial render.

## 3. Technical Stack

| Layer | Tech |
| --- | --- |
| Front‑end | HTML5, CSS3 (Bootstrap 5), JavaScript ES6, jQuery, Leaflet 1.9 + MarkerCluster, EasyButton, ExtraMarker |
| Back‑end | PHP 8.x with cURL; endpoints under /php/api/\*.php |
| APIs | OpenCage, GeoNames, Rest Countries, OpenWeather, Open Exchange Rates (plus optional extras like USGS earthquakes) |
| Tooling | VS Code, Git, Dinahosting FTP (FileZilla), Chrome DevTools |

## 4. Architecture & Data Flow

1. **SPA loads →** Bootstrap & Leaflet initialise.
2. **Geolocation →** coords sent via AJAX to php/api/geolocate.php (OpenCage) to derive ISO code.
3. **Parallel AJAX requests** fetch country info, weather, currency, POIs.
4. **Front‑end renders** border polygon, markers, and populates UI panels.

## 5. UI / Layout Sketch (ASCII)

NAVBAR  
┌──────────────────────────────┐  
│ 🌐 Gazetteer | Country ▾ │  
└──────────────────────────────┘  
MAP (fills viewport)  
[Leaflet canvas]  
Floating buttons: 🔍 Layers 🗺 Info  
Modal / Drawer slides from right with tabs: Info | Weather | Finance | Explore

## 6. Two‑Week Work Plan (2 Jul – 15 Jul 2025)

| Date | Hours | Focus | Deliverables |
| --- | --- | --- | --- |
| **Wed 2** | 8 | Project repo, scaffolding, Bootstrap, Leaflet starter map | Git repo + base index.html |
| **Thu 3** | 8 | Country borders & dropdown, geolocation highlight | Border polygon renders |
| **Fri 4** | 8 | PHP endpoint layer, OpenCage + Rest Countries integration | /php/api endpoints, Info tab |
| **Sat 5** | 3 | Refactor, UI polish, code cleanup | Cleaner structure |
| **Sun 6** | 3 | Research & stub remaining APIs | Config file for API keys |
| **Mon 7** | 8 | OpenWeather integration, weather overlay | Weather tab & map icons |
| **Tue 8** | 8 | Open Exchange Rates, currency tab | Live FX display |
| **Wed 9** | 8 | GeoNames POI & Wikipedia markers | Cluster layer operational |
| **Thu 10** | 8 | Extra data layer (earthquakes), layer controls | Toggleable layers |
| **Fri 11** | 8 | UX enhancements, responsive tweaks | Mobile layout ready |
| **Sat 12** | 3 | Cross‑device & browser testing | Test report |
| **Sun 13** | 3 | Performance & accessibility fixes | Lighthouse > 90 |
| **Mon 14** | 8 | Final polish, README, deployment | Public URL live |
| **Tue 15** | 8 | Buffer, demo video/GIF, submission | Demo + sign‑off |

*Total planned hours:* ***92***\* (80 weekday + 12 weekend) → ~22 h buffer beyond 70 h estimate.\*

## 7. Risks & Mitigations

| Risk | Mitigation |
| --- | --- |
| API quota limits | Cache responses, stagger calls, use multiple keys |
| Time overrun | Front‑load core map & data; buffer day |
| Mobile perf issues | Test early on low‑end devices |
| Scope creep | Freeze feature list after Day 7; extras only if time remains |

## 8. Next Steps

1. Await approval of this plan.
2. Upon approval, begin **Day 1 tasks on 2 Jul**.
3. Maintain daily progress notes & commit logs.

*Prepared for Amaia Artola — 1 Jul 2025*