

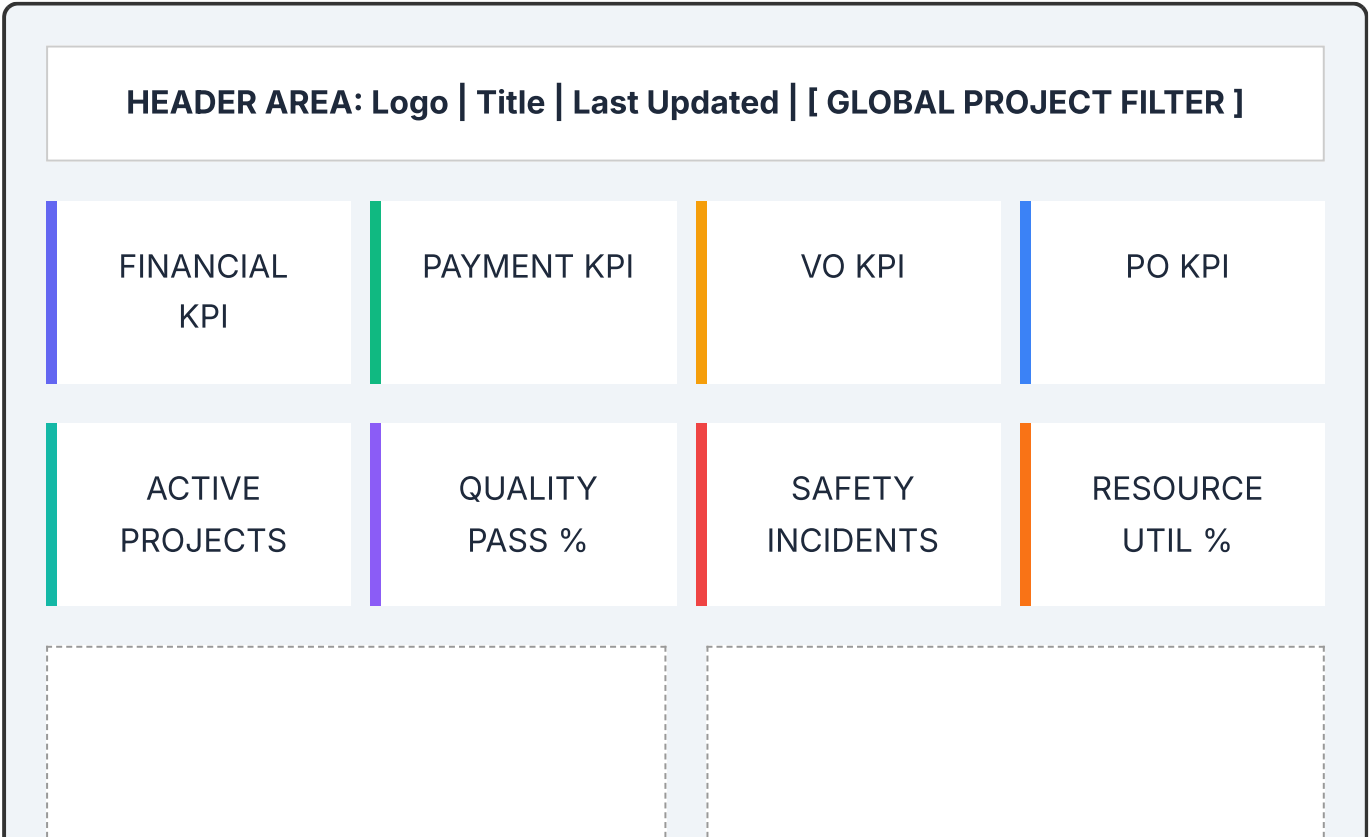
# Dubai Construction ERP Dashboard - Technical Design Specification v2.0

## 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

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## 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).

## 5. Implementation Data Model

### Data Sources & Transformations

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