

Dubai Construction ERP Dashboard - Technical Design Specification v2.0

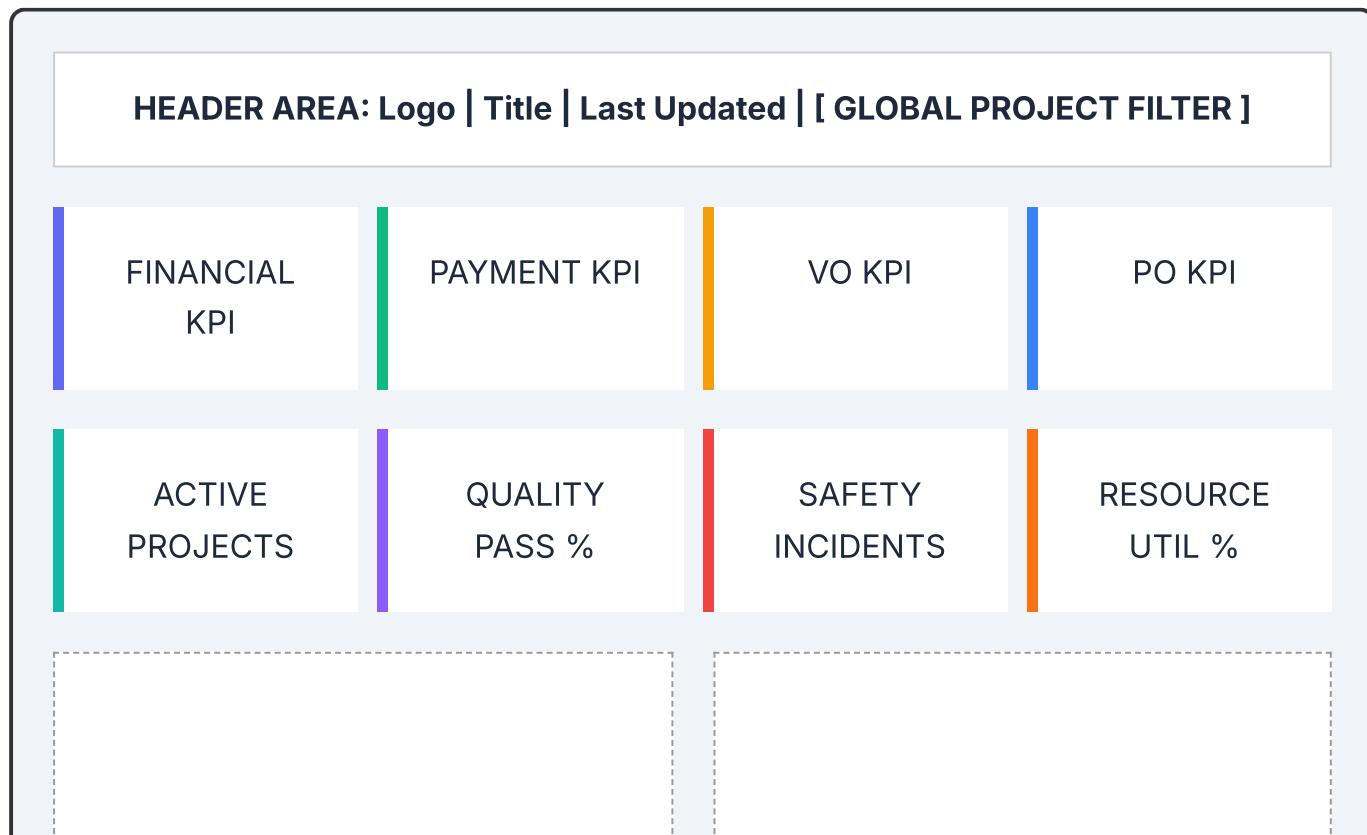
1. Executive Summary

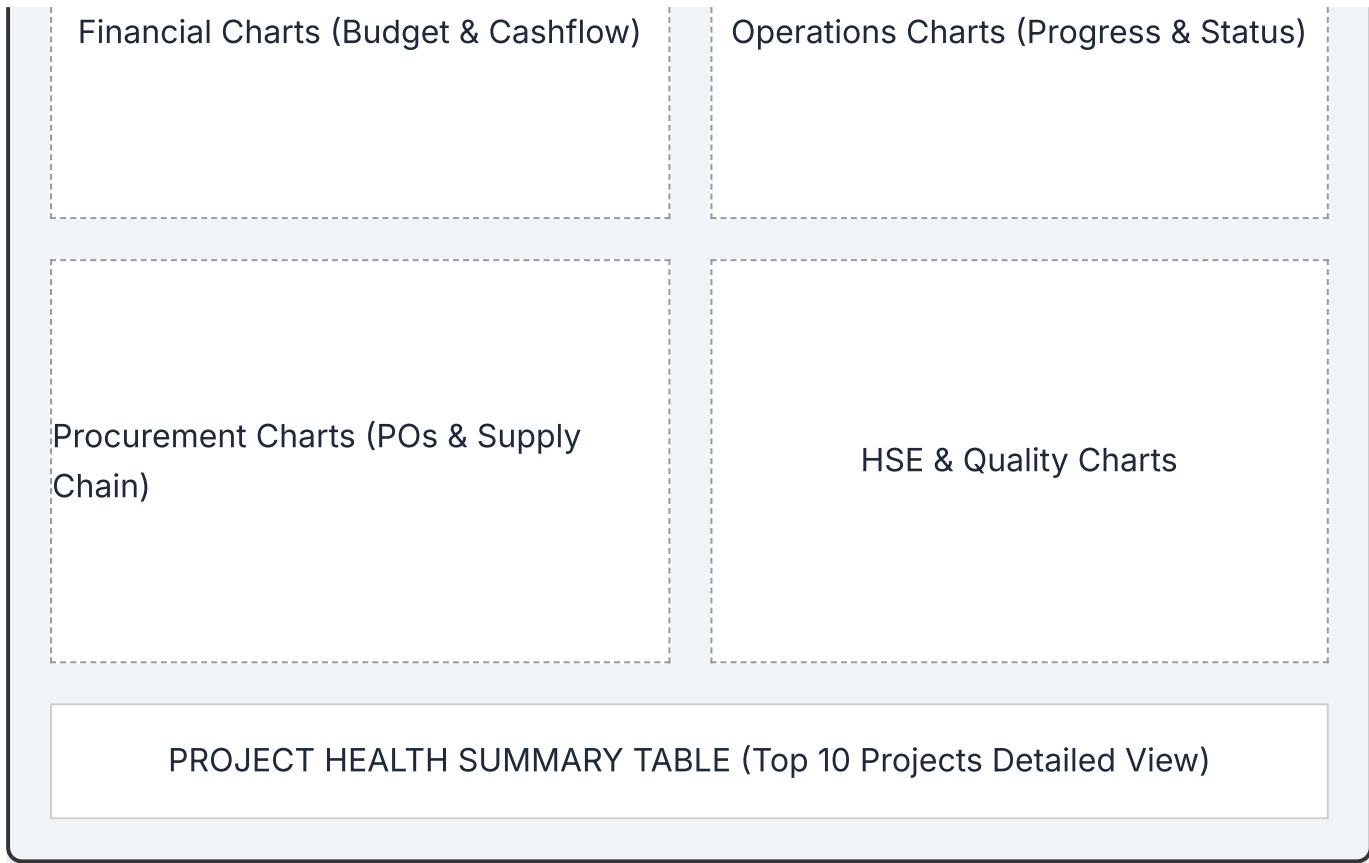
Objective: To provide a comprehensive, real-time view of construction project health, financial performance, and operational safety for executive decision-making.

Target Audience: Project Managers, Operations Directors, C-Level Executives. **Core Value:** Unification of 17 disparate data sources into a single "Command Center" for the Dubai construction portfolio.

2. Visual Layout & Wireframe

The dashboard follows a strict **104-column grid** layout to ensure density without clutter. Below is the visual structure:





3. Detailed Component Specifications

3.1 Global Navigation & Control

- **Project Slicer (L2):** The "Engine" of the dashboard. Selecting a project here instantly filters:
 - All KPI cards.
 - All 16 Charts.
 - The Health Table remains static to provide context.

3.2 Advanced Metrics (The "New Essentials")

To meet modern project management standards, the following advanced metrics are integrated:

A. Contractor Performance Module

- **Performance Scorecard:** Weighted average of `rating` from `contractors.csv`.
- **Defect Density:** Number of defects found (from `inspections.csv`) divided by `work_pages` completed.

- **Metric:** "Top 5 Performing Contractors" vs "Contractors At Risk".

B. Supply Chain Intelligence

- **Lead Time Variance:** Planned delivery vs Actual delivery (from `purchase_orders.csv`).
- **Vendor Reliance:** % of Total PO Value awarded to top 3 suppliers (Risk assessment).
- **Visual:** Scatter plot of *Vendor Value* vs *Lead Time*.

C. Equipment & Asset Efficiency

- **Idle Cost Analysis:** Value of equipment with status `Available` (Not earning revenue).
- **Maintenance Alert:** Count of equipment where `last_service_date` > 180 days.
- **Visual:** Gauge Chart for *Fleet Utilization %*.

D. Project Stages & Forecasting

- **Phase Slippage:** Comparison of `actual_end` vs `planned_end` from `project_phases.csv` .
 - **Forecasted Completion:** Linear extrapolation of progress based on current burn rate.
 - **Visual:** Gantt Chart Overlay (Planned vs Actual).
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4. Visual Identity & User Experience

Interactive Elements

1. **Hover Effects:** Chart tooltips display precise values (e.g., "PO #1234: 50,000 AED").
2. **Drill-Down:** Clicking a slice in the "Project Status" pie chart filters the Health Table below.
3. **Conditional Formatting:**
 - **Progress Bars:** Visual bars inside the table for "Completion %".
 - **Traffic Lights:** Status indicators (Green/Amber/Red) for quick health assessment.

Color Semantics details

- **Revenue/Value:** Indigo/Purple (Royal, confident).
 - **Operations/Activity:** Teal/Cyan (Vibrant, active).
 - **Risk/Issues:** Red/Orange (Alarming, draws attention).
 - **Safety/Environment:** Emerald/Green (Natural, safe).
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5. Implementation Data Model

Data Sources & Transformations

Metric Group	Primary CSV Source	Transformation Logic
Financials	<code>contracts.csv</code> , <code>payment_applications.csv</code>	<code>SUMIF</code> ProjectID, <code>SUMPRODUCT</code> (Certified + Paid).
Schedule	<code>project_phases.csv</code>	<code>DATEDIF</code> (Planned Start, Actual Start).
Quality	<code>inspections.csv</code>	<code>COUNTIF</code> (Result = "Passed") / <code>COUNTA</code> .
Safety	<code>safety_incidents.csv</code>	Incident Rate = (Incidents / Manpower) * 1000.
Supply Chain	<code>suppliers.csv</code> , <code>purchase_orders.csv</code>	Lead Time = Delivery Date - Issue Date.

6. Risk & Governance (New Section)

Risk Matrix (Derived)

Risks are calculated dynamically based on project parameters:

- **Schedule Risk:** If `Actual Progress` < `Planned Progress` by > 10%.
- **Cost Risk:** If `Approved V0 Value` > 15% of `Original Contract Value`.

- **Quality Risk:** If `Inspection Pass Rate` < 85%.

Quality Assurance (NCRs)

- Visual tracking of Non-Conformance Reports (NCRs).
- Tracking of "Corrective Actions" (from `inspections.csv` > `corrective_action` column).