

Product Requirements Document (PRD) v1.0

GPS Admin Dashboard - POI & Tour Management System

Document Information

Field	Value
Product Name	GPS Admin Dashboard
Version	1.0 (MVP)0
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Status	Draft for Development
Owner	Business Analyst / Product Owner
Target Audience	Development Team, QA, Stakeholders

1. Executive Summary

1.1 Overview

GPS Admin Dashboard is a web-based administrative interface for managing Points of Interest (POIs) and Tour routes in Hoi An Ancient Town. The system enables administrators to create, update, and organize location-based content that will be consumed by end-user GPS applications.

1.2 Goals

Primary Goal: Provide administrators with an efficient tool to manage POIs and Tours through an intuitive map-based interface

Secondary Goals:

- Ensure data integrity with mandatory location validation
- Enable visual tour creation through drag-and-drop POI sequencing
- Maintain referential integrity between POIs and Tours (cascade deletion)

2. Scope Definition

2.1 In-Scope (MVP v1.0)

Module 1: Admin Authentication

- Username/password login
- Session management (stay logged in until logout)
- Basic logout functionality

Module 2: POI Management

- Create POI via map click or manual lat/Ing entry
- Edit existing POI (name, description, coordinates, radius, type, image)
- Delete POI with cascade removal from all Tours
- Categorize POI as:
 - **Major/Main** (Điểm chính): Primary tourist attraction
 - **Minor/Sub** (Điểm phụ): Supporting facilities
 - WC
 - Bán vé
 - Gửi xe
 - Bến thuyền
- View all POIs in list and map view
- Visual map interaction for POI placement

Module 3: Tour Management

- Create new Tour
- Edit existing Tour (name, description, duration, image)
- Add/remove POIs to/from Tour
- Reorder POIs in Tour sequence (via drag-and-drop UI)
- View all Tours in card grid layout
- Delete Tour
- View POI count and duration per Tour

2.2 Out-of-Scope (Future Enhancements)

- The following are explicitly NOT included in MVP v1.0:
- Multi-language content management (only Vietnamese in MVP)
Audio guide integration
- User role management (only single Admin role)
- Advanced map features (routing, distance calculation, path drawing)
Image upload/management (MVP uses URL placeholders)
- Tour publishing/status
workflow
- Analytics and reporting
- Mobile app development (admin panel is web-only)
API versioning
- Tour preview/simulation
- POI search and filtering (only basic search in Tour builder)
- Batch operations
- Export/import
functionality
- Audit logging

3. User Personas & Roles

3.1 Primary Persona: Content Administrator

Name: Minh Nguyen

Role: Tourism Content Manager

Age: 28-45

Technical Proficiency: Medium (comfortable with web apps, Google Maps)

Goals:

- Quickly add new POIs as tourism sites are discovered
- Update POI information when details change

- Create themed Tours for different tourist interests
- Maintain accurate location data

Pain Points:

- Manual data entry is time-consuming
- Difficulty visualizing tour routes
- Errors in coordinates lead to bad user experience

Usage Patterns:

- ♦ Logs in 2-3 times per week
- ♦ Typical session: 30-60 minutes
- ♦ Primary tasks: Create 3-5 new POIs, update 1-2 Tours per session

4. User Stories

4.1 User Stories Table

ID	Module	User Story	Priority	Acceptance Criteria ID
US-001	Authentication	As an Admin, I want to log in with username/password so that I can access the dashboard securely	P0 (Must)	AC-001
US-002	Authentication	As an Admin, I want to log out so that my session is terminated when I'm done	P0 (Must)	AC-002
US-003	POI	As an Admin, I want to create a new POI by clicking on the map so that I can quickly mark locations	P0 (Must)	AC-003
US-004	POI	As an Admin, I want to manually enter lat/lng coordinates so that I can add POIs with precise locations	P1 (Should)	AC-004
US-005	POI	As an Admin, I want to edit POI details so that I can update outdated information	P0 (Must)	AC-005
US-006	POI	As an Admin, I want to categorize POIs as major or minor types so that users can filter by facility type	P0 (Must)	AC-006

ID	Module	User Story	Priority	Acceptance Criteria ID
US-007	POI	As an Admin, I want to delete a POI so that I can remove obsolete locations	P0 (Must)	AC-007
US-008	POI	As an Admin, I want to see all POIs on a map so that I can visualize their distribution	P0 (Must)	AC-008
US-009	POI	As an Admin, I want to view POIs in a list/gallery so that I can browse them quickly	P1 (Should)	AC-009
US-010	Tour	As an Admin, I want to create a new Tour so that I can group related POIs into a route	P0 (Must)	AC-010
US-011	Tour	As an Admin, I want to add POIs to a Tour so that I can build the route sequence	P0 (Must)	AC-011
US-012	Tour	As an Admin, I want to reorder POIs in a Tour so that I can adjust the route sequence	P0 (Must)	AC-012
US-013	Tour	As an Admin, I want to remove POIs from a Tour so that I can fix route errors	P0 (Must)	AC-013
US-014	Tour	As an Admin, I want to edit Tour metadata (name, description, duration, image) so that I can keep information current	P0 (Must)	AC-014
US-015	Tour	As an Admin, I want to delete a Tour so that I can remove deprecated routes	P1 (Should)	AC-015
US-016	Tour	As an Admin, I want to view all Tours in a grid so that I can browse and select them easily	P0 (Must)	AC-016
US-017	Tour	As an Admin, I want to filter POIs (all/major/minor) when building a Tour so that I can focus on relevant POIs	P1 (Should)	AC-017
US-018	Tour	As an Admin, I want to search POIs by name when building a Tour so that I can find specific locations quickly	P1 (Should)	AC-018

Priority Legend:

- ♦ **P0 (Must):** Critical for MVP launch; blocks release if missing
- ♦ **P1 (Should):** Important for usability; should be included if time permits
- ♦ **P2 (Could):** Nice-to-have; can be deferred to post-M

5. Detailed Functional Requirements

5.1 Module 1: Admin Authentication

FR-AUTH-001: Login Screen

Description: Display a secure login interface

Business Rule: BR-004 (Single Admin role, no registration flow)

UI Components:

- Username text input
- Password text input (masked, with show/hide toggle)
- "Sign In" submit button
- Error message area for invalid credentials

Behavior:

- Username and password are pre-filled (for dev: "adminisme" / "*****")
- On submit, validate credentials (client-side mock in MVP)
- On success: redirect to Tours Management (default landing page)
- On failure: display "Invalid credentials" error message
- No "Remember Me" or "Forgot Password" in MVP

FR-AUTH-002: Session Management

Description: Maintain authenticated state

Behavior:

- User stays logged in until explicit logout
- No timeout in MVP (session persists until browser close)
- Auth state stored in React state (no persistence across browser sessions)

FR-AUTH-003: Logout

Description: Terminate user session

Behavior:

- Logout button always visible in Sidebar
- On click, clear auth state and return to Login screen
- No confirmation dialog required

5.2 Module 2: POI Management

FR-POI-001: Interactive Map Display

Description: Display a map canvas showing all POIs

Business Rule: BR-001 (Mandatory location validation)

UI Components:

- Map canvas (simulated; not Google Maps integration in MVP)
- POI markers (color-coded by type):
 - Green: Selected POI
 - Blue: Major POI
 - Orange: Minor POI
- Legend showing color meanings
- Crosshair cursor for click-to-place functionality

Behavior:

- Map centered on Hoi An (lat: 15.877, lng: 108.327)
- Click anywhere on map to set lat/lng for new POI
- Click existing marker to edit that POI
- Map does NOT support zoom/pan in MVP (fixed view)

FR-POI-002: POI Creation Form

Description: Sidebar form for creating/editing POI

Form Fields (all in Vietnamese):

1. **Vị trí (Location)** - Collapsible section
 - Latitude (number input, 6 decimal precision)
 - Longitude (number input, 6 decimal precision)
 - Radius (integer input, in meters, default: 50)
 - Helper text: "Click vào bản đồ hoặc nhập thủ công"
2. **Thông tin đa ngôn ngữ (Info)** - Collapsible section
 - Tên điểm (POI Name) - Required text input
 - Mô tả (Description) - Optional textarea (3 rows)

3. Loại điểm (Type) - Collapsible section

- Phân loại (Category) - Required dropdown:
 - Điểm chính (MAIN)
 - WC
 - Bán vé (TICKET)
 - Gửi xe (PARKING)
 - Bến thuyền (BOAT)

Action Buttons:

- "Đặt lại" (Reset): Clear form to defaults
- "Tạo điểm" / "Cập nhật điểm" (Create/Update): Save POI

Validation Rules:

- Name: Required, max 200 characters
- Description: Optional, max 1000 characters
- Latitude: Required, range 15.870-15.885 (Hoi An bounds)
- Longitude: Required, range 108.320-108.340
- Radius: Required, range 10-500 meters
- Type: Required (default to MAIN)

Business Rules Applied:

- BR-001: Lat/lng must be validated before save
- If validation fails, show alert: "Vui lòng nhập tên và chọn vị trí trên bản đồ!"

FR-POI-003: POI Gallery View

Description: Bottom horizontal gallery showing all POIs

UI Components:

- Scrollable horizontal card list
- Each card shows:
 - Thumbnail image (aspect 4:3)
 - POI name (truncated)

- Lat/lng coordinates
- Type badge
- Radius (e.g., "50m")
- Delete button (visible on hover)

Behavior:

- Click card to load POI into edit form
- Click Delete icon: show confirmation "Xóa điểm này?"
 - On confirm: delete POI and remove from all Tours (BR-003)
 - On cancel: no action

FR-POI-004: POI Edit Mode

Description: Load existing POI data into form

Behavior:

- When POI is selected (via map click or gallery click):
 - Populate all form fields with POI data
 - Highlight selected marker in green on map
 - Change action button text to "Cập nhật điểm"
- Saving updates the existing POI (same ID)

FR-POI-005: POI Deletion with Cascade

Description: Delete POI and clean up references

Business Rule: BR-003 (Cascade deletion)

Behavior:

- On Delete confirmation:
 - Remove POI from `pois` array
 - Remove POI ID from all Tours' `poiIds` arrays
 - Show success feedback (visual marker removal)
- If POI is used in 0 Tours: delete without warning
- If POI is used in 1+ Tours: still delete (cascade is automatic, no extra warning)

5.3 Module 3: Tour Management

FR-TOUR-001: Tour List View (Read-Only Mode)

Description: Default landing page showing all Tours

UI Components:

- Header: "Danh sách Tours (X)" + "Tạo mới" button
- Grid layout (responsive: 1/2/3 columns)
- Each Tour card shows:
 - Cover image (aspect 21:9, fallback icon if missing)
 - Tour name (default: "Chưa đặt tên")
 - Short description (2 lines max, default: "Chưa có mô tả...")
 - Duration icon + minutes
 - POI count icon + number of POIs
- Empty state: "Danh sách tour trống" + "Tạo tour ngay" link

Behavior:

- Click card: enter Edit mode for that Tour
- Click "Tạo mới": enter Edit mode with blank Tour

FR-TOUR-002: Tour Edit Mode - Layout

Description: Split-screen editor for Tour building

Left Sidebar - POI Selection Panel:

- Header: "Điểm tham quan" + subtitle
- Search input: "Tìm kiếm điểm..."
- Filter buttons:
 - "Tất cả" (All)
 - "Điểm chính" (Main only)
 - "Điểm phụ" (Sub only)
- Scrollable POI list:
 - Thumbnail + name + distance + type
 - Checkmark icon if POI is in Tour
 - Click to toggle POI in/out of Tour

Right Main Area - Tour Editor:

- Top header bar:
 - Title: "Chỉnh sửa Tour" / "Tạo Tour mới"
 - Subtitle: "Quản lý thông tin và lộ trình tham quan"
 - Buttons: "Hủy bỏ" (Cancel), "Cập nhật" (Save)
- Content area (scrollable):
 - **Banner Section:** Upload/display tour cover image
 - **Info Section:** Name, Description, Duration inputs
 - **Route Section:** Ordered list of POIs with drag handles

FR-TOUR-003: Tour Metadata Form

Description: Input fields for Tour attributes

Form Fields:

1. **Ảnh bìa tour (Cover Image)**
 - Aspect ratio 21:9
 - Placeholder: ImageIcon + "Click để chọn ảnh bìa"
 - Hover: overlay with "Thay đổi ảnh" button
 - MVP: No upload, use image URL field (string input)
2. **Tên tour (Tour Name)**
 - Required text input
 - Placeholder: "Nhập tên tour..."
 - Max 200 characters
3. **Mô tả ngắn (Description)**
 - Optional textarea (3 rows)
 - Placeholder: "Mô tả hành trình..."
 - Max 1000 characters
4. **Thời lượng (Duration)**
 - Number input with Clock icon
 - Unit: minutes
 - Default: 0
 - Range: 0-1440 (24 hours)

Validation Rules:

- Name: Required
- At least 1 POI must be added to Tour (BR-002: minimum 2 POIs for valid route)
- Duration: Optional (can be 0)

FR-TOUR-004: POI Selection for Tour

Description: Add/remove POIs from Tour

Business Rule: BR-002 (Min 2 POIs required)

Behavior:

- Click POI in left sidebar: toggle inclusion
- If POI not in Tour: add to end of `poiIds` array
- If POI in Tour: remove from `poiIds` array
- Visual feedback: checkmark icon + green background for selected POIs

Search Functionality:

- Filter POIs by name (case-insensitive substring match)
- Search updates POI list in real-time

Filter Functionality:

- "Tất cả": show all POIs
- "Điểm chính": show only POIType.MAIN
- "Điểm phụ": show all POIs except MAIN

FR-TOUR-005: POI Sequencing in Route

Description: Reorder POIs to define Tour route

UI Components:

- "Lộ trình tham quan" section header + POI count badge
- Ordered list of POIs:
 - Drag handle icon (GripVertical)
 - Sequence number badge (1, 2, 3...)
 - POI name
 - Remove button (X icon, visible on hover)

Behavior:

- Drag POI to reorder (via drag handle)
- Reordering updates `poiIds` array order
- Click X: remove POI from Tour (with hover visibility)
- Empty state: "Hành trình chưa có điểm nào. Chọn từ danh sách bên trái."

FR-TOUR-006: Tour Save/Update

Description: Persist Tour data

Validation on Save:

- Name is required
- At least 1 POI must be included (show alert if empty)
- Alert message: "Vui lòng nhập tên tour và chọn ít nhất một điểm!"

Behavior:

- If new Tour: generate random ID, prepend to `tours` array
- If editing existing: update in place
- On success: return to Tour List View (FR-TOUR-001)

FR-TOUR-007: Tour Deletion

Description: Remove Tour from system

Behavior:

- Trigger: (Currently not visible in UI; future: add Delete button in List View)
- Show confirmation: "Xóa tour này?"
- On confirm: remove Tour from `tours` array
- Does NOT delete associated POIs (POIs remain independent)

6. Acceptance Criteria (Given-When-Then)**AC-001: Admin Login (US-001)**

gherkin

GIVEN I am on the login page

WHEN I enter valid username "adminisme" and password "*****"

AND I click "Sign In"

THEN I am redirected to the Tours Management page

AND I can see the sidebar with Tours/Map navigation

AC-002: Admin Logout (US-002)

gherkin

GIVEN I am logged in and viewing any page

WHEN I click " **L o g o u t** " in the sidebar

THEN I am returned to the login page

AND my session is terminated

AND I cannot navigate back to authenticated pages

AC-003: Create POI via Map Click (US-003)

gherkin

GIVEN I am on the POI Management page

AND the POI form is in create mode (empty)

WHEN I click on the map at coordinates (15.878, 108.330)

THEN the Latitude field is populated with 15.878

AND the Longitude field is populated with 108.330

AND I can enter a POI name and save

THEN the new POI appears on the map with a blue/orange marker

AC-004: Manual Lat/Lng Entry (US-004)

gherkin

GIVEN I am on the POI Management page

WHEN I manually enter Latitude " **1 5 . 8 7 9** " and Longitude " **1 0 8 . 3 2 8** "

AND I enter POI name " **T e s t L o c a t i o n** "

AND I click "Tạo điểm"

THEN the POI is created with the specified coordinates

AND I see the POI marker at the correct position on the map

AC-005: Edit POI Details (US-005)

gherkin

GIVEN I am on the POI Management page with existing POIs

WHEN I click on an existing POI marker or gallery card

THEN the form populates with that POI's data

WHEN I change the POI name to " U p d a t e d Name"

AND I click "Cấp n h ã t điểm"

THEN the POI name is updated in the gallery and map

AND the form button text changes to "Cấp n h ã t điểm"

AC-006: Categorize POI Type (US-006)

gherkin

GIVEN I am creating or editing a POI

WHEN I open the " L o ạ i điểm " section

AND I select "WC" from the Type dropdown

AND I save the POI

THEN the POI is saved with type "WC"

AND the POI displays an orange marker on the map (minor type)

AND the gallery card shows "WC" as the type badge

AC-007: Delete POI with Cascade (US-007)

gherkin

GIVEN I have a POI " T e s t POI " that is used in Tour "My Tour"

WHEN I click the Delete button on " T e s t POI " in the gallery

AND I confirm the deletion dialog "Xóa điểm n ã y ? "

THEN " T e s t POI " is removed from the POI list and map

AND "My T o u r " no longer contains " T e s t POI " in its poiIds array

AND the Tour's POI count is decremented by 1

AC-008: View POIs on Map (US-008)

gherkin

GIVEN I am on the POI Management page

WHEN the page loads

THEN I see all existing POIs displayed as colored markers on the map

AND major POIs show blue markers

AND minor POIs show orange markers

AND the selected POI (if any) shows a green marker

AND I can see a legend explaining marker colors

AC-009: View POI Gallery (US-009)

gherkin

GIVEN I am on the POI Management page with 5 POIs

WHEN I scroll the bottom gallery

THEN I see all 5 POIs as cards

AND each card shows: thumbnail, name, coordinates, type, radius

AND hovering a card reveals the Delete button

AC-010: Create New Tour (US-010)

gherkin

GIVEN I am on the Tour List page

WHEN I click "Tạo mới"

THEN I enter Tour Edit mode

AND the form is blank (no name, no POIs, duration=0)

AND the title shows "Tạo Tour mới"

WHEN I enter name "Beach T o u r" , add 3 POIs, set duration to 120

AND I click "Cập n h ậ t "

THEN the Tour is created and appears in the Tour List

AND it shows 3 POIs and 120 phút duration

AC-011: Add POIs to Tour (US-011)

gherkin

GIVEN I am editing a Tour in Edit mode
AND the left sidebar shows all available POIs
WHEN I click on POI "Japanese Bridge"
THEN "Japanese Bridge" is added to the Route section
AND the POI shows a checkmark icon in the sidebar
AND the Route section shows sequence number " 1 " for this POI
WHEN I click on POI "Tan Ky House"
THEN "Tan Ky House" is added as sequence " 2 "
AND the POI count badge updates to " 2 điểm "

AC-012: Reorder POIs in Tour (US-012)

gherkin

GIVEN I am editing a Tour with POIs [A, B, C]
WHEN I drag POI B above POI A using the drag handle
THEN the sequence becomes [B, A, C]
AND the sequence numbers update to reflect new order
AND saving the Tour persists the new order

AC-013: Remove POI from Tour (US-013)

gherkin

GIVEN I am editing a Tour with POI "Museum" in the Route
WHEN I hover over "Museum" in the Route section
AND I click the X button
THEN "Museum" is removed from the Route
AND the checkmark icon disappears from "Museum" in the sidebar
AND the POI count badge decrements
AND "Museum" still exists in the POI database (not deleted)

AC-014: Edit Tour Metadata (US-014)

gherkin

GIVEN I am editing an existing Tour "Old Town Walk"
WHEN I change the name to " Heritage Walk "
AND I change duration to 90 minutes
AND I click "Cập nhật "
THEN the Tour is updated
AND the Tour List shows "Heritage Walk" with "90 phút "
AND returning to edit mode shows the updated values

AC-015: Delete Tour (US-015)

gherkin

GIVEN I am on the Tour List page with Tour " **T**e s t Tour"
WHEN I click the delete button for " **T**e s t Tour"
AND I confirm the dialog "Xóa tour này ? "
THEN " **T**e s t Tour" is removed from the list
AND all POIs associated with " **T**e s t Tour" remain in the POI database

AC-016: View All Tours in Grid (US-016)

gherkin

GIVEN I am logged in
WHEN I navigate to the Tours tab (default landing)
THEN I see all Tours in a responsive grid (1/2/3 columns)
AND each Tour card shows: image, name, description, duration, POI count
AND clicking a card opens it for editing

AC-017: Filter POIs by Type (US-017)

gherkin

GIVEN I am editing a Tour
AND there are 10 POIs: 5 major, 5 minor
WHEN I click the "Điểm c h í n h " filter button
THEN the sidebar shows only the 5 major POIs
WHEN I click "Điểm phụ"
THEN the sidebar shows only the 5 minor POIs
WHEN I click " **T**ấ t c ả ""
THEN the sidebar shows all 10 POIs

AC-018: Search POIs by Name (US-018)

gherkin

GIVEN I am editing a Tour
AND there are POIs named ["Museum", " **M**arket", " **T**emple"]
WHEN I type "mu" in the search box
THEN the sidebar shows only "Museum"
WHEN I clear the search
THEN all POIs are visible again

7. Non-Functional Requirements (NFRs)

7.1 Performance

- **NFR-PERF-001:** All CRUD operations (create, read, update, delete) must complete within 2 seconds
- **NFR-PERF-002:** Map rendering with up to 100 POIs must display within 1 second
- **NFR-PERF-003:** Tour list page must load and render 50 Tours within 2 seconds

7.2 Security

- **NFR-SEC-001:** All user sessions must be isolated (no session sharing)
- **NFR-SEC-002:** Password input must be masked by default with toggle visibility option
- **NFR-SEC-003:** Authentication state must be validated on every page navigation
- **NFR-SEC-004:** (Future) Use HTTPS for all API communication (currently client-side mock)

7.3 Usability

- **NFR-USE-001:** All form validation errors must display clear Vietnamese messages
- **NFR-USE-002:** All destructive actions (delete) must require confirmation dialog
- **NFR-USE-003:** Form inputs must support keyboard navigation (tab order)
- **NFR-USE-004:** UI must be responsive for desktop screens (1280px - 1920px width)

7.4 Reliability

- **NFR-REL-001:** Data consistency: Deleting a POI must always remove it from all Tours
- **NFR-REL-002:** System must prevent saving Tours with 0 POIs (validation alert)
- **NFR-REL-003:** Form state must persist during edit mode until save or cancel

7.5 Maintainability

- **NFR-MAIN-001:** Code must follow React TypeScript best practices
- **NFR-MAIN-002:** All data types must be strictly typed (POI, Tour, POIType enums)
- **NFR-MAIN-003:** Components must be modular (Sidebar, InteractiveMap, Page components)

7.6 Accessibility

- **NFR-ACC-001:** All interactive elements must be keyboard accessible
- **NFR-ACC-002:** Color-coded markers must have text labels (legend provided)
- **NFR-ACC-003:** Form labels must be properly associated with inputs

7.7 Browser Support

- **NFR-BROW-001:** Must support latest versions of Chrome, Firefox, Safari, Edge
- **NFR-BROW-002:** Minimum screen resolution: 1280x720px

8. Data Requirements

8.1 POI Data Model

```
typescript

interface POI {
  id: string; //UUID or random 9-char string (client-generated)
  name: string; //Required, max 200 chars
  description: string; //Optional, max 1000 chars
  latitude: number; //Required, float64, 6 decimal precision
  longitude: number; //Required, float64, 6 decimal precision
  radius: number; //Required, integer, meters (10-500)
  type: POIType; //Required, enum
  image: string; //Required, URL or placeholder
  distance?: string; //Optional, display helper (e.g., "50m")
}

enum POIType {
  MAIN = 'Điểm chính', //Major tourist attraction
  WC = 'WC', //Restroom
  TICKET = 'Bán vé', //Ticket office
  PARKING = 'Giữ xe', //Parking
  BOAT = 'Bến thuyền' //Boat dock
}
```

Field Validation Rules:

Field	Type	Required	Constraints
id	string	Yes	Unique, auto-generated
name	string	Yes	1-200 characters
description	string	No	0-1000 characters
latitude	number	Yes	15.870 - 15.885 (Hoi An bounds)
longitude	number	Yes	108.320 - 108.340
radius	integer	Yes	10-500 meters
type	POIType	Yes	Must be valid enum value
image	string	Yes	Valid URL format
distance	string	No	Display only, not persisted

Business Rules:

- **BR-001:** Latitude and longitude must be validated before save
- **BR-003:** Deleting a POI cascades to remove it from all Tours

8.2 Tour Data Model

typescript

```
interface Tour {  
  id: string; //UUID or random 9-char string (client-generated)  
  name: string; //Required, max 200 chars  
  description: string; //Optional, max 1000 chars  
  duration: number; //Required, integer, minutes (0-1440)  
  poiIds: string[]; //Ordered array of POI IDs  
  image?: string; //Optional, URL  
  createdAt: string; //ISO 8601  
  timestamp  
}
```

Field Validation Rules:

Field	Type	Required	Constraints
id	string	Yes	Unique, auto-generated
name	string	Yes	1-200 characters
description	string	No	0-1000 characters
duration	integer	Yes	0-1440 minutes (24 hours)
poiIds	string[]	Yes	Array of valid POI IDs, min 1 item
image	string	No	Valid URL format
createdAt	string	Yes	ISO 8601 format, auto-generated

Business Rules:

- **BR-002:** A Tour must have at least 1 POI (ideally 2+ for a "route")
- **BR-003:** If a POI is deleted, it is automatically removed from `poiIds` arrays
- POI order in `poiIds` array defines the route sequence (index 0 = first stop)

8.3 Authentication Data Model

```
typescript

interface AuthState {
  isAuthenticated: boolean;
  username: string | null;
}
```

Notes:

- MVP stores auth state in React state (no persistence)
- No password field exposed (validated server-side in future)
- Session expires on browser close

9. API Assumptions

9.1 Overview

The current MVP uses **client-side mock data** (React state). This section documents the expected REST API structure for backend integration in future phases.

9.2 Authentication Endpoints

POST /api/auth/login

Purpose: Authenticate admin user

Request:

```
json

{
  "username": "adminisme",
  "password": "*****"
}
```

Success Response (200):

```
json

{
  "token": "jwt-token-string",
  "username": "adminisme",
  "expiresIn": 3600
}
```

Error Response (401):

```
json

{
  "error": "Invalid credentials"
}
```

POST /api/auth/logout

Purpose: Invalidate session token

Request: Bearer token in header

Response (200): `{ "success": true }`

9.3 POI Endpoints

GET /api/pois

Purpose: Retrieve all POIs

Response (200):

```
json

[
  {
    "id": "1",
    "name": "Japanese Bridge",
    "description": "Historic bridge",
    "latitude": 15.8787,
    "longitude": 108.3288,
    "radius": 30,
    "type": "Điểm chính",
    "image": "https://picsum.photos/seed/bridge/400/300"
  }
]
```

GET /api/pois/:id

Purpose: Retrieve single POI

Response (200): POI object

Response (404): { "error": "POI not found" }

POST /api/pois

Purpose: Create new POI

Request:

```
json
```

```
{
  "name": "New Location",
  "description": "Optional text",
  "latitude": 15.878,
  "longitude": 108.330,
  "radius": 50,
  "type": "WC",
  "image": "https://example.com/image.jpg"
}
```

Success Response (201):

```
json

{
  "id": "generated-id",
  "name": "New Location",
  ...
}
```

Error Response (400):

```
json

{
  "errors": [
    { "field": "latitude", "message": "Must be between 15.870 and 15.885" }
  ]
}
```

PUT /api/pois/:id

Purpose: Update existing POI

Request: Same as POST (partial updates allowed)

Response (200): Updated POI object

Response (404): POI not found

DELETE /api/pois/:id

Purpose: Delete POI and cascade remove from Tours

Business Rule: BR-003

Response (200):

json

```
{
  "deleted": true,
  "affectedTours": ["tour-1", "tour-2"]
}
```

9.4 Tour Endpoints

GET /api/tours

Purpose: Retrieve all Tours

Response (200):

json

```
[
  {
    "id": "tour-1",
    "name": "Heritage Walk",
    "description": "Explore ancient town",
    "duration": 120,
    "poiIds": ["1", "2", "3"],
    "image": "https://example.com/tour.jpg",
    "createdAt": "2026-02-01T10:00:00Z"
  }
]
```

GET /api/tours/:id

Purpose: Retrieve single Tour with expanded POI details

Response (200):

json

```
{
  "id": "tour-1",
  "name": "Heritage Walk",
  "pois": [
    { "id": "1", "name": "Japanese Bridge", - },
    { "id": "2", "name": "Tan Ky House", - }
  ],
  ...
}
```

POST /api/tours

Purpose: Create new Tour

Request:

```
json

{
  "name": "Beach Tour",
  "description": "Coastal route",
  "duration": 90,
  "poiIds": ["5", "6"],
  "image": "https://example.com/beach.jpg"
}
```

Success Response (201): Created Tour object

Error Response (400):

```
json

{
  "errors": [
    { "field": "poiIds", "message": "Must contain at least 1 POI" }
  ]
}
```

PUT /api/tours/:id

Purpose: Update existing Tour

Request: Same as POST

Response (200): Updated Tour object

DELETE /api/tours/:id

Purpose: Delete Tour (does NOT delete POIs)

Response (200): `{ "deleted": true }`

9.5 API Conventions

Base URL: `https://api.gps-admin.example.com/v1`

Authentication:

- Use JWT Bearer token in `Authorization` header
- Token format: `Bearer <token>`

Request Headers:

```
Content-Type: application/json
Authorization: Bearer <jwt-token>
```

Response Format:

- Success: HTTP 2xx with JSON body
- Error: HTTP 4xx/5xx with `{ "error": "message" }` or `{ "errors": [...] }`

Pagination (future):

- Use query params: `?page=1&limit=50`
 - Response includes: `{ "data": [...], "total": 100, "page": 1, "limit": 50 }`
-

10. UI/UX Specifications

10.1 Design System

Color Palette:

- Primary: Emerald (`#10B981`) / emerald-600)
- Secondary: Blue (`#2563EB`) / blue-600)
- Neutral: Slate (`#64748B`) / slate-500)
- Error: Red (`#EF4444`) / red-500)
- Success: Green (`#10B981`)

Typography:

- Font: System font stack (font-sans)
- Headings: Bold, 700 weight
- Body: Regular, 400 weight
- Small text: 10-12px (labels, metadata)

Spacing:

- Use Tailwind spacing scale (p-4, p-6, gap-3, etc.)
- Consistent padding: Cards (p-6), Inputs (px-4 py-3)

Borders & Shadows:

- Border radius: rounded-xl (12px) for cards, rounded-lg (8px) for buttons
- Border color: slate-200
- Shadow: shadow-sm (subtle), shadow-lg (prominent)

10.2 Component Patterns

Buttons:

- Primary: `bg-emerald-600 text-white hover:bg-emerald-700`
- Secondary: `bg-slate-100 text-slate-600 hover:bg-slate-200`
- Destructive: `bg-red-500 text-white hover:bg-red-600`
- Size: `px-6 py-2 rounded-xl` (standard)

Form Inputs:

- Style: `border border-slate-200 rounded-xl px-4 py-3`
- Focus: `focus:ring-1 focus:ring-emerald-500`
- Label: `text-xs font-bold text-slate-500 uppercase tracking-wider`

Cards:

- Structure: `bg-white border border-slate-200 rounded-2xl p-6 shadow-sm`
- Hover: `hover:shadow-md transition-shadow`

Collapsible Sections:

- Header: `bg-slate-50 border-b border-slate-200 p-4`

- Toggle icon: ChevronUp / ChevronDown

10.3 Responsive Behavior

Breakpoints:

- Desktop: 1280px+ (primary target)
- Tablet: 768-1279px (acceptable degradation)
- Mobile: <768px (out of scope for MVP)

Layout:

- Sidebar: Fixed 256px width (w-64) on left
- Main content: Flex-1 (remaining width)
- Tour grid: 3 columns on large, 2 on medium, 1 on small

10.4 Loading States

POI Management:

- Map: Show placeholder "HOI AN ANCIENT TOWN" text
- Gallery: Show card skeletons (if implementing loading)

Tour Management:

- List view: Show card skeletons
- Edit mode: Show form with disabled inputs

General:

- Use spinner icon or progress indicator for async actions
- Disable buttons during save operations

10.5 Empty States

POI Gallery (if 0 POIs):

[Icon: MapPin]

"Chưa có điểm tham quan nào"

[Button: "Tạo điểm đầu tiên"]

Tour List (if 0 Tours):

[Border: Dashed]
"Danh sách tour trống"
[Link: "Tạo tour ngay"]

Tour Route (if 0 POIs in Tour):

[Icon: MapPin]
"Hành trình chưa có điểm nào. Chọn từ danh sách bên trái."

10.6 Error States

Form Validation Errors:

- Display as browser alert (MVP): `alert("Vui lòng nhập tên và chọn vị trí trên bản đồ!")`
- Future: Inline error messages below fields

API Errors (future):

- Toast notification: "Lỗi kết nối. Vui lòng thử lại."
- Error boundary for critical failures

11. Business Rules

ID	Rule Name	Description	Impact
BR-001	Mandatory Location	Every POI must have validated Lat/Lng coordinates before saving. Coordinates must fall within Hoi An bounds (lat: 15.870-15.885, lng: 108.320-108.340).	Prevents invalid map markers; ensures data quality
BR-002	Route Logic	A Tour requires a minimum of 1 POI to save (ideally 2+ for a valid route). System shows alert if user tries to save with 0 POIs.	Ensures Tours are meaningful; prevents empty routes
BR-003	Cascade Deletion	Deleting a POI automatically removes it from any existing Tours' <code>poiIds</code> arrays. POI deletion does not delete the Tours themselves.	Maintains referential integrity; prevents orphaned POI references
BR-004	Single Admin Role	MVP supports only one admin role with full CRUD access. No user registration, role management, or permissions system.	Simplifies MVP scope; all authenticated users have equal access

ID	Rule Name	Description	Impact
BR-005	Client-Side Data	All data (POIs, Tours, Auth) is stored in React state. No backend persistence in MVP. Data resets on browser refresh.	Enables rapid prototyping without API dependency

12. Technical Constraints

12.1 Technology Stack

Frontend:

- Framework: React 18+ with TypeScript
- Build Tool: Vite
- Styling: Tailwind CSS
- Icons: Lucide React
- State Management: React useState (no Redux/Context in MVP)

Backend (future):

- Not implemented in MVP
- Recommended: Node.js/Express or Python/FastAPI
- Database: PostgreSQL with PostGIS (for geospatial queries)

Map Integration:

- MVP: Simulated map canvas (not Google Maps/Mapbox)
- Future: Integrate Google Maps JavaScript API or Mapbox GL

12.2 Known Limitations

1. **No Image Upload:** MVP uses placeholder URLs. Future: implement file upload to cloud storage (S3, Cloudinary).
2. **No Drag-and-Drop:** MVP POI reordering described in UI, but not fully functional (requires library like react-beautiful-dnd).
3. **No Real Map:** MVP simulates lat/lng conversion. Future: integrate actual map tiles.
4. **No Data Persistence:** All data resets on browser refresh.
5. **No Multi-Language:** Only Vietnamese labels. Future: i18n support for English, Chinese, etc.

13. Dependencies & Integrations

13.1 External Dependencies

Dependency	Purpose	Version	Status
React	UI framework	18.3.1	Implemented
TypeScript	Type safety	5.x	Implemented
Tailwind CSS	Styling	3.x	Implemented
Vite	Build tool	5.x	Implemented
Lucide React	Icons	Latest	Implemented

13.2 Future Integrations

Service	Purpose	Priority	Notes
Google Maps API	Real map rendering	High	Replace simulated map
AWS S3 / Cloudinary	Image hosting	Medium	For POI/Tour cover images
PostgreSQL + PostGIS	Database	High	Geospatial queries
JWT Auth Service	Secure authentication	High	Replace client-side mock
Google Drive API	(Out of scope)	Low	Potential future export

14. Risks & Mitigations

Risk ID	Description	Likelihood	Impact	Mitigation Strategy
R-001	Users accidentally delete POIs used in many Tours	Medium	High	Add warning in delete confirmation: "Điểm này đang được dùng trong X tours. Xóa?"
R-002	Lat/lng input errors lead to invalid map positions	Medium	Medium	Implement stricter validation with Hoi An bounds checking (BR-001)

Risk ID	Description	Likelihood	Impact	Mitigation Strategy
R-003	Large number of POIs (100+) causes map performance issues	Low	Medium	Implement POI pagination or clustering in future
R-004	Browser refresh loses all unsaved data	High	High	Add explicit warning: "MVP does not persist data" (documentation)
R-005	No undo functionality for destructive actions	Medium	Medium	Implement soft delete or undo stack in post-MVP
R-006	Image URLs may break or expire	Low	Low	Validate URL format; future: host images internally

15. Open Questions

15.1 Data & Business Logic

- Q1:** Should POI deletion show a warning if the POI is used in multiple Tours? Or is silent cascade sufficient?
 - Recommendation:** Add count warning: "Điểm này đang được dùng trong X tours. Xóa?"
- Q2:** What happens if a Tour has only 1 POI after cascade deletion? Does it become invalid?
 - Recommendation:** Allow 1-POI Tours (user can manually delete if needed).
- Q3:** Should POI distance field be auto-calculated or manual input?
 - Recommendation:** Auto-calculate in future (based on user location or prev POI in Tour).
- Q4:** How to handle duplicate POI names?
 - Recommendation:** Allow duplicates (ID is unique); future: add warning on save.

15.2 UI/UX

- Q5:** Should drag-and-drop reordering be implemented in MVP? (Currently UI mock only)
 - Recommendation:** Yes, if time permits; otherwise defer to post-MVP.
- Q6:** Should empty Tours (0 POIs) be deletable from list view, or only via edit mode?
 - Recommendation:** Add delete button in list view hover state.
- Q7:** Should there be a "Draft" vs "Published" status for Tours?
 - Decision:** Out of scope for MVP. All Tours are implicitly "draft".

15.3 Technical

8. **Q8:** What is the expected backend API authentication scheme?
 - **Recommendation:** JWT Bearer token with 1-hour expiry.
9. **Q9:** Should the system support concurrent editing by multiple admins?
 - **Decision:** No, out of scope for MVP. Last-write-wins in future.
10. **Q10:** What is the expected data volume at launch?
 - **Estimate:** ~50 POIs, ~10 Tours initially. Scale plan for 500 POIs, 100 Tours.

16. Success Criteria & Acceptance

16.1 MVP Launch Checklist

- ☐ All P0 (Must) user stories implemented and tested
- ☐ All acceptance criteria (AC-001 to AC-018) pass manual testing
- ☐ No P0 bugs or data loss scenarios
- ☐ Business Rules (BR-001 to BR-005) enforced
- ☐ UI matches provided design (responsive desktop 1280px+)
- ☐ Documentation: README with setup instructions

16.2 Testing Requirements

Manual Testing:

- Happy path flows for Create/Edit/Delete POI
- Happy path flows for Create/Edit/Delete Tour
- Cascade deletion: POI removal from Tours
- Form validation errors display correctly
- Map click interaction works across different screen areas

Edge Cases:

- ♦ Delete last POI in a Tour
- ♦ Delete POI used in 10+ Tours
- ♦ Enter invalid lat/lng (out of bounds)
- ♦ Save Tour with empty name
- ♦ Save POI with missing required fields

Cross-Browser:

- Test in Chrome, Firefox, Safari, Edge (latest versions)

16.3 Go-Live Criteria

- All P0 features functional
- Zero critical bugs (data loss, security, crashes)
- Admin training complete (1-hour session)
- Rollback plan documented

17. Future Enhancements (Post-MVP)

These features are OUT of scope for v1.0 but documented for future roadmap:

17.1 Phase 2 (v1.1-1.2)

1. **Multi-language support:** English, Chinese translations
2. **Image upload:** Cloud storage integration (S3, Cloudinary)
3. **Real map integration:** Google Maps or Mapbox
4. **Tour status workflow:** Draft → Published states
5. **User role management:** Super Admin, Content Editor roles
6. **Audit logging:** Track who created/edited what and when

17.2 Phase 3 (v2.0)

7. **Audio guide integration:** Link audio files to POIs
8. **Route calculation:** Auto-calculate distance/time between POIs
9. **Advanced search:** Filter POIs by radius, type, creation date
10. **Analytics dashboard:** View POI visit counts, popular Tours
11. **Mobile app:** iOS/Android admin app
12. **Batch operations:** Bulk POI import/export (CSV/JSON)

17.3 Phase 4 (v3.0)

13. **Public API:** Expose read-only endpoints for 3rd-party apps
14. **Tour preview:** 3D/AR preview of Tour route

- 15. **Collaborative editing:** Real-time multi-admin editing
- 16. **Version history:** Restore previous versions of POIs/Tours
- 17. **Geofencing alerts:** Notify when users enter POI radius (end-user app feature)

18. Appendix

18.1 Glossary

Term	Definition
POI	Point of Interest: A geographic location with associated metadata (name, description, radius, type)
Tour	A curated sequence of POIs forming a route for visitors to follow
Major POI	Primary tourist attraction (type: MAIN)
Minor POI	Supporting facility (WC, parking, ticket office, boat dock)
Cascade Deletion	Automatic removal of references when a parent entity is deleted
MVP	Minimum Viable Product: Initial release with core features only
Hoi An Bounds	Geographic rectangle: lat 15.870-15.885, lng 108.320-108.340

18.2 Related Documents

- UI Mockups: Embedded in codebase (`App.tsx` Business Artifacts overlay)
- API Design: Section 9 of this PRD
- User Manual: (To be created post-MVP)
- Deployment Guide: (To be created post-MVP)

18.3 Revision History

Version	Date	Author	Changes
1.0	2026-02-02	BA/PO Team	Initial PRD for MVP development

18.4 Approval Sign-Off

Role	Name	Signature	Date
Product Owner	[Name]	_____	_____
Tech Lead	[Name]	_____	_____
QA Lead	[Name]	_____	_____
Stakeholder	[Name]	_____	_____

19. Contact & Feedback

For questions or clarifications:

- Product Owner: [email@example.com]
- Development Team: [team-email@example.com]
- Issue Tracker: [Link to Jira/GitHub Issues]

Document Feedback:

- Submit PRD suggestions via [feedback form link]
- Request PRD updates via [communication channel]

End of Document

