

Data Model Specification: Case Study Builder (ICA) Application

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Compliance: ISO 27001 (Access Control, Logging, Data Security)

Font Requirement: Nunito (to be applied in UI/Export)

1. Executive Summary & Architecture

This data model is designed to support the "Case Study Builder" (internally referred to as ICA) application. It strictly adheres to the **WA Group Policy - Software Development V2.3** and the **Functional Requirements Document (FRD) v2.3**.

Key Architectural Decisions:

- **Multi-Subsidiary Support:** A centralized waSubsidiary table governs data segregation.
- **Role-Based Access Control (RBAC):** Users can now hold multiple roles via the waUserRole table.
- **Master List Architecture:** Generic waMasterList handles all dropdowns (Industry, Wear Types, etc.).
- **ERP Integration (Netsuite):** One-way sync for Customers and Products using waNetsuiteInternalId as the anchor.
- **Versioning Strategy:** walca table uses strict versioning (insert-only updates for published records).

2. Entity Relationship Diagram (ERD) Overview

- **waAppUser (1) ↔ (N) waUserRole:** A user can have multiple active roles.
- **walca (1) ↔ (N) waMediaAsset:** One case study has many media files.
- **walca (1) ↔ (N) walcaWearType:** One case study can have multiple wear types.
- **waMasterList (1) ↔ (N) waCustomer:** Customers linked to Industry.
- **waCustomer (1) ↔ (N) walca:** Case studies linked to Customers.

3. Table Definitions

3.1. Table: waListKey

System Configuration - Defines the types of dropdown lists available.

Column Name	Data Type	Constraints	Description
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waListKeyId	UUID	PK, Not Null	Unique identifier for the list type.
waKeyName	VARCHAR(50)	Unique, Not Null	System name (e.g., "Industry", "WearType").
waDescription	VARCHAR(255)		Description of what this list controls.

3.2. Table: waMasterList

System Configuration - Contains the actual dropdown values.

Column Name	Data Type	Constraints	Description
waMasterListId	UUID	PK, Not Null	Unique identifier for the value.
waListKeyId	UUID	FK, Not Null	Links to waListKey.
waValue	VARCHAR(100)	Not Null	The display value (e.g., "Cement", "Abrasion").
waNetsuiteInternalId	INT	Unique	Optional link for sync.
walsActive	BOOLEAN	Default: True	Soft delete flag.
waSortOrder	INT	Default: 0	UI display ordering.

3.3. Table: waSubsidiary

Master Data - Synced from ERP.

Column Name	Data Type	Constraints	Description
waSubsidiaryId	UUID	PK, Not Null	Unique identifier.
waIntegrationId	VARCHAR(50)	Unique, Not Null	External ID (e.g.,

			ERP Code).
waName	VARCHAR(100)	Not Null	Legal name.
waRegion	VARCHAR(50)	Not Null	Region group (e.g., 'EMEA', 'APAC').
waCurrencyCode	CHAR(3)	Not Null	ISO currency code.
walsActive	BOOLEAN	Default: True	Soft delete flag.

3.4. Table: waAppUser

Identity & Access Management - Synced via Google Workspace/Okta.

Column Name	Data Type	Constraints	Description
waUserId	UUID	PK, Not Null	Internal system ID.
waSsoUid	VARCHAR(255)	Unique, Not Null	Immutable User ID from Identity Provider.
waEmail	VARCHAR(255)	Unique, Not Null	Corporate email address.
waFullName	VARCHAR(150)	Not Null	Display name.
waSubsidiaryId	UUID	FK	Links to waSubsidiary. Home entity.
waRegion	VARCHAR(50)		Sales Region for dashboard filtering.
waStatus	ENUM	Default 'ACTIVE'	'ACTIVE', 'INACTIVE'.
waLastLoginDate	TIMESTAMP		Audit timestamp.

3.5. Table: waUserRole (NEW)

Access Control - Many-to-Many relationship for User Roles.

Column Name	Data Type	Constraints	Description
waUserRoleld	UUID	PK, Not Null	Internal ID.
waUserId	UUID	FK, Not Null	Link to waAppUser.
waRole	ENUM	Not Null	'CONTRIBUTOR', 'APPROVER', 'ADMIN', 'VIEWER'.
waAssignedAt	TIMESTAMP	Default Now()	Date role was assigned.
waAssignedBy	UUID	FK, Not Null	Link to waAppUser (Admin who assigned role).

3.6. Table: waCustomer

Master Data - Synced from Netsuite/Insightly.

Column Name	Data Type	Constraints	Description
waCustomerId	UUID	PK, Not Null	App-specific ID.
waCrmId	VARCHAR(100)	Unique	External Unique ID from Insightly CRM.
waNetsuiteInternalId	INT	Unique	Permanent ID from Netsuite.
waCompanyName	VARCHAR(255)	Not Null	Name of the customer (Obfuscated for Viewers).
waSubsidiaryId	UUID	FK, Not Null	Links to waSubsidiary.
walIndustryId	UUID	FK, Not Null	Links to

			waMasterList (Industry).
waLastPurchaseDate	DATE		Used for "New Customer" validation logic.
waSyncedAt	TIMESTAMP		Date of last sync.

3.7. Table: waProduct

Master Data - Synced from Netsuite.

Column Name	Data Type	Constraints	Description
waProductId	UUID	PK, Not Null	App-specific ID.
waNetsuiteInternalId	INT	Unique, Not Null	Permanent ID from Netsuite.
waltemName	VARCHAR(200)	Not Null	Product commercial name.
waFamily	VARCHAR(100)		Product family classification.
walsActive	BOOLEAN	Default: True	To handle discontinued products.

3.8. Table: walca

Transactional Data - The core "Case Study" record.

Identity & Status

Column Name	Data Type	Constraints	Description
walcald	UUID	PK, Not Null	Unique ID for this version.
walcaNumber	VARCHAR(20)	Unique (Business)	Format:

			ICAYYMMnnn (e.g., ICA2510001).
waParentId	UUID	FK, Nullable	Links to previous version.
waVersionNumber	INT	Default 1	Starts at 1. Increments on edit.
walsLatest	BOOLEAN	Default True	Filter for active version.
waStatus	ENUM	Not Null	'DRAFT', 'SUBMITTED', 'APPROVED', 'PUBLISHED', 'ARCHIVED', 'REJECTED'.
waContributorId	UUID	FK, Not Null	Links to waAppUser (The Creator).
waSubsidiaryId	UUID	FK, Not Null	Captured from Creator profile.
waCreateDate	TIMESTAMP	Default Now()	Creation date.

Qualifiers & Business Logic

Column Name	Data Type	Constraints	Description
walsNewCustomer	BOOLEAN		Answer to "Bought in last 3 years?".
walsCrossSell	BOOLEAN		Answer to "Bought solution before?".
walsTarget	BOOLEAN	Computed	(IsNew OR IsCrossSell). Drives BHAG.
walsApplicationLev	BOOLEAN	Default False	Flag: Basic data

el			complete.
walsTechLevel	BOOLEAN	Default False	Flag: Technical/WPS data complete.
walsStarLevel	BOOLEAN	Default False	Flag: Cost calc data complete.
waDataQualityScore	INT		0-100. Computed based on field completeness.

Core Application Data

Column Name	Data Type	Constraints	Description
waTitle	VARCHAR(255)	Not Null	Descriptive title.
waCustomerId	UUID	FK, Not Null	Links to waCustomer.
waLocationType	ENUM		'WORKSHOP', 'IN-SITU', 'BOTH'.
waComponentName	VARCHAR(255)		Name of the part.
waBaseMetal	VARCHAR(100)		Material of original component.
waDimensions	VARCHAR(255)		Geometry/Size description.
waProblemDesc	TEXT		Narrative of the challenge.
waSolutionDesc	TEXT		Narrative of the solution.
waProductId	UUID	FK	Link to waProduct.
waProductNameMa	VARCHAR(255)		Fallback if product

nual			ID not found.
waJobDuration	DECIMAL(10,2)		Time taken to complete work.
waJobDurationUnit	UUID	FK	Links to waMasterList.
waPreviousSolution	TEXT		Description of old solution.
waPrevServiceLife	DECIMAL(10,2)		Lifespan of old solution.
waPrevServiceUnit	UUID	FK	Links to waMasterList.
waTechnicalAdvantages	TEXT		"The Difference" - Why WA won.
waOriginalLanguage	CHAR(2)		ISO Code (e.g., 'fr').
waSecurityLevel	VARCHAR(20)	Default 'Internal'	'Internal' or 'Confidential'.

Technical Data (WPS)

Column Name	Data Type	Constraints	Description
waProcessType	VARCHAR(50)		e.g., FCAW-S.
waLayersCount	INT		Number of welding layers.
waAmperageMin	INT		Min Amps.
waAmperageMax	INT		Max Amps.
waVoltageMin	INT		Min Volts.
waVoltageMax	INT		Max Volts.

waTravelSpeed	VARCHAR(50)		e.g., "100-250 mm/min".
waWireSpeed	VARCHAR(50)		Unit m/min.
waOscillation	VARCHAR(100)		Width/Speed/Temp o details.
waPreheating	VARCHAR(100)		Temp management info.
waShieldingGas	VARCHAR(50)		Gas used.
waWpsNotes	TEXT		Additional technical notes.

Financial Data (Cost Calculator)

Column Name	Data Type	Constraints	Description
waCurrency	CHAR(3)		Input currency.
waExchangeRate	DECIMAL(10,4)		Rate to EUR at creation.
waLifeStatus	ENUM		'EXPECTED', 'VERIFIED'.
waCostOldSolution	DECIMAL(15,2)		Unit cost old (EUR).
waCostWaSolution	DECIMAL(15,2)		Unit cost WA (EUR).
waWaServiceLife	DECIMAL(10,2)		Expected/Measure d lifespan.
waSavingsAmt	DECIMAL(15,2)	Computed	(Annual Cost Old - Annual Cost WA).
waSavingsPct	DECIMAL(5,2)	Computed	% Savings.

3.9. Table: walcaWearType (NEW)

Many-to-Many Link for Wear Types.

Column Name	Data Type	Constraints	Description
walcaWearTypeld	UUID	PK, Not Null	Internal ID.
walcald	UUID	FK, Not Null	Link to walca.
waMasterListId	UUID	FK, Not Null	Link to waMasterList (Category: WEAR_TYPE).

3.10. Table: waMediaAsset (NEW)

Handling photos, videos, and documents.

Column Name	Data Type	Constraints	Description
waMediaId	UUID	PK, Not Null	Internal ID.
walcald	UUID	FK, Not Null	Link to walca.
waFileUrl	VARCHAR(500)	Not Null	Cloud Storage Path (S3/Blob).
waFileType	ENUM	Not Null	'IMAGE', 'VIDEO', 'DOCUMENT'.
walsPrimary	BOOLEAN	Default False	True = Thumbnail/Main Image.
waCaption	VARCHAR(255)		User description.
waAiTags	JSONB		Tags from Vision API.
waUploadedAt	TIMESTAMP	Default Now()	Upload timestamp.

3.11. Table: waAuditLog

Security & Compliance - Immutable log.

Column Name	Data Type	Constraints	Description
waLogId	BIGINT	PK, Auto Inc	Sequential ID.
waTableName	VARCHAR(50)	Not Null	Table modified.
waRecordId	UUID	Not Null	ID of record modified.
waAction	VARCHAR(20)	Not Null	'CREATE', 'UPDATE', 'APPROVE', 'REJECT', 'EXPORT_PDF'.
waUserId	UUID	FK, Not Null	Actor.
waLogDate	TIMESTAMP	Default Now()	Event time.
waIpAddress	VARCHAR(45)		Request IP.
waChanges	JSONB		Old/New value pairs.