**🧭 PHASED IMPLEMENTATION PLAN: Drug Regulation KPI Dashboard**

**✅ PHASE 0: Project Scope & KPI Framework Definition**

**Objectives:**

* Finalize KPI definitions for MA, CT, GMP
* Standardize KPI structure (code, name, type, frequency, etc.)
* Map numerators/denominators to log events for dummy data

**Deliverables:**

* kpi\_definitions.yaml or kpi\_config.json — machine-readable config
* Master table of all KPI metadata

**✅ PHASE 1: Dockerized Environment Setup**

**Components:**

* **MySQL** (holds raw + transformed KPI data)
* **Apache Airflow** (ETL orchestration)
* **ETL Python service** (dummy data generation + transformation)
* **Optional tools:** Adminer/phpMyAdmin, FastAPI backend

**Milestone Deliverables:**

* docker-compose.yml
* Airflow initialized with dags folder
* MySQL schema init script

**✅ PHASE 2: Dummy Data Generation**

**Data Scope:**

* 3 years of logs (2022–2024)
* One logging table per process:
  + ma\_logs
  + ct\_logs
  + gmp\_logs

**Fields (generalized):**

* application\_id, event\_type, status, created\_at, duration\_days, officer\_id, is\_compliant, published, etc.

**Milestone Deliverables:**

* Python script to generate & insert dummy logs
* SQL seed files (optional)
* Sample log preview in each table

**✅ PHASE 3: ETL Development and KPI Computation (Airflow DAGs)**

**Per Process:**

* MA → etl\_ma\_dag.py
* CT → etl\_ct\_dag.py
* GMP → etl\_gmp\_dag.py

**DAG Tasks:**

1. Extract quarterly logs
2. Transform based on each KPI formula
3. Store in summarized table:
   * kpi\_ma\_summary
   * kpi\_ct\_summary
   * kpi\_gmp\_summary

**Milestone Deliverables:**

* Airflow DAGs deployed
* Example output for 1–2 quarters
* Summary tables in MySQL populated

**✅ PHASE 4: Dashboard Development (JavaScript)**

**Structure:**

* HTML + JS single-page app (SPA) or tabbed layout
* Data pulled via:
  + Option 1: FastAPI backend endpoint per KPI
  + Option 2: Direct fetch via server-side queries (less secure)

**Visuals:**

* Time series charts (e.g. KPI over quarters)
* % gauges, bar charts
* Tabs: MA | CT | GMP

**Milestone Deliverables:**

* Web interface with real data for all KPIs
* Clean layout, filters (e.g. year/quarter)

**✅ PHASE 5: Automation, CI/CD & Documentation**

**Additions:**

* GitHub Actions (CI: lint/validate/pytest ETL scripts)
* Daily/Weekly Airflow scheduling
* README with full architecture, setup, usage instructions

**Optional:**

* Monitoring: Airflow email alerts, health check pings
* Export to Excel/CSV