City Pulse: Unified Citizen Service Request Data Product

Technical Assessment

Head: Data Product Services (City of Cape Town)

By

Sibusiso Gumede

Product Vision Statement

- Empowering every Cape Town resident to report and track city issues effortlessly through a unified, data-driven system that turns service requests into proactive action.

Key User Types

1. Residents (Public Users): report issues via WhatsApp.

2. Ward Councillors: monitor service delivery within their wards.

3. City Depot Managers: assign, track, and close service requests.

Resident User Profile

- **Primary Goal:** Quickly report city service issues and receive updates *(potholes, leaks, streetlights, etc.)*.

- **Pain Points:**
  - Complex portals and long call queues
  - No real-time feedback or transparency
  - Duplicate requests due to fragmentation

Core Strategy

- **City Pulse** will centralize fragmented data and integrate WhatsApp chatbot for simple, real-time citizen engagement.

- **Unique value:** frictionless reporting, cross-departmental visibility, and predictive insights.

Objectives and Key Results (OKRs)

- **Objective:** Establish City Pulse as the single source of truth for service requests within 12 months.

- **KR1:** 75% of requests via WhatsApp *(aiming for 100%)*.
- **KR2:** 80% reduction in duplicates
- **KR3:** 75% department integration
- **KR4:** <10 min acknowledgment time

WhatsApp User Journey

1. User reports issue

2. Bot asks for location/photo *(short description)*.

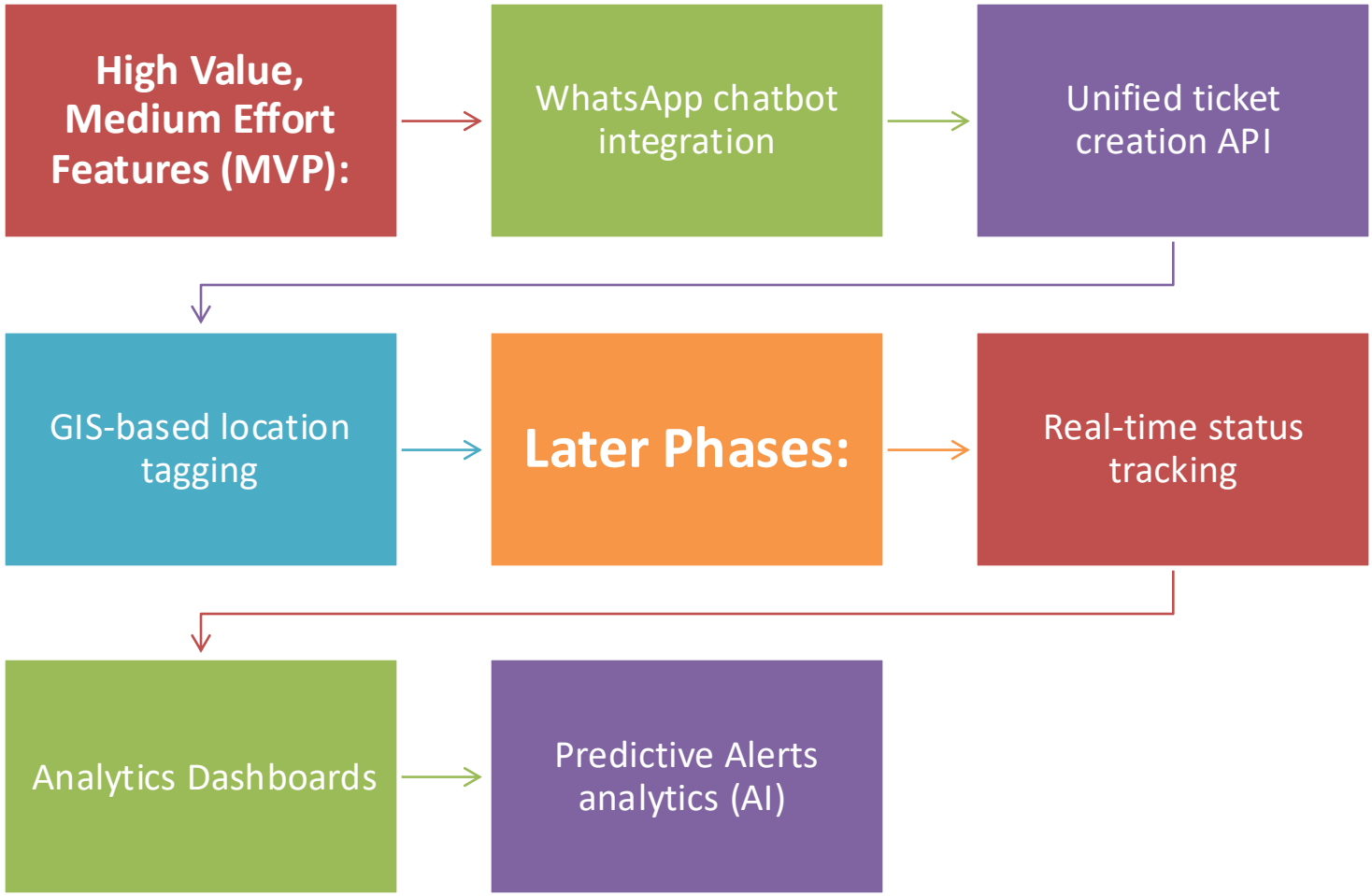
3. Ticket auto-created via GIS mapping

4. User receives confirmation & progress updates

5. Closure message upon completion

6. Customer feedback survey

MVP Feature Prioritization



Data & Technical Considerations

Key Sources: Service request DBs *(current legacy ticket system)*, GIS *(spatial data for location validation & routing)*, CRM *(user contact details & engagement history)*, Work Orders *(task progress & completion data)*.

Future Use Case: Predictive maintenance analytics (*Using aggregated service request data & spatial clustering to forecast high-risk infrastructure zones*).

Risks:

1. Inconsistent data - use ETL standardization

2. Privacy - anonymize PII in data lake storage & secure APIs.

Implementation & Governance Plan

Frameworks: FAIR + DAMA-DMBOK.

Metadata: Data catalog & lineage docs.

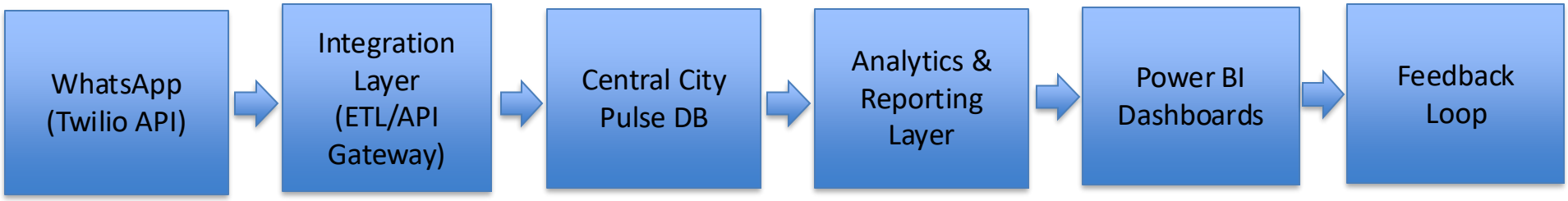
QA: Automated data validation. Validation rules at ingestion.

Ownership: Directorate-level data stewardship.

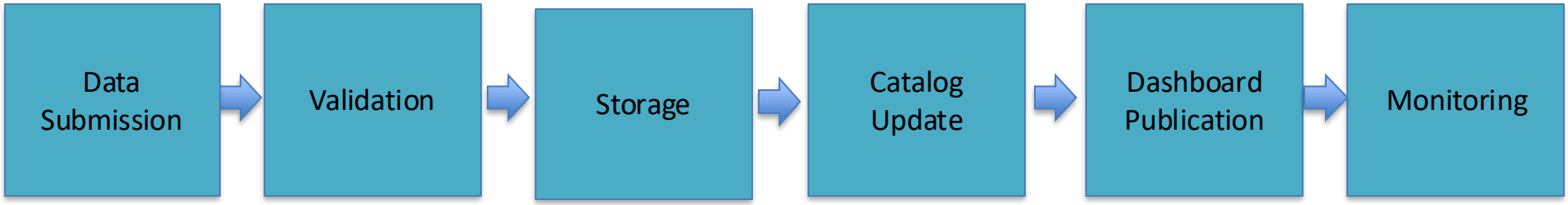
Phasing:
1) Intake,
2) Integration,
3) Analytics.

Annotated Architecture (Summary)

- **Flow:**



- **Governance Workflow:**



Reflection on AI Use

- AI tools supported structure and phrasing, but strategy and decisions were based on professional judgment.

- **Limitation:** Lack of access to internal City systems required contextual adaptation.