

# **Baseline handoff design and overwrite prevention**

Finanzas SD – Architecture, Flows & SOPs

Arquitectura, Flujos y Procedimientos

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# 1 Baseline handoff design and overwrite prevention

## 1.1 Root cause of the overwrite

Historically the handoff endpoint trusted the `projectId` provided in the path even when the incoming baseline belonged to a different project. When the resolver detected a different `projectId` for the baseline it only swapped the identifier but continued to reuse the metadata fetched for the **path project**, so the final `PutCommand` wrote a new baseline into the wrong `PROJECT#.../METADATA` item. Because the request context (`created_by = system`) became the source of truth, the prior project owner, acceptance metadata, and SDM assignment were overwritten. The new baseline-aware helper now returns both the correct `projectId` **and** the resolved project metadata so downstream writes preserve original authorship and SDM ownership.

## 1.2 Design goals

- **Idempotency:** repeated handoffs with the same `idempotencyKey` return the original `{handoffId, projectId, baselineId}` tuple and never create duplicate projects.
- **Baseline isolation:** every baseline maps to a single `PROJECT#.../METADATA` record; different baselines cannot collide even if the UI reuses a stale project ID.
- **Metadata preservation:** ownership fields (`created_by`, `created_at`, `sdm_manager_name`) are taken from the resolved project metadata whenever it exists so system contexts do not clobber user-entered values.
- **Auditable writes:** every handoff produces a `HANDOFF#...` item plus an `audit_log` entry that records the before/after payloads and the actor.

## 1.3 Data flow

1. **Baseline normalization** – the handler normalizes incoming baseline/handoff payloads and extracts `baselineId`, deal inputs, and acceptance metadata.
2. **Project resolution** – `resolveProjectForHandoff` is called with `baselineId`, the incoming (path) `projectId`, and the `idempotencyKey`.
  - Checks idempotency cache and returns the cached tuple when the key matches the same baseline.
  - If the path project already carries the baseline, it is reused.
  - If the path project carries a **different** baseline, the helper searches for an existing project with the incoming baseline; if none is found it generates a new `P-<uuid>` project ID to avoid collisions.
  - The helper returns both `resolvedProjectId` and any `existingProjectMetadata` for that baseline so the handler does not rely on the path project's metadata.

3. **Metadata hydration** – the handler replaces existing `Project.Item` with the resolver's metadata (or fetches it when the resolver chose a different project ID) so subsequent writes use the correct `created_by/created_at/sdm_manager_name` values.
4. **Project write** – a `PROJECT#.../METADATA` item is written with:
  - Baseline details (id, status, acceptance timestamp).
  - Project identity (code derived from baseline for long UUIDs) and client/name fields.
  - Ownership fields preserved from existing metadata when present.
5. **Handoff record** – a `HANDOFF#...` item captures the normalized payload and owner, and an idempotency record stores the tuple for future retries.
6. **Audit trail** – `audit_log` receives a `HANDOFF_UPDATE` entry with before/after snapshots to aid investigations.

## 1.4 Components touched

- **`services/finanzas-api/src/handlers/projects.ts`** – consumes resolver metadata, builds the project item with preserved ownership, writes handoff and audit entries.
- **`services/finanzas-api/src/lib/projects-handoff.ts`** – performs baseline-aware project selection, idempotency checks, and metadata retrieval.
- **DynamoDB tables** – `projects` (for `PROJECT#.../METADATA`, `HANDOFF#...`, `IDEMPOTENCY#HANDOFF`) and `audit_log` are written during handoff.

## 1.5 Behavioral expectations

- Adding a new baseline to an existing project ID will **not** overwrite another project's metadata; a new project is generated or the correct baseline-specific project is reused.
- Retrying the same handoff with the same idempotency key returns the original identifiers without creating extra projects.
- Ownership fields remain attributed to the original user even when handoff runs under system credentials.
- Audit logs always reflect the state transition so regressions can be traced.

## 1.6 Testing performed

- `npm run test:unit (tsx)` – validates auth role resolution, API service coercion, baseline creation error handling, cost utilities, role routing, and project normalization logic relevant to SDMT handoff flows.

## 1.7 Defensive measures against baseline collisions

### 1.7.1 Pre-write METADATA baseline check

As an additional safety layer, `projects.ts` includes a defensive check immediately before writing `PROJECT#.../METADATA`:

1. Read the current METADATA record for the resolved project ID
2. Extract any existing `baseline_id` or `baselineId` field
3. If an existing baseline is present and differs from the incoming baseline:
  - **Refuse the write with HTTP 409 Conflict**
  - Return error details: `{ error: "baseline collision detected", existingBaselineId, newBaselineId, projectId }`

This prevents cross-baseline overwrites even if the resolution logic has edge cases or receives incorrectly routed requests.

### 1.7.2 Idempotency conflict detection

The `resolveProjectForHandoff` helper enforces baseline-scoped idempotency:

- If an idempotency key was previously used with a different baseline, it throws `IdempotencyConflictError`
- The handler catches this error and returns HTTP 409 Conflict with: `{ error: "idempotency conflict", message }`
- This ensures the same idempotency key cannot be reused across different baselines

### 1.7.3 QA project handling

When a project exists without a baseline (e.g., a QA test project):

- The **first** baseline handoff can claim that project
- Subsequent handoffs with **different** baselines will create new project IDs
- This prevents multiple baselines from accidentally sharing a single QA project

## 1.8 Error responses

### 1.8.1 409 Conflict: Baseline collision

```
[ ] { "error": "baseline collision detected: metadata already exists for a different baseline", "projectId": "P-1b6309be-bf75-4994-a332-097bdfc63ae4", "existingBaselineId": "base_eac8ddf69dbb", "newBaselineId": "base_b8566fa19c08" }
```

### 1.8.2 409 Conflict: Idempotency conflict

```
[ ] { "error": "idempotency conflict", "message": "Idempotency key \"key-123\" was previously used with baseline \"base_old\" but is now being used with baseline \"base_new\""}
}
```