<https://gemini.google.com/u/1/app/bf28f389cd093e55?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/1d4834db0819faf2>

<https://gemini.google.com/u/1/app/34bd37922031b95a>

Okay, here is the complete and updated "4.1 Waypoints Table Module" document, incorporating the agreed-upon changes.

\* \* \* \* \*

4.1 Waypoints Table Module (Version 1.3 - Enhanced Integrity & Master Table Standardization)

--------------------------------------------------------------------------------------------

This document details the structure, purpose, and considerations for the `waypoints` table and its immediate master lookup tables. \*Updates in this version focus on strengthening data integrity for array foreign keys and standardizing the DDL for associated master tables.\*

### 1\. Purpose & Primary Use-Cases

This table serves as the definitive, central repository for all distinct, geographically located points of interest (POIs), navigational markers, or service locations relevant to the pilgrimage trails. It underpins map displays, route construction, POI discovery, and provides the common attributes before linking to specialized detail tables.

Key user-story touchpoints:

- Pilgrim: Discovering POIs (accommodations, attractions, water, etc.) on a map or along a route (Stories A1-A4, A7, A9).

- Pilgrim: Understanding POI names, basic descriptions, and seeing a primary image.

- Pilgrim: Accessing accessibility notes for a POI (Story A4, general accessibility).

- Pilgrim: Seeing curated highlights like "Franciscan sites" (Story A4, A7).

- System: Defining start/end points for trail segments (Story A2).

- Content Managers/Admins: Adding, updating, and managing the publication status of all POIs (Stories C2, D1).

- System/UI: Driving map icons and determining links to more detailed information tables based on category.

### 2\. Updated Schema (Markdown Table)

| column | data\_type | constraints | description |

| id | bigint | Primary Key (Generated as identity always) | Unique identifier for each waypoint. Switched to bigint for future growth. |

| name | text | Not Null, CHECK (length(name) > 0 AND length(name) &lt;= 255) | Primary human-readable name of the waypoint (e.g., "La Verna Sanctuary"). Primary reference language (English) text. Translatable via the 'translations' table. |

| slug | text | Unique, Nullable, CHECK (slug IS NULL OR (slug ~ '^[a-z0-9]+(?:-[a-z0-9]+)\*$' AND length(slug) > 0 AND length(slug) &lt;= 100)) | URL-friendly identifier. Pattern ensures Kebab-case. Max length added. |

| alternate\_names\_primary\_lang | text[] | Nullable | Array of other known names or synonyms for the waypoint in the primary reference language (English). For non-primary language names, use the translations table. |

| waypoint\_primary\_category\_id | integer | Not Null, Foreign Key to waypoint\_categories\_master(id) ON DELETE RESTRICT | Broad category of the waypoint, linking to a master table for i18n, icons, etc. |

| waypoint\_subcategory\_tag\_ids | integer[] | Nullable | Array of Foreign Keys to tags\_master(id) for more specific, managed tags. |

| description | text | Nullable | General, brief description of the waypoint. Primary reference language (English) text. Translatable via the 'translations' table. |

| geom | geography(PointZ, 4326) | Not Null | PostGIS geography point (PointZ, SRID 4326 WGS84). geography type is often better for global lat/lon distance calculations. |

| latitude | double precision | Generated Always As (ST\_Y(ST\_Transform(geom::geometry, 4326))) Stored | Latitude coordinate (WGS 84 decimal degrees). Generated from geom. |

| longitude | double precision | Generated Always As (ST\_X(ST\_Transform(geom::geometry, 4326))) Stored | Longitude coordinate (WGS 84 decimal degrees). Generated from geom. |

| elevation\_meters | integer | Generated Always As (ST\_Z(ST\_Transform(geom::geometry, 4326))) Stored, Nullable | Elevation (meters above sea level). Generated from geom's Z value if present. |

| town\_id | integer | Nullable, Foreign Key to towns(id) ON DELETE SET NULL | If the waypoint is within or associated with a town. |

| parent\_waypoint\_id | bigint | Nullable, Foreign Key to waypoints(id) ON DELETE SET NULL | For hierarchical waypoints (e.g., a specific chapel within La Verna Sanctuary complex). |

| address\_text | text | Nullable | Textual street address, if applicable. Primary reference language (English) text. Translatable. |

| primary\_image\_media\_id | uuid | Nullable, Foreign Key to media(id) ON DELETE SET NULL | Reference to a primary representative image in the central media table. |

| primary\_thumbnail\_media\_id | uuid | Nullable, Foreign Key to media(id) ON DELETE SET NULL | Reference to a primary thumbnail in the central media table. |

| content\_visibility\_status\_id | integer | Not Null, Default (SELECT id FROM content\_statuses\_master WHERE code = 'draft' LIMIT 1), Foreign Key to content\_statuses\_master(id) ON DELETE RESTRICT | Manages publication lifecycle. Links to a master table. |

| is\_seasonal | boolean | Not Null, Default false | Indicates if availability, operation, or accessibility is seasonal. |

| is\_trail\_access\_point | boolean | Not Null, Default false | Flags common/convenient trail access points. |

| is\_significant\_trail\_junction | boolean | Not Null, Default false | Flags major, named, or decision-critical trail junctions. |

| is\_franciscan\_highlight\_site | boolean | Not Null, Default false | Flags key sites directly related to St. Francis or Franciscan history. |

| is\_significant\_pilgrim\_poi | boolean | Not Null, Default false | Flags POIs of general major significance to pilgrims. |

| short\_narrative\_for\_dynamic\_lists | text | Nullable, CHECK (short\_narrative\_for\_dynamic\_lists IS NULL OR length(short\_narrative\_for\_dynamic\_lists) &lt;= 250) | Brief descriptive snippet for dynamic highlight lists. Primary reference language (English) text. Translatable. Max length 250 chars. |

| waypoint\_accessibility\_notes | text | Nullable | Specific accessibility notes for individuals with disabilities. Primary reference language (English) text. Translatable. |

| general\_tags\_text | text[] | Nullable | Array of general, free-text descriptive tags for filtering/search if not covered by structured waypoint\_subcategory\_tag\_ids. |

| primary\_data\_source\_waypoint | text | Nullable | Information on the source of this waypoint's data. |

| quality\_score | smallint | Nullable, CHECK (quality\_score IS NULL OR (quality\_score >= 0 AND quality\_score &lt;= 100)) | Internal score indicating data confidence/completeness (0-100). |

| created\_at | timestamp with time zone | Not Null, Default now() | Timestamp of record creation. |

| created\_by\_profile\_id | uuid | Nullable, Foreign Key to profiles(id) ON DELETE SET NULL | Profile ID of the user who created the record. Assumes profiles table linked to auth.users. |

| updated\_at | timestamp with time zone | Not Null, Default now() | Timestamp of last update (auto-updated by trigger). |

| updated\_by\_profile\_id | uuid | Nullable, Foreign Key to profiles(id) ON DELETE SET NULL | Profile ID of the user who last updated the record. |

| deleted\_at | timestamp with time zone | Nullable | Timestamp for soft deletion. Active records have deleted\_at IS NULL. |

### 3\. PostgreSQL DDL

SQL

```

-- Assumed Master Tables (Create these first if they don't exist):

CREATE TABLE public.waypoint\_categories\_master (

id SERIAL PRIMARY KEY,

code TEXT UNIQUE NOT NULL CHECK (length(code) > 0 AND length(code) <= 50 AND code ~ '^[a-z0-9\_]+$'), -- Standardized constraint

label TEXT NOT NULL, -- Primary reference language (English) text. Translatable.

description TEXT NULL, -- Optional. Primary reference language (English) text. Translatable.

icon\_identifier TEXT NULL CHECK (icon\_identifier IS NULL OR length(icon\_identifier) <= 100), -- Added length check

created\_at TIMESTAMPTZ NOT NULL DEFAULT now(),

updated\_at TIMESTAMPTZ NOT NULL DEFAULT now(),

created\_by\_profile\_id UUID NULL REFERENCES public.profiles(id) ON DELETE SET NULL, -- Added audit field

updated\_by\_profile\_id UUID NULL REFERENCES public.profiles(id) ON DELETE SET NULL -- Added audit field

);

COMMENT ON TABLE public.waypoint\_categories\_master IS 'Master list of broad waypoint categories. `label` and `description` are translatable. Codes are snake\_case, max 50 chars.';

COMMENT ON COLUMN public.waypoint\_categories\_master.code IS 'Short, stable, machine-readable code (snake\_case). Max 50 chars.';

COMMENT ON COLUMN public.waypoint\_categories\_master.label IS 'Primary reference language (English) label. Translatable via the ''translations'' table.';

COMMENT ON COLUMN public.waypoint\_categories\_master.description IS 'Optional primary reference language (English) description. Translatable via the ''translations'' table.';

COMMENT ON COLUMN public.waypoint\_categories\_master.created\_by\_profile\_id IS 'Profile ID of the user who created the record.';

COMMENT ON COLUMN public.waypoint\_categories\_master.updated\_by\_profile\_id IS 'Profile ID of the user who last updated the record.';

CREATE TABLE public.tags\_master (

id SERIAL PRIMARY KEY,

tag\_code TEXT UNIQUE NOT NULL CHECK (length(tag\_code) > 0 AND length(tag\_code) <= 50 AND tag\_code ~ '^[a-z0-9\_]+$'), -- Standardized constraint & name

label TEXT NOT NULL, -- Primary reference language (English) text. Translatable.

description TEXT NULL, -- Optional. Primary reference language (English) text. Translatable.

tag\_type TEXT NULL CHECK (tag\_type IS NULL OR length(tag\_type) <= 50), -- Added length check

created\_at TIMESTAMPTZ NOT NULL DEFAULT now(),

updated\_at TIMESTAMPTZ NOT NULL DEFAULT now(),

created\_by\_profile\_id UUID NULL REFERENCES public.profiles(id) ON DELETE SET NULL, -- Added audit field

updated\_by\_profile\_id UUID NULL REFERENCES public.profiles(id) ON DELETE SET NULL -- Added audit field

);

COMMENT ON TABLE public.tags\_master IS 'Master list of descriptive tags for various entities. `label` and `description` are translatable. Codes are snake\_case, max 50 chars.';

COMMENT ON COLUMN public.tags\_master.tag\_code IS 'Short, stable, machine-readable code (snake\_case). Max 50 chars.';

COMMENT ON COLUMN public.tags\_master.label IS 'Primary reference language (English) label. Translatable via the ''translations'' table.';

COMMENT ON COLUMN public.tags\_master.description IS 'Optional primary reference language (English) description. Translatable via the ''translations'' table.';

COMMENT ON COLUMN public.tags\_master.created\_by\_profile\_id IS 'Profile ID of the user who created the record.';

COMMENT ON COLUMN public.tags\_master.updated\_by\_profile\_id IS 'Profile ID of the user who last updated the record.';

CREATE TABLE public.content\_statuses\_master (

id SERIAL PRIMARY KEY,

code TEXT UNIQUE NOT NULL CHECK (length(code) > 0 AND length(code) <= 50 AND code ~ '^[a-z0-9\_]+$'), -- Standardized constraint

label TEXT NOT NULL, -- Primary reference language (English) text. Translatable.

description TEXT NULL, -- Optional. Primary reference language (English) text. Translatable.

created\_at TIMESTAMPTZ NOT NULL DEFAULT now(),

updated\_at TIMESTAMPTZ NOT NULL DEFAULT now(),

created\_by\_profile\_id UUID NULL REFERENCES public.profiles(id) ON DELETE SET NULL, -- Added audit field

updated\_by\_profile\_id UUID NULL REFERENCES public.profiles(id) ON DELETE SET NULL -- Added audit field

);

COMMENT ON TABLE public.content\_statuses\_master IS 'Master list of content publication statuses. `label` and `description` are translatable. Codes are snake\_case, max 50 chars.';

COMMENT ON COLUMN public.content\_statuses\_master.code IS 'Short, stable, machine-readable code (snake\_case). Max 50 chars.';

COMMENT ON COLUMN public.content\_statuses\_master.label IS 'Primary reference language (English) label. Translatable via the ''translations'' table.';

COMMENT ON COLUMN public.content\_statuses\_master.description IS 'Optional primary reference language (English) description. Translatable via the ''translations'' table.';

COMMENT ON COLUMN public.content\_statuses\_master.created\_by\_profile\_id IS 'Profile ID of the user who created the record.';

COMMENT ON COLUMN public.content\_statuses\_master.updated\_by\_profile\_id IS 'Profile ID of the user who last updated the record.';

-- Populate content\_statuses\_master with initial values like 'draft', 'published', etc.

-- Ensure these INSERT statements also populate created\_by\_profile\_id if necessary (e.g., with a system user ID or admin ID).

CREATE TABLE public.media (

id UUID PRIMARY KEY DEFAULT gen\_random\_uuid(),

-- other media fields like file\_path, mime\_type, size\_bytes, owner\_profile\_id etc.

created\_at TIMESTAMPTZ NOT NULL DEFAULT now()

);

COMMENT ON TABLE public.media IS 'Central repository for media assets.';

CREATE TABLE public.profiles ( -- Simplified example, assumes you have this for users

id UUID PRIMARY KEY REFERENCES auth.users(id) ON DELETE CASCADE,

full\_name TEXT,

-- other profile fields, including role\_name if used by RLS

created\_at TIMESTAMPTZ NOT NULL DEFAULT now(),

updated\_at TIMESTAMPTZ NOT NULL DEFAULT now()

);

CREATE TABLE public.towns ( -- Simplified example

id SERIAL PRIMARY KEY,

name TEXT NOT NULL, -- Primary reference language (English) name. Translatable.

-- other town fields like region\_id, province\_id, geom, etc.

created\_at TIMESTAMPTZ NOT NULL DEFAULT now(),

updated\_at TIMESTAMPTZ NOT NULL DEFAULT now()

);

COMMENT ON TABLE public.towns IS 'Master list of towns and cities. `name` is translatable.';

COMMENT ON COLUMN public.towns.name IS 'Primary reference language (English) name. Translatable via the ''translations'' table.';

-- Main Waypoints Table

CREATE TABLE public.waypoints (

id BIGINT GENERATED ALWAYS AS IDENTITY PRIMARY KEY,

name TEXT NOT NULL CHECK (length(name) > 0 AND length(name) <= 255),

slug TEXT UNIQUE CHECK (slug IS NULL OR (slug ~ '^[a-z0-9]+(?:-[a-z0-9]+)\*$' AND length(slug) > 0 AND length(slug) <= 100)),

alternate\_names\_primary\_lang TEXT[] NULL,

waypoint\_primary\_category\_id INTEGER NOT NULL,

waypoint\_subcategory\_tag\_ids INTEGER[] NULL,

description TEXT NULL,

geom GEOGRAPHY(PointZ, 4326) NOT NULL,

latitude DOUBLE PRECISION GENERATED ALWAYS AS (ST\_Y(ST\_Transform(geom::geometry, 4326))) STORED,

longitude DOUBLE PRECISION GENERATED ALWAYS AS (ST\_X(ST\_Transform(geom::geometry, 4326))) STORED,

elevation\_meters INTEGER GENERATED ALWAYS AS ( ST\_Z(ST\_Transform(geom::geometry, 4326)) ) STORED NULL,

town\_id INTEGER NULL,

parent\_waypoint\_id BIGINT NULL,

address\_text TEXT NULL,

primary\_image\_media\_id UUID NULL,

primary\_thumbnail\_media\_id UUID NULL,

content\_visibility\_status\_id INTEGER NOT NULL DEFAULT (SELECT id FROM public.content\_statuses\_master WHERE code = 'draft' LIMIT 1),

is\_seasonal BOOLEAN NOT NULL DEFAULT FALSE,

is\_trail\_access\_point BOOLEAN NOT NULL DEFAULT FALSE,

is\_significant\_trail\_junction BOOLEAN NOT NULL DEFAULT FALSE,

is\_franciscan\_highlight\_site BOOLEAN NOT NULL DEFAULT FALSE,

is\_significant\_pilgrim\_poi BOOLEAN NOT NULL DEFAULT FALSE,

short\_narrative\_for\_dynamic\_lists TEXT NULL CHECK (short\_narrative\_for\_dynamic\_lists IS NULL OR length(short\_narrative\_for\_dynamic\_lists) <= 250),

waypoint\_accessibility\_notes TEXT NULL,

general\_tags\_text TEXT[] NULL,

primary\_data\_source\_waypoint TEXT NULL,

quality\_score SMALLINT NULL CHECK (quality\_score IS NULL OR (quality\_score >= 0 AND quality\_score <= 100)),

created\_at TIMESTAMPTZ NOT NULL DEFAULT now(),

created\_by\_profile\_id UUID NULL,

updated\_at TIMESTAMPTZ NOT NULL DEFAULT now(),

updated\_by\_profile\_id UUID NULL,

deleted\_at TIMESTAMPTZ NULL,

CONSTRAINT fk\_waypoint\_primary\_category

FOREIGN KEY(waypoint\_primary\_category\_id)

REFERENCES public.waypoint\_categories\_master(id)

ON DELETE RESTRICT,

CONSTRAINT fk\_town

FOREIGN KEY(town\_id)

REFERENCES public.towns(id)

ON DELETE SET NULL,

CONSTRAINT fk\_parent\_waypoint

FOREIGN KEY(parent\_waypoint\_id)

REFERENCES public.waypoints(id)

ON DELETE SET NULL, -- Or RESTRICT if children shouldn't exist without a parent

CONSTRAINT fk\_primary\_image\_media

FOREIGN KEY(primary\_image\_media\_id)

REFERENCES public.media(id)

ON DELETE SET NULL,

CONSTRAINT fk\_primary\_thumbnail\_media

FOREIGN KEY(primary\_thumbnail\_media\_id)

REFERENCES public.media(id)

ON DELETE SET NULL,

CONSTRAINT fk\_content\_visibility\_status

FOREIGN KEY(content\_visibility\_status\_id)

REFERENCES public.content\_statuses\_master(id)

ON DELETE RESTRICT,

CONSTRAINT fk\_created\_by\_profile

FOREIGN KEY(created\_by\_profile\_id)

REFERENCES public.profiles(id)

ON DELETE SET NULL,

CONSTRAINT fk\_updated\_by\_profile

FOREIGN KEY(updated\_by\_profile\_id)

REFERENCES public.profiles(id)

ON DELETE SET NULL

);

COMMENT ON TABLE public.waypoints IS 'Central, generic repository for all distinct, geographically located points of interest (POIs), navigational markers, or service locations relevant to the pilgrimage trails. Version 1.3';

COMMENT ON COLUMN public.waypoints.id IS 'Unique identifier for each waypoint.';

COMMENT ON COLUMN public.waypoints.name IS 'Primary human-readable name. Primary reference language (English) text. Translatable via the ''translations'' table. Max 255 chars.';

COMMENT ON COLUMN public.waypoints.slug IS 'URL-friendly identifier (kebab-case), unique if set. Max 100 chars.';

COMMENT ON COLUMN public.waypoints.alternate\_names\_primary\_lang IS 'Array of other known names or synonyms in the primary reference language (English). For other language names, use the ''translations'' table.';

COMMENT ON COLUMN public.waypoints.waypoint\_primary\_category\_id IS 'FK to waypoint\_categories\_master. Broad category of the waypoint.';

COMMENT ON COLUMN public.waypoints.waypoint\_subcategory\_tag\_ids IS 'Array of FKs to tags\_master. Specific, managed tags. \*\*Integrity of array elements MUST be enforced by a dedicated database trigger.\*\*';

COMMENT ON COLUMN public.waypoints.description IS 'General, brief description. Primary reference language (English) text. Translatable via the ''translations'' table.';

COMMENT ON COLUMN public.waypoints.geom IS 'Authoritative PostGIS geography point (PointZ, SRID 4326 WGS84), including Z for elevation if available.';

COMMENT ON COLUMN public.waypoints.latitude IS 'Latitude (WGS 84 decimal degrees). Generated from geom. For non-PostGIS contexts.';

COMMENT ON COLUMN public.waypoints.longitude IS 'Longitude (WGS 84 decimal degrees). Generated from geom. For non-PostGIS contexts.';

COMMENT ON COLUMN public.waypoints.elevation\_meters IS 'Elevation (meters above sea level). Generated from geom Z value if present. Nullable.';

COMMENT ON COLUMN public.waypoints.town\_id IS 'FK to towns table. If the waypoint is located within or directly associated with a recognized town.';

COMMENT ON COLUMN public.waypoints.parent\_waypoint\_id IS 'FK to waypoints.id for hierarchical waypoints (e.g., specific chapel within La Verna complex).';

COMMENT ON COLUMN public.waypoints.address\_text IS 'Textual street address, if applicable. Primary reference language (English) text. Translatable via the ''translations'' table.';

COMMENT ON COLUMN public.waypoints.primary\_image\_media\_id IS 'FK to media table. Primary representative image.';

COMMENT ON COLUMN public.waypoints.primary\_thumbnail\_media\_id IS 'FK to media table. Smaller thumbnail version of the primary image.';

COMMENT ON COLUMN public.waypoints.content\_visibility\_status\_id IS 'FK to content\_statuses\_master. Manages the publication lifecycle.';

COMMENT ON COLUMN public.waypoints.is\_seasonal IS 'Indicates if the waypoint''s availability, operation, or accessibility is seasonal.';

COMMENT ON COLUMN public.waypoints.is\_trail\_access\_point IS 'Flags if this waypoint serves as a common or convenient access point to a trail.';

COMMENT ON COLUMN public.waypoints.is\_significant\_trail\_junction IS 'Flags if this waypoint represents a major, named, or decision-critical trail junction.';

COMMENT ON COLUMN public.waypoints.is\_franciscan\_highlight\_site IS 'Flags if this is a key site directly related to St. Francis, Franciscan history, or Franciscan spirituality.';

COMMENT ON COLUMN public.waypoints.is\_significant\_pilgrim\_poi IS 'Flags if this is a point of interest of general major significance to pilgrims.';

COMMENT ON COLUMN public.waypoints.short\_narrative\_for\_dynamic\_lists IS 'Brief (1-2 sentence, max 250 chars) descriptive snippet. Primary reference language (English) text. Translatable via the ''translations'' table.';

COMMENT ON COLUMN public.waypoints.waypoint\_accessibility\_notes IS 'Specific notes regarding accessibility for individuals with disabilities. Primary reference language (English) text. Translatable via the ''translations'' table.';

COMMENT ON COLUMN public.waypoints.general\_tags\_text IS 'Array of general, free-text descriptive tags if not covered by structured waypoint\_subcategory\_tag\_ids. Use with caution.';

COMMENT ON COLUMN public.waypoints.primary\_data\_source\_waypoint IS 'Information on the source of this waypoint''s data (e.g., "Official Guidebook VdF 2024").';

COMMENT ON COLUMN public.waypoints.quality\_score IS 'Internal score (0-100) indicating data confidence/completeness. Nullable.';

COMMENT ON COLUMN public.waypoints.created\_at IS 'Timestamp of record creation.';

COMMENT ON COLUMN public.waypoints.created\_by\_profile\_id IS 'Profile ID of the user who created the record.';

COMMENT ON COLUMN public.waypoints.updated\_at IS 'Timestamp of last update.';

COMMENT ON COLUMN public.waypoints.updated\_by\_profile\_id IS 'Profile ID of the user who last updated the record.';

COMMENT ON COLUMN public.waypoints.deleted\_at IS 'Timestamp for soft deletion. Active records have deleted\_at IS NULL.';

-- Create necessary indexes

CREATE INDEX idx\_waypoints\_geom ON public.waypoints USING GIST (geom);

CREATE INDEX idx\_waypoints\_town\_id ON public.waypoints(town\_id) WHERE town\_id IS NOT NULL;

CREATE INDEX idx\_waypoints\_parent\_waypoint\_id ON public.waypoints(parent\_waypoint\_id) WHERE parent\_waypoint\_id IS NOT NULL;

CREATE INDEX idx\_waypoints\_content\_visibility\_status\_id ON public.waypoints(content\_visibility\_status\_id);

CREATE INDEX idx\_waypoints\_waypoint\_primary\_category\_id ON public.waypoints(waypoint\_primary\_category\_id);

CREATE INDEX idx\_waypoints\_name\_trgm ON public.waypoints USING GIN (name gin\_trgm\_ops); -- Requires pg\_trgm extension

CREATE INDEX idx\_waypoints\_subcategory\_tag\_ids ON public.waypoints USING GIN (waypoint\_subcategory\_tag\_ids) WHERE waypoint\_subcategory\_tag\_ids IS NOT NULL;

CREATE INDEX idx\_waypoints\_deleted\_at ON public.waypoints(deleted\_at) WHERE deleted\_at IS NOT NULL;

-- Trigger for updated\_at (assuming function public.set\_current\_timestamp\_updated\_at already exists or is defined as below)

CREATE OR REPLACE FUNCTION public.set\_current\_timestamp\_updated\_at()

RETURNS TRIGGER AS $$

DECLARE

BEGIN

NEW.updated\_at = NOW();

RETURN NEW;

END;

$$ LANGUAGE plpgsql;

CREATE TRIGGER trigger\_waypoints\_set\_updated\_at

BEFORE UPDATE ON public.waypoints

FOR EACH ROW

EXECUTE FUNCTION public.set\_current\_timestamp\_updated\_at();

COMMENT ON TRIGGER trigger\_waypoints\_set\_updated\_at ON public.waypoints IS 'Trigger to automatically update updated\_at timestamp on row modification.';

-- Placeholder for Array FK Integrity Trigger for waypoint\_subcategory\_tag\_ids

-- CREATE OR REPLACE FUNCTION public.check\_waypoint\_subcategory\_tags() ...

-- CREATE TRIGGER trigger\_check\_waypoint\_subcategory\_tags ...

```

### 4\. JSON Schema Mirror

JSON

```

{

"title": "waypoint",

"description": "Central, generic repository for all distinct, geographically located points of interest (POIs), navigational markers, or service locations relevant to the pilgrimage trails. Version 1.3",

"type": "object",

"properties": {

"id": {

"type": "integer",

"format": "int64",

"description": "Unique identifier for the waypoint. Primary Key.",

"readOnly": true

},

"name": {

"type": "string",

"description": "Primary human-readable name of the waypoint. Primary reference language (English) text. Translatable. Max 255 chars.",

"minLength": 1,

"maxLength": 255

},

"slug": {

"type": ["string", "null"],

"description": "URL-friendly identifier (kebab-case), unique if set. Max 100 chars.",

"pattern": "^[a-z0-9]+(?:-[a-z0-9]+)\*$",

"maxLength": 100

},

"alternate\_names\_primary\_lang": {

"type": ["array", "null"],

"items": { "type": "string" },

"description": "Array of other known names or synonyms in the primary reference language (English)."

},

"waypoint\_primary\_category\_id": {

"type": "integer",

"description": "FK to waypoint\_categories\_master. Broad category of the waypoint."

},

"waypoint\_subcategory\_tag\_ids": {

"type": ["array", "null"],

"items": { "type": "integer" },

"description": "Array of FKs to tags\_master. Specific, managed tags. Integrity enforced by DB trigger."

},

"description": {

"type": ["string", "null"],

"description": "General, brief description. Primary reference language (English) text. Translatable."

},

"geom": {

"type": "object",

"description": "Authoritative PostGIS geography point (PointZ, SRID 4326 WGS84). Expected to be GeoJSON Point in API.",

"properties": {

"type": {"type": "string", "enum": ["Point"]},

"coordinates": {

"type": "array",

"items": {"type": "number", "format": "double"},

"minItems": 2,

"maxItems": 3

}

}

},

"latitude": {

"type": "number",

"format": "double",

"description": "Latitude (WGS 84 decimal degrees). Generated from geom.",

"readOnly": true

},

"longitude": {

"type": "number",

"format": "double",

"description": "Longitude (WGS 84 decimal degrees). Generated from geom.",

"readOnly": true

},

"elevation\_meters": {

"type": ["integer", "null"],

"description": "Elevation (meters above sea level). Generated from geom Z value if present.",

"readOnly": true

},

"town\_id": {

"type": ["integer", "null"],

"description": "FK to towns table. If the waypoint is located within or directly associated with a recognized town."

},

"parent\_waypoint\_id": {

"type": ["integer", "null"],

"format": "int64",

"description": "FK to waypoints.id for hierarchical waypoints."

},

"address\_text": {

"type": ["string", "null"],

"description": "Textual street address, if applicable. Primary reference language (English) text. Translatable."

},

"primary\_image\_media\_id": {

"type": ["string", "null"],

"format": "uuid",

"description": "FK to media table. Primary representative image."

},

"primary\_thumbnail\_media\_id": {

"type": ["string", "null"],

"format": "uuid",

"description": "FK to media table. Smaller thumbnail version of the primary image."

},

"content\_visibility\_status\_id": {

"type": "integer",

"description": "FK to content\_statuses\_master. Manages the publication lifecycle. Default corresponds to 'draft'."

},

"is\_seasonal": {

"type": "boolean",

"default": false,

"description": "Indicates if the waypoint's availability, operation, or accessibility is seasonal."

},

"is\_trail\_access\_point": {

"type": "boolean",

"default": false,

"description": "Flags if this waypoint serves as a common or convenient access point to a trail."

},

"is\_significant\_trail\_junction": {

"type": "boolean",

"default": false,

"description": "Flags if this waypoint represents a major, named, or decision-critical trail junction."

},

"is\_franciscan\_highlight\_site": {

"type": "boolean",

"default": false,

"description": "Flags if this is a key site directly related to St. Francis, Franciscan history, or Franciscan spirituality."

},

"is\_significant\_pilgrim\_poi": {

"type": "boolean",

"default": false,

"description": "Flags if this is a point of interest of general major significance to pilgrims."

},

"short\_narrative\_for\_dynamic\_lists": {

"type": ["string", "null"],

"maxLength": 250,

"description": "Brief (1-2 sentence, max 250 chars) descriptive snippet. Primary reference language (English) text. Translatable."

},

"waypoint\_accessibility\_notes": {

"type": ["string", "null"],

"description": "Specific notes regarding accessibility for individuals with disabilities. Primary reference language (English) text. Translatable."

},

"general\_tags\_text": {

"type": ["array", "null"],

"items": { "type": "string" },

"description": "Array of general, free-text descriptive tags if not covered by structured waypoint\_subcategory\_tag\_ids."

},

"primary\_data\_source\_waypoint": {

"type": ["string", "null"],

"description": "Information on the source of this waypoint's data (e.g., 'Official Guidebook VdF 2024')."

},

"quality\_score": {

"type": ["integer", "null"],

"minimum": 0,

"maximum": 100,

"description": "Internal score (0-100) indicating data confidence/completeness."

},

"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 of the user who created the record."

},

"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 of the user who last updated the record."

},

"deleted\_at": {

"type": ["string", "null"],

"format": "date-time",

"description": "Timestamp for soft deletion.",

"readOnly": true

}

},

"required": [

"name",

"waypoint\_primary\_category\_id",

"geom",

"content\_visibility\_status\_id",

"is\_seasonal",

"is\_trail\_access\_point",

"is\_significant\_trail\_junction",

"is\_franciscan\_highlight\_site",

"is\_significant\_pilgrim\_poi"

]

}

```

\*(Note: JSON Schemas for `waypoint\_categories\_master`, `tags\_master`, `content\_statuses\_master` should be created separately if needed, reflecting their updated DDLs including audit fields and code constraints.)\*

### 5\. Relationships & Integrity

- Primary Key: `id` (BIGINT)

- Foreign Keys:

- `waypoint\_primary\_category\_id` REFERENCES `public.waypoint\_categories\_master(id)` ON DELETE RESTRICT

- `town\_id` REFERENCES `public.towns(id)` ON DELETE SET NULL

- `parent\_waypoint\_id` REFERENCES `public.waypoints(id)` ON DELETE SET NULL (self-referencing for hierarchy)

- `primary\_image\_media\_id` REFERENCES `public.media(id)` ON DELETE SET NULL

- `primary\_thumbnail\_media\_id` REFERENCES `public.media(id)` ON DELETE SET NULL

- `content\_visibility\_status\_id` REFERENCES `public.content\_statuses\_master(id)` ON DELETE RESTRICT

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

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

- Junction/Lookup Tables Introduced or Modified:

- 🟢 `waypoint\_categories\_master`: New lookup table (replaces enum). Stores category codes (standardized with CHECK constraints), primary language labels (translatable), descriptions, icon identifiers, and audit fields.

- 🟢 `tags\_master`: New lookup table. `waypoints.waypoint\_subcategory\_tag\_ids` (integer array) references `tags\_master.id`. Stores tag codes (standardized with CHECK constraints), primary language labels (translatable), and audit fields.

- 🟢 `content\_statuses\_master`: New lookup table (replaces enum). Stores status codes (standardized with CHECK constraints), primary language labels (translatable), descriptions, and audit fields.

- Integrity Notes for Array FKs (`waypoint\_subcategory\_tag\_ids`):

- 🔴 PostgreSQL does not natively enforce that each element in `waypoint\_subcategory\_tag\_ids` corresponds to a valid `id` in `tags\_master`. To ensure data integrity, a database trigger WILL BE IMPLEMENTED. This trigger will validate that all IDs in the array exist in `tags\_master.id` during INSERT and UPDATE operations on the `waypoints` table. This is a critical part of the database design.

- Mermaid ER Snippet: \*(Ensure `label` is used for translatable names in master tables within the diagram, and audit fields are noted if diagram detail allows).\*

<!-- end list -->

Code snippet

```

erDiagram

waypoints ||--|{ waypoint\_categories\_master : "belongs\_to\_category"

waypoints }o--|| tags\_master : "has\_tags (via array IDs)"

waypoints ||--|{ content\_statuses\_master : "has\_status"

waypoints }o..o| towns : "optionally\_in"

waypoints }o..o| waypoints : "can\_be\_child\_of (parent\_waypoint\_id)"

waypoints }o..o| media : "primary\_image"

waypoints }o..o| media : "primary\_thumbnail"

waypoints }o..o| profiles : "created\_by"

waypoints }o..o| profiles : "updated\_by"

waypoints {

bigint id PK

text name "Translatable"

text slug UK

text[] alternate\_names\_primary\_lang

integer waypoint\_primary\_category\_id FK

integer[] waypoint\_subcategory\_tag\_ids "FKs to tags\_master (DB Trigger Enforced)"

text description "Translatable"

geography\_PointZ\_4326 geom

double precision latitude "Generated"

double precision longitude "Generated"

integer elevation\_meters "Generated"

integer town\_id FK

bigint parent\_waypoint\_id FK

uuid primary\_image\_media\_id FK

uuid primary\_thumbnail\_media\_id FK

integer content\_visibility\_status\_id FK

boolean is\_seasonal

timestamptz created\_at

uuid created\_by\_profile\_id FK

timestamptz updated\_at

uuid updated\_by\_profile\_id FK

timestamptz deleted\_at

}

waypoint\_categories\_master {

integer id PK

text code "UK, snake\_case"

text label "Translatable"

text icon\_identifier

uuid created\_by\_profile\_id FK "Audit"

uuid updated\_by\_profile\_id FK "Audit"

}

tags\_master {

integer id PK

text tag\_code "UK, snake\_case"

text label "Translatable"

uuid created\_by\_profile\_id FK "Audit"

uuid updated\_by\_profile\_id FK "Audit"

}

content\_statuses\_master {

integer id PK

text code "UK, snake\_case"

text label "Translatable"

uuid created\_by\_profile\_id FK "Audit"

uuid updated\_by\_profile\_id FK "Audit"

}

towns {

integer id PK

text name "Translatable"

}

media {

uuid id PK

}

profiles {

uuid id PK

}

```

### 6\. Multilingual Strategy

- Fields storing primary reference language (English) text directly in `waypoints` (to be translated via central `translations` table):

- `name`

- `description`

- `address\_text`

- `short\_narrative\_for\_dynamic\_lists`

- `waypoint\_accessibility\_notes`

- `alternate\_names\_primary\_lang` (elements are in primary language; the concept of "alternate name" isn't translated, the names are).

- Fields linked to master tables whose `label` fields are translated via the `translations` table:

- `waypoint\_primary\_category\_id` (links to `waypoint\_categories\_master.label`)

- `waypoint\_subcategory\_tag\_ids` (elements link to `tags\_master.label`)

- `content\_visibility\_status\_id` (links to `content\_statuses\_master.label`)

- Sample `translations` table entry for a waypoint name: \*(Remains the same as V1.2)\*

### 7\. Role-Based Workflow & RLS Notes

- Key Fields for Workflow:

- `content\_visibility\_status\_id`: Central to moderation and publication workflows.

- `created\_by\_profile\_id`, `updated\_by\_profile\_id`: Track authorship and modifications.

- `deleted\_at`: For soft deletion and archival workflows.

- Recommended Row-Level Security (RLS) Policies: \*(RLS policies from sources remain conceptually valid but ensure table and column names match updates).\*

- Public Users: Read-only access to published and non-deleted waypoints.

- Content Managers: Broader access, potentially regionalized.

- Hosts: Limited updates to their own accommodation-linked waypoints (if applicable).

- Admins: Full access (typically via `service\_role` or specific admin user role policies). \*(Ensure profiles table contains a `role\_name` or similar column if RLS policies depend on it for Content Manager/Admin roles, as shown in example policies for other tables).\*

### 8\. ENUM vs Lookup Discussion

- 🟢 `waypoint\_categories\_master`: Successfully promoted from enum. Allows richer attributes (icons, standardized codes, audit trails) and i18n for category labels.

- 🟢 `content\_statuses\_master`: Successfully promoted from enum. Allows translatable labels/descriptions for statuses, standardized codes, and audit trails.

- 🟢 `tags\_master`: `waypoint\_subcategory\_tag\_ids` (integer array) links to this new lookup table, replacing a free-text array for primary subcategory tags. Provides standardization, i18n for tag labels, consistent filtering, standardized codes, and audit trails. `general\_tags\_text` (text array) is retained for ad-hoc, non-managed tags.

### 9\. UI/UX Enablement

- Filters, Icons, Lists driven by:

- `waypoint\_primary\_category\_id` (via `waypoint\_categories\_master.icon\_identifier` and its translatable label).

- `waypoint\_subcategory\_tag\_ids` (via `tags\_master`'s translatable label).

- Boolean flags (`is\_seasonal`, etc.) for direct filtering/highlighting.

- Display Fields: `name`, `description`, `primary\_image\_media\_id`, `short\_narrative\_for\_dynamic\_lists`.

- Map Integration: `geom` for display; generated `latitude`, `longitude`, `elevation\_meters` for convenience and performance.

- Indexes: GIST on `geom`, GIN on `name` (trigram) and `waypoint\_subcategory\_tag\_ids` are crucial for performance.

### 10\. Key Considerations & Definitions

- Business Rules & Validation:

- `name`: Required, max 255 chars.

- `slug`: Optional, unique if present, kebab-case, max 100 chars. System generation with manual override recommended.

- `parent\_waypoint\_id`: Manage hierarchy carefully to avoid circular dependencies (application logic).

- `segment\_delimiter` Waypoints: UI forms should adapt for waypoints categorized as 'segment\_delimiter', as many descriptive fields may be irrelevant.

- Hierarchical Waypoints (`parent\_waypoint\_id`): Application layer needs to handle querying/display. ON DELETE SET NULL is often preferred to avoid accidental data loss of children.

### 11\. Scalability & Future-Proofing

- Audit columns, soft deletes (`deleted\_at`), `BIGINT` for `id`, generated coordinate columns, and standardized lookup tables contribute positively.

- Central media table is scalable.

- Partitioning or full content versioning are V2+ considerations if needed.

### 12\. Next-Action Checklist

1. 🔴 Implement Master Tables: Create and populate `waypoint\_categories\_master`, `tags\_master`, and `content\_statuses\_master` using the updated DDL (with standardized `code` constraints and full audit fields). Ensure default values (e.g., for 'draft' status) exist and `created\_by\_profile\_id` is appropriately set for initial data.

2. 🔴 Create `waypoints` Table: Use the updated DDL. Ensure the `set\_current\_timestamp\_updated\_at` trigger function is created and applied.

3. 🟠 Review `parent\_waypoint\_id` ON DELETE: Confirm `ON DELETE SET NULL` is the desired behavior for all use cases.

4. 🔴 Implement Array FK Integrity Trigger for `waypoint\_subcategory\_tag\_ids`: Develop, test, and deploy a database trigger function to ensure that all integer IDs provided in the `waypoint\_subcategory\_tag\_ids` array correspond to valid `id` entries in the `tags\_master` table. This is mandatory for data integrity.

5. 🟢 Develop RLS Policies: Implement and test RLS policies, ensuring they use updated table/column names and correctly reference user roles (e.g., from `profiles.role\_name`).

\* \* \* \* \*