<https://gemini.google.com/u/1/app/9ed6b32c76b55d3a?is_sa=1&android-min-version=301356232&ios-min-version=322.0&campaign_id=bkws&utm_source=google&utm_medium=cpc&utm_campaign=2024enUS_gemfeb&pt=9008&mt=8&ct=p-growth-sem-bkws>

<https://gemini.google.com/u/1/app/8d62cfd96b565ac8>

<https://gemini.google.com/u/1/app/2d30425fc8a5984a>

\* \* \* \* \*

### Updated Production-Ready Specification

Table Name: `public.trails`

1\. Purpose & Primary Use-Cases

This table defines the main, overarching pilgrimage trails, such as "Via di Francesco". It provides a comprehensive, translatable overview of each trail's identity, characteristics, operational status, and key information. This data is essential for high-level pilgrim planning, discovery features on the platform, and overall platform administration.

Key User-Story Touchpoints:

- Pilgrim (Anna) - Story A1 (Route Exploration & Selection): Enables Anna to browse available trails, understanding their general nature, indicative distances, typical durations, overall difficulty, and geographic scope.

- Pilgrim (Anna) - Story A5 (Checking Trail Conditions): Provides the top-level `operational\_status` and `content\_visibility\_status` for an entire trail.

- Pilgrim (Anna) - Story A6 (Accessing Information in My Language): Core descriptive fields like name and descriptions are designed to be translatable via the central `public.translations` table.

- Regional Content Manager (Sofia) - Story C2 (Updating Information): Allows authorized managers to update trail descriptions, statuses, and other details for trails within their geographical purview.

- Platform Administrator (Admin Team) - Story D1 (Managing All Content) & D2 (Curating Featured Content): Enables administrators to create, update, manage all aspects of trail entities, and highlight specific trails using the `is\_featured` flag.

2\. Schema

| Column Name | Data Type | Constraints | Description (Translatable fields marked) |

| `id` | `bigint` | PRIMARY KEY, GENERATED ALWAYS AS IDENTITY | Unique identifier for each trail. |

| `name` | `text` | NOT NULL, CHECK (char\_length(`name`) &lt;= 255) | Primary, official name of the trail in English. (Translatable via `public.translations`) |

| `slug` | `text` | NOT NULL, UNIQUE, CHECK (`slug` ~ '^[a-z0-9]+(?:-[a-z0-9]+)\*$' AND char\_length(`slug`) &lt;= 255) | URL-friendly identifier (e.g., "via-di-francesco"). |

| `trail\_short\_code` | `text` | UNIQUE, CHECK (`trail\_short\_code` IS NULL OR (`trail\_short\_code` ~ '^[A-Z0-9\_-]+$' AND char\_length(`trail\_short\_code`) &lt;= 50)) | Optional short, stable code for internal referencing (e.g., "VDF"). |

| `alternate\_names` | `text[]` | | Array of other known names in English. (Each element Translatable via `public.translations`) |

| `short\_description` | `text` | CHECK (`short\_description` IS NULL OR char\_length(`short\_description`) &lt;= 250) | Brief summary in English (approx. 160-250 chars). (Translatable via `public.translations`) |

| `full\_description` | `text` | | Detailed description in English. (Translatable via `public.translations`) |

| `historical\_significance` | `text` | | Historical background in English. (Translatable via `public.translations`) |

| `cultural\_significance` | `text` | | Cultural impact and relevance in English. (Translatable via `public.translations`) |

| `pilgrimage\_focus` | `text` | | Main spiritual/thematic focus in English. (Translatable via `public.translations`) |

| `primary\_start\_point\_name` | `text` | | Textual description of main start point(s) in English. (Translatable via `public.translations`) |

| `primary\_end\_point\_name` | `text` | | Textual description of main end point(s) in English. (Translatable via `public.translations`) |

| `typical\_direction\_of\_travel` | `text` | | Common travel direction(s) in English. (Translatable via `public.translations`) |

| `estimated\_total\_distance\_km` | `real` | | Indicative overall distance (km) for the trail. |

| `estimated\_total\_duration\_days` | `text` | | Estimated typical completion duration (e.g., "20-30 days"). |

| `overall\_difficulty` | `public.trail\_difficulty\_enum` | | Overall subjective difficulty rating. |

| `waymarking\_description` | `text` | | Description of waymarking system in English. (Translatable via `public.translations`) |

| `overall\_safety\_considerations` | `text` | | General safety advice in English. (Translatable via `public.translations`) |

| `best\_seasons\_to\_walk` | `text[]` | | Recommended seasons/months (e.g., `{"Spring (April-June)"}`). (Each element Translatable via `public.translations`) |

| `operational\_status` | `public.trail\_operational\_status\_enum` | NOT NULL DEFAULT 'information\_unavailable' | General operational status of the trail. |

| `content\_visibility\_status` | `public.content\_visibility\_status\_enum` | NOT NULL DEFAULT 'draft' | Editorial status for public view. |

| `official\_website\_url` | `text` | CHECK (`official\_website\_url` IS NULL OR `official\_website\_url` ~\* '^https?://.+') | Link to the official trail website. |

| `logo\_media\_id` | `bigint` | REFERENCES `public.media(id)` ON DELETE SET NULL | FK to `media` table for the trail's logo. |

| `banner\_media\_id` | `bigint` | REFERENCES `public.media(id)` ON DELETE SET NULL | FK to `media` table for a representative banner image. |

| `key\_attractions\_summary` | `text` | | Summary of key attractions in English. (Translatable via `public.translations`) |

| `pilgrim\_credential\_info` | `text` | | Info on pilgrim credentials in English. (Translatable via `public.translations`) |

| `contact\_organization\_name` | `text` | | Primary contact organization name in English. (Translatable via `public.translations`) |

| `contact\_organization\_url` | `text` | CHECK (`contact\_organization\_url` IS NULL OR `contact\_organization\_url` ~\* '^https?://.+') | Website of the primary contact organization. |

| `primary\_data\_source\_credit` | `text` | | Acknowledgement of primary data source(s) in English. (Translatable via `public.translations`) |

| `data\_licence\_info` | `text` | | Trail data licensing information in English. (Translatable via `public.translations`) |

| `general\_notes\_for\_pilgrims` | `text` | | General advice for pilgrims in English. (Translatable via `public.translations`) |

| `meta\_description\_seo` | `text` | CHECK (`meta\_description\_seo` IS NULL OR char\_length(`meta\_description\_seo`) &lt;= 160) | Optimized SEO meta description in English. (Translatable via `public.translations`) |

| `wordpress\_excerpt` | `text` | | Short summary for WordPress excerpts in English. (Translatable via `public.translations`) |

| `is\_featured` | `boolean` | NOT NULL DEFAULT `false` | Flag to indicate if the trail should be prominently featured. |

| `created\_at` | `timestamptz` | NOT NULL DEFAULT `now()` | Timestamp of record creation. |

| `created\_by\_profile\_id` | `uuid` | REFERENCES `public.profiles(id)` ON DELETE SET NULL | Profile ID of the user who created this record. |

| `updated\_at` | `timestamptz` | NOT NULL DEFAULT `now()` | Timestamp of last update (auto-updated by trigger). |

| `updated\_by\_profile\_id` | `uuid` | REFERENCES `public.profiles(id)` ON DELETE SET NULL | Profile ID of the user who last updated this record. |

| `deleted\_at` | `timestamptz` | | Timestamp for soft deletion. If NOT NULL, trail is considered inactive. |

3\. PostgreSQL DDL

SQL

```

-- Ensure ENUM types are created if not already present (typically in a global types script)

DO $$

BEGIN

IF NOT EXISTS (SELECT 1 FROM pg\_type WHERE typname = 'trail\_difficulty\_enum') THEN

CREATE TYPE public.trail\_difficulty\_enum AS ENUM ('easy', 'moderate', 'challenging', 'strenuous', 'variable'); -- [cite: 1464]

END IF;

IF NOT EXISTS (SELECT 1 FROM pg\_type WHERE typname = 'trail\_operational\_status\_enum') THEN

CREATE TYPE public.trail\_operational\_status\_enum AS ENUM ('fully\_operational', 'partially\_closed\_detours\_in\_place', 'seasonal\_access\_only', 'under\_development', 'closed', 'information\_unavailable'); -- [cite: 1466]

END IF;

IF NOT EXISTS (SELECT 1 FROM pg\_type WHERE typname = 'content\_visibility\_status\_enum') THEN

CREATE TYPE public.content\_visibility\_status\_enum AS ENUM ('draft', 'pending\_review', 'published', 'archived'); -- [cite: 1467]

END IF;

END$$;

-- Assuming 'public.media' (BIGINT PK) and 'public.profiles' (UUID PK) tables exist. [cite: 1469]

CREATE TABLE public.trails (

id BIGINT GENERATED ALWAYS AS IDENTITY PRIMARY KEY, -- [cite: 1409]

name TEXT NOT NULL CHECK (char\_length(name) <= 255), -- [cite: 1410]

slug TEXT NOT NULL UNIQUE CHECK (slug ~ '^[a-z0-9]+(?:-[a-z0-9]+)\*$' AND char\_length(slug) <= 255), -- [cite: 1412]

trail\_short\_code TEXT UNIQUE CHECK (trail\_short\_code IS NULL OR (trail\_short\_code ~ '^[A-Z0-9\_-]+$' AND char\_length(trail\_short\_code) <= 50)), -- [cite: 1414]

alternate\_names TEXT[], -- [cite: 1415]

short\_description TEXT CHECK (short\_description IS NULL OR char\_length(short\_description) <= 250), -- [cite: 1417]

full\_description TEXT, -- [cite: 1419]

historical\_significance TEXT, -- [cite: 1420]

cultural\_significance TEXT, -- [cite: 1421]

pilgrimage\_focus TEXT, -- [cite: 1422]

primary\_start\_point\_name TEXT, -- [cite: 1424]

primary\_end\_point\_name TEXT, -- [cite: 1426]

typical\_direction\_of\_travel TEXT, -- [cite: 1427]

estimated\_total\_distance\_km REAL, -- [cite: 1429]

estimated\_total\_duration\_days TEXT, -- [cite: 1430]

overall\_difficulty public.trail\_difficulty\_enum, -- [cite: 1431]

waymarking\_description TEXT, -- [cite: 1432]

overall\_safety\_considerations TEXT, -- [cite: 1433]

best\_seasons\_to\_walk TEXT[], -- [cite: 1435]

operational\_status public.trail\_operational\_status\_enum NOT NULL DEFAULT 'information\_unavailable', -- [cite: 1436]

content\_visibility\_status public.content\_visibility\_status\_enum NOT NULL DEFAULT 'draft', -- [cite: 1438]

official\_website\_url TEXT CHECK (official\_website\_url IS NULL OR official\_website\_url ~\* '^https?://.+'), -- [cite: 1439]

logo\_media\_id BIGINT REFERENCES public.media(id) ON DELETE SET NULL, -- [cite: 1441]

banner\_media\_id BIGINT REFERENCES public.media(id) ON DELETE SET NULL, -- [cite: 1442]

key\_attractions\_summary TEXT, -- [cite: 1444]

pilgrim\_credential\_info TEXT, -- [cite: 1445]

contact\_organization\_name TEXT, -- [cite: 1447]

contact\_organization\_url TEXT CHECK (contact\_organization\_url IS NULL OR contact\_organization\_url ~\* '^https?://.+'), -- [cite: 1448]

primary\_data\_source\_credit TEXT, -- [cite: 1449]

data\_licence\_info TEXT, -- [cite: 1450]

general\_notes\_for\_pilgrims TEXT, -- [cite: 1452]

meta\_description\_seo TEXT CHECK (meta\_description\_seo IS NULL OR char\_length(meta\_description\_seo) <= 160), -- [cite: 1453]

wordpress\_excerpt TEXT, -- [cite: 1455]

is\_featured BOOLEAN NOT NULL DEFAULT FALSE, -- [cite: 1456]

created\_at TIMESTAMPTZ NOT NULL DEFAULT now(), -- [cite: 1458]

created\_by\_profile\_id UUID REFERENCES public.profiles(id) ON DELETE SET NULL, -- [cite: 1459]

updated\_at TIMESTAMPTZ NOT NULL DEFAULT now(), -- [cite: 1460]

updated\_by\_profile\_id UUID REFERENCES public.profiles(id) ON DELETE SET NULL, -- [cite: 1461]

deleted\_at TIMESTAMPTZ -- [cite: 1463]

);

-- Indexes

CREATE INDEX IF NOT EXISTS idx\_trails\_slug ON public.trails(slug); -- [cite: 1472]

CREATE INDEX IF NOT EXISTS idx\_trails\_trail\_short\_code ON public.trails(trail\_short\_code); -- [cite: 1473]

CREATE INDEX IF NOT EXISTS idx\_trails\_operational\_status ON public.trails(operational\_status); -- [cite: 1473]

CREATE INDEX IF NOT EXISTS idx\_trails\_content\_visibility\_status ON public.trails(content\_visibility\_status); -- [cite: 1474]

CREATE INDEX IF NOT EXISTS idx\_trails\_is\_featured ON public.trails(is\_featured); -- [cite: 1474]

CREATE INDEX IF NOT EXISTS idx\_trails\_deleted\_at ON public.trails(deleted\_at) WHERE deleted\_at IS NULL; -- For querying active trails [cite: 1475]

-- Trigger for audit columns (created\_by\_profile\_id, updated\_at, updated\_by\_profile\_id)

-- It's recommended to use a generic audit trigger function if available (e.g., public.handle\_generic\_audit\_meta()).

-- The specific trigger from the original document is functional:

CREATE OR REPLACE FUNCTION public.set\_trail\_modification\_meta()

RETURNS TRIGGER AS $$

BEGIN

NEW.updated\_at = NOW(); -- [cite: 1475]

IF (TG\_OP = 'INSERT') THEN

NEW.created\_by\_profile\_id = auth.uid(); -- [cite: 1476]

NEW.updated\_by\_profile\_id = auth.uid(); -- Also set updated\_by on insert [cite: 1476]

ELSIF (TG\_OP = 'UPDATE') THEN

NEW.updated\_by\_profile\_id = auth.uid(); -- [cite: 1477]

-- Preserve original creation audit fields if they are not meant to be changed on update

NEW.created\_at = OLD.created\_at; -- [cite: 1478]

NEW.created\_by\_profile\_id = OLD.created\_by\_profile\_id; -- [cite: 1479]

END IF;

RETURN NEW;

END;

$$ LANGUAGE plpgsql SECURITY DEFINER; -- [cite: 1480]

CREATE TRIGGER trigger\_trails\_modification\_meta

BEFORE INSERT OR UPDATE ON public.trails

FOR EACH ROW

EXECUTE FUNCTION public.set\_trail\_modification\_meta(); -- [cite: 1481]

-- Comments

COMMENT ON TABLE public.trails IS 'Defines overarching pilgrimage trails, providing comprehensive, translatable overviews of identity, characteristics, status, and key information. Version: V2.'; -- [cite: 1482]

COMMENT ON COLUMN public.trails.name IS 'The primary, official, or most common name of the trail in English (e.g., "Via di Francesco"). Max 255 chars. (Translatable via public.translations)'; -- [cite: 1483]

COMMENT ON COLUMN public.trails.slug IS 'URL-friendly identifier for the trail (e.g., "via-di-francesco"). Max 255 chars, pattern: ^[a-z0-9]+(?:-[a-z0-9]+)\*$. Must be unique.'; -- [cite: 1484]

COMMENT ON COLUMN public.trails.trail\_short\_code IS 'A short, stable, unique code for the trail (e.g., "VDF"), useful for internal referencing or concise display. Max 50 chars, pattern: ^[A-Z0-9\_-]+$.'; -- [cite: 1485]

COMMENT ON COLUMN public.trails.alternate\_names IS 'Array of other known names for the trail in English. Each element is translatable via public.translations.';

COMMENT ON COLUMN public.trails.short\_description IS 'A brief, concise summary of the trail in English (approx. 160-250 characters). (Translatable via public.translations)';

COMMENT ON COLUMN public.trails.estimated\_total\_distance\_km IS 'Indicative overall distance for the entire trail or its most common primary configuration (in kilometers). Precise distances are at route/segment levels.'; -- [cite: 1487]

COMMENT ON COLUMN public.trails.deleted\_at IS 'Timestamp for soft deletion. Records with deleted\_at IS NOT NULL are considered deleted/inactive and should typically be excluded from public queries.'; -- [cite: 1488]

COMMENT ON COLUMN public.trails.logo\_media\_id IS 'Foreign key to the public.media table for the trail''s official logo image.'; -- [cite: 1489]

COMMENT ON COLUMN public.trails.banner\_media\_id IS 'Foreign key to the public.media table for a representative banner image for the trail.'; -- [cite: 1490]

COMMENT ON COLUMN public.trails.created\_at IS 'Timestamp of when the trail record was created.';

COMMENT ON COLUMN public.trails.created\_by\_profile\_id IS 'Profile ID (public.profiles.id) of the user who created this trail record.';

COMMENT ON COLUMN public.trails.updated\_at IS 'Timestamp of when the trail record was last updated. Auto-updated by a trigger.';

COMMENT ON COLUMN public.trails.updated\_by\_profile\_id IS 'Profile ID (public.profiles.id) of the user who last updated this trail record.';

-- (Add comments for other translatable fields as per original spec and current schema)

```

4\. JSON Schema Mirror

JSON

```

{

"title": "trail",

"description": "Defines an overarching pilgrimage trail, providing a comprehensive overview of its identity, characteristics, status, and key information. Version: V2.",

"type": "object",

"properties": {

"id": { "type": "integer", "format": "int64", "description": "Unique identifier for the trail.", "readOnly": true },

"name": { "type": "string", "maxLength": 255, "description": "The primary, official, or most common name of the trail in English. (Translatable via public.translations)" },

"slug": { "type": "string", "maxLength": 255, "pattern": "^[a-z0-9]+(?:-[a-z0-9]+)\*$", "description": "URL-friendly identifier for the trail. Must be unique." },

"trail\_short\_code": { "type": ["string", "null"], "maxLength": 50, "pattern": "^[A-Z0-9\_-]+$", "description": "A short, stable code for the trail (e.g., VDF). Must be unique if provided." },

"alternate\_names": { "type": ["array", "null"], "items": { "type": "string" }, "description": "Array of other known names for the trail in English. (Each element Translatable via public.translations)" },

"short\_description": { "type": ["string", "null"], "maxLength": 250, "description": "Brief summary of the trail in English (approx. 160-250 characters). (Translatable via public.translations)" },

"full\_description": { "type": ["string", "null"], "description": "Detailed description of the trail in English. (Translatable via public.translations)" },

"historical\_significance": { "type": ["string", "null"], "description": "Information about the trail's historical background in English. (Translatable via public.translations)" },

"cultural\_significance": { "type": ["string", "null"], "description": "Details on the cultural impact and relevance of the trail in English. (Translatable via public.translations)" },

"pilgrimage\_focus": { "type": ["string", "null"], "description": "The main spiritual, religious, or thematic focus of the pilgrimage in English. (Translatable via public.translations)" },

"primary\_start\_point\_name": { "type": ["string", "null"], "description": "Textual description of the trail's main starting point(s) in English. (Translatable via public.translations)" },

"primary\_end\_point\_name": { "type": ["string", "null"], "description": "Textual description of the trail's main ending point(s) in English. (Translatable via public.translations)" },

"typical\_direction\_of\_travel": { "type": ["string", "null"], "description": "Describes common direction(s) of walking in English. (Translatable via public.translations)" },

"estimated\_total\_distance\_km": { "type": ["number", "null"], "format": "float", "description": "Indicative overall distance for the trail (km)." },

"estimated\_total\_duration\_days": { "type": ["string", "null"], "description": "Estimated range for typical completion duration (e.g., '20-30 days')." },

"overall\_difficulty": { "type": ["string", "null"], "enum": ["easy", "moderate", "challenging", "strenuous", "variable", null], "description": "Overall subjective difficulty rating for the trail." },

"waymarking\_description": { "type": ["string", "null"], "description": "Description of the trail's waymarking system in English. (Translatable via public.translations)" },

"overall\_safety\_considerations": { "type": ["string", "null"], "description": "General safety advice for the trail in English. (Translatable via public.translations)" },

"best\_seasons\_to\_walk": { "type": ["array", "null"], "items": { "type": "string" }, "description": "Array listing recommended seasons/months. (Each element Translatable via public.translations)" },

"operational\_status": { "type": "string", "enum": ["fully\_operational", "partially\_closed\_detours\_in\_place", "seasonal\_access\_only", "under\_development", "closed", "information\_unavailable"], "default": "information\_unavailable", "description": "General operational status of the entire trail." },

"content\_visibility\_status": { "type": "string", "enum": ["draft", "pending\_review", "published", "archived"], "default": "draft", "description": "Editorial status indicating if the content is ready for public view." },

"official\_website\_url": { "type": ["string", "null"], "format": "url", "pattern": "^https?://.+", "description": "Link to the official website for this trail." },

"logo\_media\_id": { "type": ["integer", "null"], "format": "int64", "description": "Foreign key to the public.media table for the trail's logo." },

"banner\_media\_id": { "type": ["integer", "null"], "format": "int64", "description": "Foreign key to the public.media table for the trail's banner image." },

"key\_attractions\_summary": { "type": ["string", "null"], "description": "Brief narrative summary of key attractions in English. (Translatable via public.translations)" },

"pilgrim\_credential\_info": { "type": ["string", "null"], "description": "Information on pilgrim credentials in English. (Translatable via public.translations)" },

"contact\_organization\_name": { "type": ["string", "null"], "description": "Name of the primary contact organization in English. (Translatable via public.translations)" },

"contact\_organization\_url": { "type": ["string", "null"], "format": "url", "pattern": "^https?://.+", "description": "Website of the primary contact organization." },

"primary\_data\_source\_credit": { "type": ["string", "null"], "description": "Acknowledgement of primary data source(s) in English. (Translatable via public.translations)" },

"data\_licence\_info": { "type": ["string", "null"], "description": "Licensing of the trail data in English. (Translatable via public.translations)" },

"general\_notes\_for\_pilgrims": { "type": ["string", "null"], "description": "General advice for pilgrims in English. (Translatable via public.translations)" },

"meta\_description\_seo": { "type": ["string", "null"], "maxLength": 160, "description": "Optimized meta description for SEO in English (approx. 150-160 characters). (Translatable via public.translations)" },

"wordpress\_excerpt": { "type": ["string", "null"], "description": "Short summary for WordPress excerpt in English. (Translatable via public.translations)" },

"is\_featured": { "type": "boolean", "default": false, "description": "Flag to indicate if this trail should be prominently featured." },

"created\_at": { "type": "string", "format": "date-time", "description": "Timestamp of record creation.", "readOnly": true },

"created\_by\_profile\_id": { "type": ["string", "null"], "format": "uuid", "description": "Profile ID (public.profiles.id) of the user who created this trail record.", "readOnly": true },

"updated\_at": { "type": "string", "format": "date-time", "description": "Timestamp of last update.", "readOnly": true },

"updated\_by\_profile\_id": { "type": ["string", "null"], "format": "uuid", "description": "Profile ID (public.profiles.id) of the user who last updated this trail record.", "readOnly": true },

"deleted\_at": { "type": ["string", "null"], "format": "date-time", "description": "Timestamp for soft deletion. If present, the trail is considered inactive.", "readOnly": true }

},

"required": [

"name",

"slug",

"operational\_status",

"content\_visibility\_status",

"is\_featured",

"created\_at",

"updated\_at"

],

"primary\_key": ["id"],

"unique\_constraints": [

{"columns": ["slug"], "name": "trails\_slug\_key"},

{"columns": ["trail\_short\_code"], "name": "trails\_trail\_short\_code\_key"}

]

}

```

5\. Relationships & Integrity

- Foreign Key Targets & `ON DELETE` Actions:

- `logo\_media\_id` references `public.media(id)`: `ON DELETE SET NULL`.

- `banner\_media\_id` references `public.media(id)`: `ON DELETE SET NULL`.

- `created\_by\_profile\_id` references `public.profiles(id)`: `ON DELETE SET NULL`.

- `updated\_by\_profile\_id` references `public.profiles(id)`: `ON DELETE SET NULL`.

- Child Tables (Strong Relationships):

- `public.routes`: Linked via `routes.trail\_id`. `ON DELETE CASCADE` on `routes.trail\_id` means deleting a trail deletes its routes.

- `public.trail\_regions`: Linked via `trail\_regions.trail\_id`. `ON DELETE CASCADE` on `trail\_regions.trail\_id` deletes region links.

- Junction Tables for Characteristics:

- `public.trail\_terrain\_types`: Links `trails` to `terrain\_types\_master`. `ON DELETE CASCADE` on its `trail\_id` FK ensures links are removed if the trail is deleted.

- `public.trail\_usage\_types`: Links `trails` to `usage\_types\_master`. `ON DELETE CASCADE` on its `trail\_id` FK ensures links are removed if the trail is deleted.

- Mermaid ER Diagram Snippet:

Code snippet

```

erDiagram

trails {

bigint id PK

text name

text slug UK

text trail\_short\_code UK

bigint logo\_media\_id FK

bigint banner\_media\_id FK

uuid created\_by\_profile\_id FK

uuid updated\_by\_profile\_id FK

timestamptz deleted\_at

trail\_operational\_status\_enum operational\_status

content\_visibility\_status\_enum content\_visibility\_status

boolean is\_featured

}

media {

bigint id PK

text storage\_object\_path\_original -- Example column from media spec

}

profiles {

uuid id PK

text email -- Example column from profiles spec

}

routes {

bigint id PK

bigint trail\_id FK

}

trail\_regions {

bigint id PK

bigint trail\_id FK

}

trail\_terrain\_types {

bigint trail\_id PK FK

integer terrain\_type\_id PK FK

}

trail\_usage\_types {

bigint trail\_id PK FK

integer usage\_type\_id PK FK

}

terrain\_types\_master {

integer id PK

}

usage\_types\_master {

integer id PK

}

trails ||--o| media : "has\_logo (SET NULL)"

trails ||--o| media : "has\_banner (SET NULL)"

trails ||--o| profiles : "created\_by (SET NULL)"

trails ||--o| profiles : "updated\_by (SET NULL)"

trails ||--|{ routes : "defines (CASCADE)"

trails ||--|{ trail\_regions : "traverses (CASCADE)"

trails ||--|{ trail\_terrain\_types : "characterized\_by (CASCADE from trail)"

trail\_terrain\_types ||--|| terrain\_types\_master : "uses\_type (RESTRICT from master)"

trails ||--|{ trail\_usage\_types : "permits\_use (CASCADE from trail)"

trail\_usage\_types ||--|| usage\_types\_master : "uses\_type (RESTRICT from master)"

```

6\. Multilingual Strategy

- User-facing textual content intended for multiple languages stores its primary English version directly in the `trails` table. The `public.translations` table holds translations, linked by `table\_name='trails'`, `column\_name`, and `row\_id=trails.id`.

- Translatable Fields: `name`, `alternate\_names` (each element), `short\_description`, `full\_description`, `historical\_significance`, `cultural\_significance`, `pilgrimage\_focus`, `primary\_start\_point\_name`, `primary\_end\_point\_name`, `typical\_direction\_of\_travel`, `waymarking\_description`, `overall\_safety\_considerations`, `best\_seasons\_to\_walk` (each element), `key\_attractions\_summary`, `pilgrim\_credential\_info`, `contact\_organization\_name`, `primary\_data\_source\_credit`, `data\_licence\_info`, `general\_notes\_for\_pilgrims`, `meta\_description\_seo`, `wordpress\_excerpt`.

7\. Role-Based Workflow & RLS Notes

- Workflow Fields:

- `content\_visibility\_status` (`public.content\_visibility\_status\_enum`): Manages the editorial lifecycle ('draft', 'pending\_review', 'published', 'archived').

- Audit and soft-delete fields (`created\_at`, `created\_by\_profile\_id`, `updated\_at`, `updated\_by\_profile\_id`, `deleted\_at`) track changes and lifecycle.

- Note: The RLS policies outlined above rely on the existence and correct implementation of global RLS helper functions (e.g., public.has\_role(TEXT), public.is\_platform\_admin(), specific regional/trail management checks) that authenticate users and verify their roles stored in the public.profiles table." This reinforces that the table-specific RLS is part of a larger auth system.

- Row-Level Security (RLS) Policies (Conceptual Stubs):

- Public Read Access:

SQL

```

CREATE POLICY "Allow public read access to published trails"

ON public.trails FOR SELECT

USING (content\_visibility\_status = 'published' AND deleted\_at IS NULL); -- [cite: 1556]

```

- Admin Full Access:

SQL

```

CREATE POLICY "Allow admin full access on trails"

ON public.trails FOR ALL

USING (public.is\_platform\_admin()) -- Assumes is\_platform\_admin() helper function

WITH CHECK (public.is\_platform\_admin()); -- [cite: 1557]

```

- Regional Content Manager Access (Update - requires helper functions):

SQL

```

CREATE POLICY "Allow regional managers to update their trails"

ON public.trails FOR UPDATE

USING (

EXISTS ( -- [cite: 1558]

SELECT 1 FROM public.trail\_regions tr

JOIN public.profile\_region\_permissions prp ON tr.region\_id = prp.region\_id -- Assumed table [cite: 1558]

WHERE tr.trail\_id = trails.id

AND prp.profile\_id = auth.uid() --

AND prp.can\_edit\_trail\_content = TRUE -- Assumed permission flag [cite: 1559]

)

)

WITH CHECK (

EXISTS ( -- [cite: 1559]

SELECT 1 FROM public.trail\_regions tr

JOIN public.profile\_region\_permissions prp ON tr.region\_id = prp.region\_id --

WHERE tr.trail\_id = trails.id

AND prp.profile\_id = auth.uid() --

AND prp.can\_edit\_trail\_content = TRUE -- [cite: 1560]

)

);

```

- Regional Content Manager Access (Insert - requires helper functions):

SQL

```

CREATE POLICY "Allow regional managers to insert trails if permitted"

ON public.trails FOR INSERT

WITH CHECK (public.can\_user\_create\_trails(auth.uid())); -- Assumes helper function [cite: 1562]

```

- Audit Trigger: The `set\_trail\_modification\_meta()` trigger handles audit fields using `auth.uid()` and is `SECURITY DEFINER`.

8\. ENUM vs. Lookup Discussion

- `trail\_difficulty\_enum`, `trail\_operational\_status\_enum`, `content\_visibility\_status\_enum`: Retained as ENUMs; values are subjective or represent fixed states unlikely to need rich metadata.

- `predominant\_terrain\_types` (Original `TEXT[]`): Correctly promoted to `public.terrain\_types\_master` (lookup) and `public.trail\_terrain\_types` (junction).

- `permitted\_uses` (Original `TEXT[]`): Correctly promoted to `public.usage\_types\_master` (lookup) and `public.trail\_usage\_types` (junction).

- `alternate\_names` (`TEXT[]`): Retained as `TEXT[]`; each element translatable.

- `best\_seasons\_to\_walk` (`TEXT[]`): Retained as `TEXT[]`; each element translatable.

9\. UI/UX Enablement

- Filters: `overall\_difficulty`, `operational\_status`, `is\_featured`. Users can also filter by linked terrain and usage types via their respective junction tables.

- Icons: Driven by `overall\_difficulty`, `operational\_status`. Icons for terrain/usage from their master tables.

- Displays: `name`, `short\_description`, `slug` for titles/links. `logo\_media\_id`, `banner\_media\_id` for images. `estimated\_total\_distance\_km`, `estimated\_total\_duration\_days` for summaries.

- Performance: Indexes on key filterable and lookup columns improve query performance.

10\. Key Considerations & Definitions

- Uniqueness: `slug` and `trail\_short\_code` (if provided) must be unique.

- Formatting: `slug` (lowercase, hyphenated), `trail\_short\_code` (uppercase alphanumeric, underscore/hyphen).

- URL Validation: `CHECK` constraints for URL fields are case-insensitive for `http(s)`.

- Soft Deletes: `deleted\_at IS NOT NULL` indicates an inactive trail.

- Base Language: Primary text is English; other languages via `public.translations`.

- Trail-Level Estimates: `estimated\_total\_distance\_km` and `estimated\_total\_duration\_days` are indicative; precise figures are at the `routes` level.

11\. Scalability & Future-Proofing

- `id` as `BIGINT` supports many trails.

- Soft deletes and audit columns provide traceability.

- Centralized media management via `public.media`.

- Lookup tables for attributes (`terrain\_types\_master`, `usage\_types\_master`) allow extensible characterization.

- V2+ Consideration: Structured start/end points (`primary\_start\_point\_name`, `primary\_end\_point\_name`) could link to `waypoints` or `towns` in the future for more structured data.

- Future Enhancement: Full-Text Search (FTS) on key text fields (e.g., `name`, `short\_description`, `full\_description`) could be considered as a future (Post-V2) enhancement for improved search capabilities, as noted in the project overview.

12\. Next-Action Checklist

1. 🔴 Implement DDL: Ensure all ENUM types (`trail\_difficulty\_enum`, `trail\_operational\_status\_enum`, `content\_visibility\_status\_enum`) are created. Create/Update the `public.trails` table using the provided DDL, verifying all columns, constraints (including URL checks with `~\*`), and indexes (including `idx\_trails\_deleted\_at ON public.trails(deleted\_at) WHERE deleted\_at IS NULL`). Ensure the `set\_trail\_modification\_meta` trigger is correctly implemented and attached.

2. 🔴 Implement Orphaned Translation Cleanup Trigger: Add an `AFTER DELETE` trigger on `public.trails` that calls a generic function (e.g., `public.cleanup\_related\_translations('trails', OLD.id)`) to remove orphaned entries from `public.translations` when a trail record is deleted.

3. 🟠 Confirm Dependent Table Structure: Verify that `public.media` (PK `BIGINT`), `public.profiles` (PK `UUID`), `public.terrain\_types\_master`, `public.usage\_types\_master` (and their respective PK types and audit/lifecycle columns) are implemented as `trails` references them.

4. 🟠 Implement RLS Policies & Helper Functions: Define, implement, and thoroughly test the Row-Level Security policies for `trails`. This includes creating and testing any necessary helper functions like `public.is\_platform\_admin()`, `public.can\_user\_create\_trails(UUID)`, and logic for regional manager permissions (e.g., involving a `public.profile\_region\_permissions` table and related checks).

5. 🟠 Data Migration (if applicable):

- Map data from old `predominant\_terrain\_types` and `permitted\_uses` text arrays to the new `public.trail\_terrain\_types` and `public.trail\_usage\_types` junction tables respectively.

- Migrate old image URLs to `logo\_media\_id` and `banner\_media\_id` by first populating `public.media`.

- Populate audit columns for existing records where possible.

6. 🟢 Review Application Logic: Update backend/frontend code to reflect the new schema for `trails`, especially for querying terrain/usage characteristics via junction tables and fetching media.