<https://gemini.google.com/u/1/app/f406710aca31cc25?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/951c86a3d09aaadb>

### 3\. Updated Production-Ready Specification

Target Table Name: public.segment\_warnings

Version: 2.1 (Checklist REV 05-18-25-A Applied)

Date: May 18, 2025

1. Purpose & Primary Use-Cases

- Mission Statement: Stores dynamic, timely, and verifiable information about warnings, hazards, closures, or important advisories applicable to specific trail segments. It enables pilgrims to make safe and informed decisions by linking to standardized types, severities, sources, workflow statuses, and relevant media, with audit trails for modifications.

- Key User-Story Touchpoints:

- Pilgrim (Anna): Views active, published warnings with clear details on maps and segment pages.

- Regional Content Manager (Sofia): Creates, updates, and manages the lifecycle of warnings for segments in her assigned region, attributing actions to her user ID.

- Platform Administrator (Admin Team): Oversees all warning data, manages review and publication workflows, ensuring quality and consistency.

2. Schema

| Column | Data Type | Constraints | Description |

| :---------------------------------- | :---------------------- | :----------------------------------------------------------------------------------------------------------------------------------------------------- | :-------------------------------------------------------------------------------------------------------------------------------------------------------------------- |

| id | bigint | Primary Key, Generated always as identity | Unique identifier for each warning record. |

| segment\_id | bigint | Foreign Key to segments(id) ON DELETE RESTRICT, Not Null | The specific segment this warning applies to. |

| warning\_type\_id | integer | Foreign Key to warning\_types\_master(id) ON DELETE RESTRICT, Not Null | Category of the warning. Links to warning\_types\_master. |

| warning\_severity\_id | integer | Foreign Key to warning\_severities\_master(id) ON DELETE RESTRICT, Not Null | Seriousness of the warning. Links to warning\_severities\_master. |

| title | text | Not Null, CHECK (length(title) <= 255) | Concise headline in the primary reference language (English). (Translatable via public.translations). Max 255 chars. |

| description\_message | text | Not Null | Detailed description in the primary reference language (English). (Translatable via public.translations). |

| location\_on\_segment\_description | text | Nullable | Textual location description (English). (Translatable via public.translations). |

| location\_on\_segment\_km\_approx | real | Nullable, CHECK (location\_on\_segment\_km\_approx >= 0 OR location\_on\_segment\_km\_approx IS NULL) | Approximate kilometer marker from segment start. |

| location\_on\_segment\_geom | geometry(PointZ,4326) | Nullable | Optional PostGIS PointZ pinpointing the warning. |

| detour\_information\_url | text | Nullable, CHECK (detour\_information\_url ~\* '^https?://' OR detour\_information\_url IS NULL) | URL to official detour map or information. |

| detour\_description\_notes | text | Nullable | Detour notes (English). (Translatable via public.translations). |

| warning\_source\_type\_id | integer | Foreign Key to warning\_source\_types\_master(id) ON DELETE RESTRICT, Nullable | The source of the warning information. Links to warning\_source\_types\_master. |

| reported\_by\_source\_detail | text | Nullable, CHECK (length(reported\_by\_source\_detail) <= 500) | Specifics of the source (e.g., "Comune di Chiusi della Verna"). Max 500 chars. |

| date\_warning\_reported | timestamptz | Not Null, Default now() | When the warning was first reported/entered. |

| date\_warning\_effective\_from | timestamptz | Nullable | When the warning condition starts/started. If NULL, assumed from date\_warning\_reported. |

| date\_warning\_expected\_resolution | timestamptz | Nullable | Estimated date/time of resolution. |

| date\_warning\_resolved\_or\_expired | timestamptz | Nullable | Actual date/time warning was resolved/expired. |

| is\_currently\_active | boolean | Not Null, Generated Always AS (date\_warning\_resolved\_or\_expired IS NULL AND (date\_warning\_effective\_from IS NULL OR date\_warning\_effective\_from &lt;= NOW()) AND (date\_warning\_expected\_resolution IS NULL OR date\_warning\_expected\_resolution >= NOW())) STORED | Computed: Indicates if the warning is currently active based on dates. |

| admin\_verification\_notes | text | Nullable | Internal notes from administrators/moderators. |

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

| created\_by\_user\_id | uuid | Foreign Key to auth.users(id) ON DELETE SET NULL, Not Null | User (from auth.users table) who created the warning. |

| updated\_by\_user\_id | uuid | Foreign Key to auth.users(id) ON DELETE SET NULL, Nullable | User (from auth.users table) who last updated the warning. |

| created\_at | timestamptz | Not Null, Default now() | Timestamp of record creation. |

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

| workflow\_status\_code | text | Nullable, Foreign Key to workflow\_statuses\_master(code) ON DELETE SET NULL | Workflow status (e.g., 'draft', 'published'). Links to workflow\_statuses\_master. Consider DEFAULT 'draft'. |

3. PostgreSQL DDL

SQL

```

-- Ensure PostGIS extension is enabled if not already

-- CREATE EXTENSION IF NOT EXISTS postgis;

-- Ensure master tables (segments, media, auth.users, warning\_types\_master, etc.) exist.

-- Ensure public.set\_current\_timestamp\_updated\_at() function exists.

CREATE TABLE public.segment\_warnings (

id bigint GENERATED ALWAYS AS IDENTITY PRIMARY KEY,

segment\_id bigint NOT NULL REFERENCES public.segments(id) ON DELETE RESTRICT,

warning\_type\_id integer NOT NULL REFERENCES public.warning\_types\_master(id) ON DELETE RESTRICT,

warning\_severity\_id integer NOT NULL REFERENCES public.warning\_severities\_master(id) ON DELETE RESTRICT,

title text NOT NULL CHECK (length(title) <= 255),

description\_message text NOT NULL,

location\_on\_segment\_description text NULL,

location\_on\_segment\_km\_approx real NULL CHECK (location\_on\_segment\_km\_approx >= 0 OR location\_on\_segment\_km\_approx IS NULL),

location\_on\_segment\_geom public.geometry(PointZ, 4326) NULL,

detour\_information\_url text NULL CHECK (detour\_information\_url ~\* '^https?://' OR detour\_information\_url IS NULL),

detour\_description\_notes text NULL,

warning\_source\_type\_id integer NULL REFERENCES public.warning\_source\_types\_master(id) ON DELETE RESTRICT,

reported\_by\_source\_detail text NULL CHECK (length(reported\_by\_source\_detail) <= 500),

date\_warning\_reported timestamptz NOT NULL DEFAULT now(),

date\_warning\_effective\_from timestamptz NULL,

date\_warning\_expected\_resolution timestamptz NULL,

date\_warning\_resolved\_or\_expired timestamptz NULL,

is\_currently\_active boolean NOT NULL GENERATED ALWAYS AS (

date\_warning\_resolved\_or\_expired IS NULL AND

(date\_warning\_effective\_from IS NULL OR date\_warning\_effective\_from <= NOW()) AND

(date\_warning\_expected\_resolution IS NULL OR date\_warning\_expected\_resolution >= NOW())

) STORED,

admin\_verification\_notes text NULL,

primary\_image\_media\_id UUID NULL REFERENCES public.media(id) ON DELETE SET NULL, -- Corrected to UUID

created\_by\_user\_id uuid NOT NULL REFERENCES auth.users(id) ON DELETE SET NULL,

updated\_by\_user\_id uuid NULL REFERENCES auth.users(id) ON DELETE SET NULL,

created\_at timestamptz NOT NULL DEFAULT now(),

updated\_at timestamptz NOT NULL DEFAULT now(),

workflow\_status\_code text NULL REFERENCES public.workflow\_statuses\_master(code) ON DELETE SET NULL

-- Consider: CONSTRAINT segment\_warnings\_workflow\_status\_code\_default DEFAULT 'draft'

);

COMMENT ON TABLE public.segment\_warnings IS 'Stores specific warnings, alerts, hazards, or advisories applicable to a trail segment, referencing master tables for types, severities, sources, and workflow statuses. Version 2.1.';

COMMENT ON COLUMN public.segment\_warnings.segment\_id IS 'The specific segment this warning applies to. Deletion of a segment is restricted if warnings exist.';

COMMENT ON COLUMN public.segment\_warnings.warning\_type\_id IS 'Category of the warning. FK to warning\_types\_master.id. Deletion of type restricted if in use.';

COMMENT ON COLUMN public.segment\_warnings.warning\_severity\_id IS 'Seriousness of the warning. FK to warning\_severities\_master.id. Deletion of severity restricted if in use.';

COMMENT ON COLUMN public.segment\_warnings.title IS 'Concise headline in the primary reference language (English). (Translatable via public.translations).';

COMMENT ON COLUMN public.segment\_warnings.description\_message IS 'Detailed description in the primary reference language (English). (Translatable via public.translations).';

COMMENT ON COLUMN public.segment\_warnings.location\_on\_segment\_description IS 'Textual description of location on segment (English). (Translatable via public.translations).';

COMMENT ON COLUMN public.segment\_warnings.detour\_description\_notes IS 'Textual notes describing any known detour (English). (Translatable via public.translations).';

COMMENT ON COLUMN public.segment\_warnings.warning\_source\_type\_id IS 'The source of the warning information. FK to warning\_source\_types\_master.id. Deletion of source type restricted if in use.';

COMMENT ON COLUMN public.segment\_warnings.is\_currently\_active IS 'Computed (STORED): True if warning is considered active based on effective, expected resolution, and actual resolution dates.';

COMMENT ON COLUMN public.segment\_warnings.primary\_image\_media\_id IS 'Link to a primary image in the media table (media.id is UUID). Image is not deleted if warning is deleted; warning retains image if media entry is deleted (SET NULL).';

COMMENT ON COLUMN public.segment\_warnings.created\_by\_user\_id IS 'User (from auth.users table) who created the warning record. Record retained if user deleted (SET NULL).';

COMMENT ON COLUMN public.segment\_warnings.updated\_by\_user\_id IS 'User (from auth.users table) who last updated the warning record. Record retained if user deleted (SET NULL).';

COMMENT ON COLUMN public.segment\_warnings.workflow\_status\_code IS 'Workflow status of the warning (e.g., draft, pending\_review, published). Links to workflow\_statuses\_master.code. Warning retains NULL status if master status is deleted.';

-- Indexes

CREATE INDEX IF NOT EXISTS idx\_segment\_warnings\_segment\_id ON public.segment\_warnings(segment\_id);

CREATE INDEX IF NOT EXISTS idx\_segment\_warnings\_is\_currently\_active\_published ON public.segment\_warnings(is\_currently\_active, workflow\_status\_code) WHERE is\_currently\_active = true AND workflow\_status\_code = 'published';

CREATE INDEX IF NOT EXISTS idx\_segment\_warnings\_warning\_type\_id ON public.segment\_warnings(warning\_type\_id);

CREATE INDEX IF NOT EXISTS idx\_segment\_warnings\_warning\_severity\_id ON public.segment\_warnings(warning\_severity\_id);

CREATE INDEX IF NOT EXISTS idx\_segment\_warnings\_warning\_source\_type\_id ON public.segment\_warnings(warning\_source\_type\_id);

CREATE INDEX IF NOT EXISTS idx\_segment\_warnings\_created\_by\_user\_id ON public.segment\_warnings(created\_by\_user\_id);

CREATE INDEX IF NOT EXISTS idx\_segment\_warnings\_workflow\_status\_code ON public.segment\_warnings(workflow\_status\_code);

CREATE INDEX IF NOT EXISTS idx\_segment\_warnings\_location\_geom ON public.segment\_warnings USING GIST (location\_on\_segment\_geom);

CREATE INDEX IF NOT EXISTS idx\_segment\_warnings\_primary\_image\_media\_id ON public.segment\_warnings(primary\_image\_media\_id) WHERE primary\_image\_media\_id IS NOT NULL;

```

4. Triggers/Functions

- `updated\_at` Trigger:

SQL

```

CREATE TRIGGER set\_segment\_warnings\_updated\_at

BEFORE UPDATE ON public.segment\_warnings

FOR EACH ROW

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

```

- Orphaned Translation Cleanup Trigger Function (Conceptual definition, to be created globally):

SQL

```

-- CREATE OR REPLACE FUNCTION public.cleanup\_related\_translations() ...

```

\*(Actual attachment in Next-Action Checklist)\*

5. JSON Schema Mirror

JSON

```

{

"title": "segment\_warning",

"description": "Stores warnings for trail segments, linking to master tables for types, severities, sources, workflows, and media. Version 2.1.",

"type": "object",

"properties": {

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

"segment\_id": { "type": "integer", "format": "int64", "description": "FK to segments.id (ON DELETE RESTRICT)." },

"warning\_type\_id": { "type": "integer", "description": "FK to warning\_types\_master.id (ON DELETE RESTRICT)." },

"warning\_severity\_id": { "type": "integer", "description": "FK to warning\_severities\_master.id (ON DELETE RESTRICT)." },

"title": { "type": "string", "maxLength": 255, "description": "Headline (English). Translatable." },

"description\_message": { "type": "string", "description": "Detailed description (English). Translatable." },

"location\_on\_segment\_description": { "type": ["string", "null"], "description": "Textual location description (English). Translatable." },

"location\_on\_segment\_km\_approx": { "type": ["number", "null"], "format": "float", "minimum": 0, "description": "Approx. km marker." },

"location\_on\_segment\_geom": { "type": ["object", "null"], "description": "PostGIS PointZ geometry (SRID 4326)." },

"detour\_information\_url": { "type": ["string", "null"], "format": "url", "pattern": "^https?://", "description": "URL for detour info." },

"detour\_description\_notes": { "type": ["string", "null"], "description": "Detour notes (English). Translatable." },

"warning\_source\_type\_id": { "type": ["integer", "null"], "description": "FK to warning\_source\_types\_master.id (ON DELETE RESTRICT)." },

"reported\_by\_source\_detail": { "type": ["string", "null"], "maxLength": 500, "description": "Specifics of source." },

"date\_warning\_reported": { "type": "string", "format": "date-time", "description": "Reported date." },

"date\_warning\_effective\_from": { "type": ["string", "null"], "format": "date-time", "description": "Effective from date." },

"date\_warning\_expected\_resolution": { "type": ["string", "null"], "format": "date-time", "description": "Expected resolution date." },

"date\_warning\_resolved\_or\_expired": { "type": ["string", "null"], "format": "date-time", "description": "Actual resolution date." },

"is\_currently\_active": { "type": "boolean", "description": "Computed: True if currently active.", "readOnly": true },

"admin\_verification\_notes": { "type": ["string", "null"], "description": "Internal admin notes." },

"primary\_image\_media\_id": { "type": ["string", "null"], "format": "uuid", "description": "FK to media.id (UUID) for primary image (ON DELETE SET NULL)." },

"created\_by\_user\_id": { "type": "string", "format": "uuid", "description": "Creator auth.users.id (ON DELETE SET NULL)." },

"updated\_by\_user\_id": { "type": ["string", "null"], "format": "uuid", "description": "Last updater auth.users.id (ON DELETE SET NULL)." },

"created\_at": { "type": "string", "format": "date-time", "description": "Creation timestamp.", "readOnly": true },

"updated\_at": { "type": "string", "format": "date-time", "description": "Last update timestamp.", "readOnly": true },

"workflow\_status\_code": { "type": ["string", "null"], "description": "FK to workflow\_statuses\_master.code (ON DELETE SET NULL)." }

},

"required": [ "segment\_id", "warning\_type\_id", "warning\_severity\_id", "title", "description\_message", "date\_warning\_reported", "created\_by\_user\_id" ]

}

```

6. Relationships & Integrity

- Foreign Keys: To `segments`, `warning\_types\_master`, `warning\_severities\_master`, `warning\_source\_types\_master`, `media`, `auth.users`, `workflow\_statuses\_master`.

- `ON DELETE RESTRICT` is used for FKs to `segments` and lookup masters (`warning\_types\_master`, `warning\_severities\_master`, `warning\_source\_types\_master`) to maintain integrity.

- `ON DELETE SET NULL` is used for `media\_id`, user IDs, and `workflow\_status\_code` to allow warnings to persist if related optional entities are removed or to allow status code changes in the master.

7. Multilingual Strategy

- Translatable Fields: `title`, `description\_message`, `location\_on\_segment\_description`, `detour\_description\_notes`. These store primary reference language text (English).

- Translation Mechanism: Uses the central `public.translations` table. An `AFTER DELETE` trigger on `public.segment\_warnings` is needed for cleanup.

8. Role-Based Workflow & RLS Notes

- Creator/Updater IDs: `created\_by\_user\_id`, `updated\_by\_user\_id` (referencing `auth.users(id)`).

- Visibility/Workflow: `is\_currently\_active` (computed), `workflow\_status\_code` (FK).

- RLS Policies:

- 🟢 Public read for active & published warnings.

- 🟢 Regional Managers: CRUD on warnings in their segments, respecting workflow state checks.

- 🟢 Administrators: Full access. \*(Requires helper functions `user\_manages\_segment()` and `is\_admin()`/`has\_role\_on\_profile()`)\*

9. ENUM vs Lookup Discussion

- 🟢 Successfully uses FKs to master tables instead of ENUMs for types, severities, sources, and statuses.

10. UI/UX Enablement

- Filters: `is\_currently\_active`, `workflow\_status\_code`, FKs to master tables.

- Visuals: Data from joined lookup tables (`icon\_identifier`, `ui\_color\_hex`), `primary\_image\_media\_id`.

- Performance: `is\_currently\_active` (STORED), comprehensive indexing.

11. Auditing & Lifecycle Management

- Audit Columns: `created\_at`, `updated\_at`, `created\_by\_user\_id`, `updated\_by\_user\_id`.

- Lifecycle: Managed by `is\_currently\_active` (date-driven) and `workflow\_status\_code`.

12. Scalability & Future-Proofing

- Scalability: Uses `bigint` PK. Lookup tables enhance maintainability.

- Partitioning: Partitioning `segment\_warnings` (e.g., by `date\_warning\_reported`) is a potential future optimization if the table grows extremely large.

- Future-Proofing: Structure is extensible.

13. Seed Data

- ⚪ N/A - Transactional data.

14. Next-Action Checklist

- 🔴 Ensure all prerequisite tables and functions (esp. RLS helpers `user\_manages\_segment`, `is\_admin`/`has\_role\_on\_profile`, `set\_current\_timestamp\_updated\_at`, `cleanup\_related\_translations`) exist.

- 🔴 Implement DDL: Execute `CREATE TABLE` for `public.segment\_warnings`.

- 🔴 Apply `updated\_at` Trigger.

- 🔴 Create Indexes as defined.

- 🔴 Implement Orphaned Translation Cleanup Trigger: After `public.translations` table exists, create and apply `trigger\_cleanup\_segment\_warnings\_translations` using `public.cleanup\_related\_translations()` on this table.

- 🟠 Decide and implement `DEFAULT` for `workflow\_status\_code` if desired (e.g., 'draft').

- 🟠 Thoroughly test RLS policies with various user roles and workflow transitions.

- 🟢 Plan data migration if existing warning data needs to be imported.