

Developer Design Document

Record History Tracking (Timeline)

1. Overview

This document defines the design for **Record History Tracking**, which aggregates user activities and system-generated audit events into a unified timeline view.

2. Architecture Overview

Components

- Mobile App Timeline UI
- Timeline Aggregation API
- Audit Log Service
- Activity Service

Data Source Composition

Timeline entries are fetched from:

- Activity Service (user-generated activities)
 - Audit Log Service (system changes)
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3. Timeline Aggregation Logic

- Backend aggregates entries by record_id.
 - Entries normalized into a common timeline schema.
 - Sorted by event_timestamp descending.
 - Paginated response to support large histories.
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4. Timeline Entry Types

- ACTIVITY
- FIELD_CHANGE

- STATUS_CHANGE
- OWNER_CHANGE

System-generated entries are always read-only.

5. Caching Strategy

- Recent timeline cached on device.
- Cache invalidated on record update or sync completion.
- Partial refresh supported.

6. Permissions

- Timeline respects record visibility rules.
- Users cannot view system changes they are not authorized to see.

7. Performance Considerations

- Initial load capped to last N entries.
- Lazy loading for older entries.
- Payload size optimized for mobile.