

AOM Maps

A World Map Explorer Full Stack Website Made
with .NET and React.TS

PROJECT REQUIREMENTS DOCUMENT

Team

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1. Executive Summary

WorldMap Explorer is a full-stack web application that lets users explore the world through an interactive, zoomable map. Starting from a global view, users can click directly on continents and countries shown on the map itself to discover rich, structured information.

Each country page presents political, historical, cultural, food, entertainment, and travel data in an easy-to-navigate layout, enhanced with timelines and smart recommendations for similar countries. The platform supports Arabic and English, adapts automatically based on the selected country, and includes a travel-planning feature to estimate the cheapest routes between countries.

2. Goals

Goals - Deliver a smooth, responsive map viewer for a 16k image via tiled deep zoom UX. - Provide rich country pages with structured data and visualizations. - Implement fast search with prefix autocomplete (trie) and relevant suggestions. - Offer a smart-suggestion engine that surfaces similar countries using explainable features. - Support Arabic and English with automatic locale switch for Arabic countries. - Provide a flight planning feature that factors in flights and local taxi costs.

3. Scope

3.1 In-Scope (MVP)

- React frontend with map viewer, continent nodes, country selection UI.
- ASP.NET Core backend (WebAPI) with EF Core and PostgreSQL (or SQL Server) DB.
- Tile generation pipeline for the 16k map (multi-zoom tile pyramid, 256×256 tiles).
- Search endpoint with trie-based prefix autocomplete and basic ranking.
- Country pages: scraped/curated data (political, historical, travel, food, timelines).
- Smart suggestion service that returns top N similar countries plus explanation.
- Arabic/English UI with auto language selection mapping per country + manual switch.

3.2 Out of scope (MVP)

- Flight planning graph (country nodes, flight edges with cost, taxi edge weights) and cheapest-path calculation.
 - Timeline specific data per country.
 - User accounts, preferences (favorite topics), and basic profile.
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4. User Personas

- **Casual Explorer:** Browses map, reads country facts, toggles languages.
 - **Traveler / Trip Planner:** Uses flight planning to estimate cheapest routes factoring taxis.
 - **Researcher / Student:** Uses timeline and curated political & historical data.
 - **Power User:** Creates account, sets preferences, saves favorite countries/topics.
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5. Features & Requirements

5.1 Interactive World Map

- The landing page displays a full world map that users can zoom and pan smoothly.
- Both continents and countries are visible and clickable directly on the map.
- Continents have prominent nodes/buttons for quick access.
- Countries are highlighted as regions or markers; clicking one opens its country page.
- Hovering a country shows its name and basic info.

User flow

1. User opens the website → sees the whole world.
 2. User clicks a continent or directly clicks a country.
 3. A side panel or new page opens with relevant information.
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5.2 Country Pages

Each country has a dedicated page containing:
- Overview (location, population, flag, languages)
- Politics & governance
- History with an interactive timeline
- Economy & average income
- Culture, food, and entertainment

Content is organized in sections that can be reordered based on user preferences.

5.3 Search with Autocomplete

- A global search bar allows users to search for countries.
 - Autocomplete suggestions appear as the user types.
 - Results prioritize well-known countries and exact matches.
 - Selecting a suggestion focuses the map on that country and opens its page.
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5.4 Smart Country Suggestions

- Each country page shows a list of similar countries.

- Similarity is based on factors such as:
 - Average income
 - Language
 - Travel ease
 - Cultural similarities
 - Users can see *why* a country is suggested (simple explanations, not technical scores).
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5.5 Timeline View

- Each country has a timeline of major historical events.
 - Users can scroll through time or filter by topic (politics, culture, economy).
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5.6 User Accounts & Preferences

- Users can create accounts.
 - Users choose favorite topics (e.g., history, food, travel).
 - Favorite topics appear at the top of country pages.
 - Other topics remain accessible via scrolling or search.
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5.7 Language Support (Arabic & English)

- The website supports Arabic and English.
 - Language automatically switches to Arabic when viewing Arabic-speaking countries.
 - Users can manually switch languages at any time.
 - Arabic layout supports right-to-left reading.
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5.8 Flight Planning Feature

- Countries are treated as connected nodes in a travel network.
 - Users select a starting country and a destination.
 - The system suggests the cheapest travel path.
 - Cost factors include:
 - Flights
 - Local transportation (e.g., taxis)
 - The result shows the route and estimated total cost.
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6. Technology Overview (High-Level)

- **Frontend:** React-based web interface with an interactive map and charts.
- **Backend:** .NET-based API to serve country data, search, and travel planning.

- **Database:** Stores country information, timelines, user preferences, and travel data.
- **Data Sources:** Public datasets and web sources (Web Scraping).

Technical choices are flexible and can evolve without changing the product vision.

7. Next Actions

1. Approve PRD and pick MVP country set (recommend starting with 30 diverse countries across continents).
2. Provide the 16k source image and any preferred continent hotspot polygons (if available) or approve manual polygoning.
3. Kick off Week 0 tasks: repo skeleton, tile pipeline, and simple OpenSeadragon demo.