Talabat: Delivering Happiness

The Future of Food Delivery

Talabat

PRESENTED TO
Our Valued Customers

PRESENTED BY
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INTRODUCTION TO TALABATS' DATA ECOSYSTEM:

- Talabat is the leading on-demand food delivery and Q-Commerce (Quick Commerce) platform in the MENA region.
- Business Model: Operates a complex Three-Sided Marketplace connecting:
  - Customers: Hungry users searching for food/groceries.
  - Vendors: Restaurants and "Dark Stores" (Talabat Mart) managing inventory.
  - Logistics (Riders): A massive fleet of freelance couriers requiring real-time coordination.

ENHANCING EFFICIENCY WITH TECHNOLOGY

Revolutionizing delivery times through smart solutions.

Why Data Engineering Matters:

SCALE:

Handling terabytes of data daily across the MENA region.

SPEED:

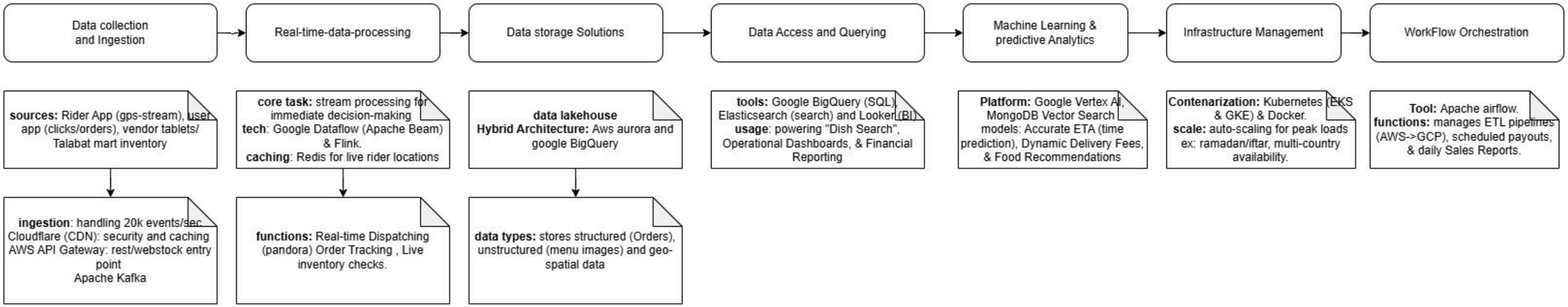
ETAs (Estimated Time of Arrival) must be calculated in milliseconds.

ACCURACY:

Inventory for "Talabat Mart" (Q-Commerce) must be accurate to avoid out-of-stock cancellations.

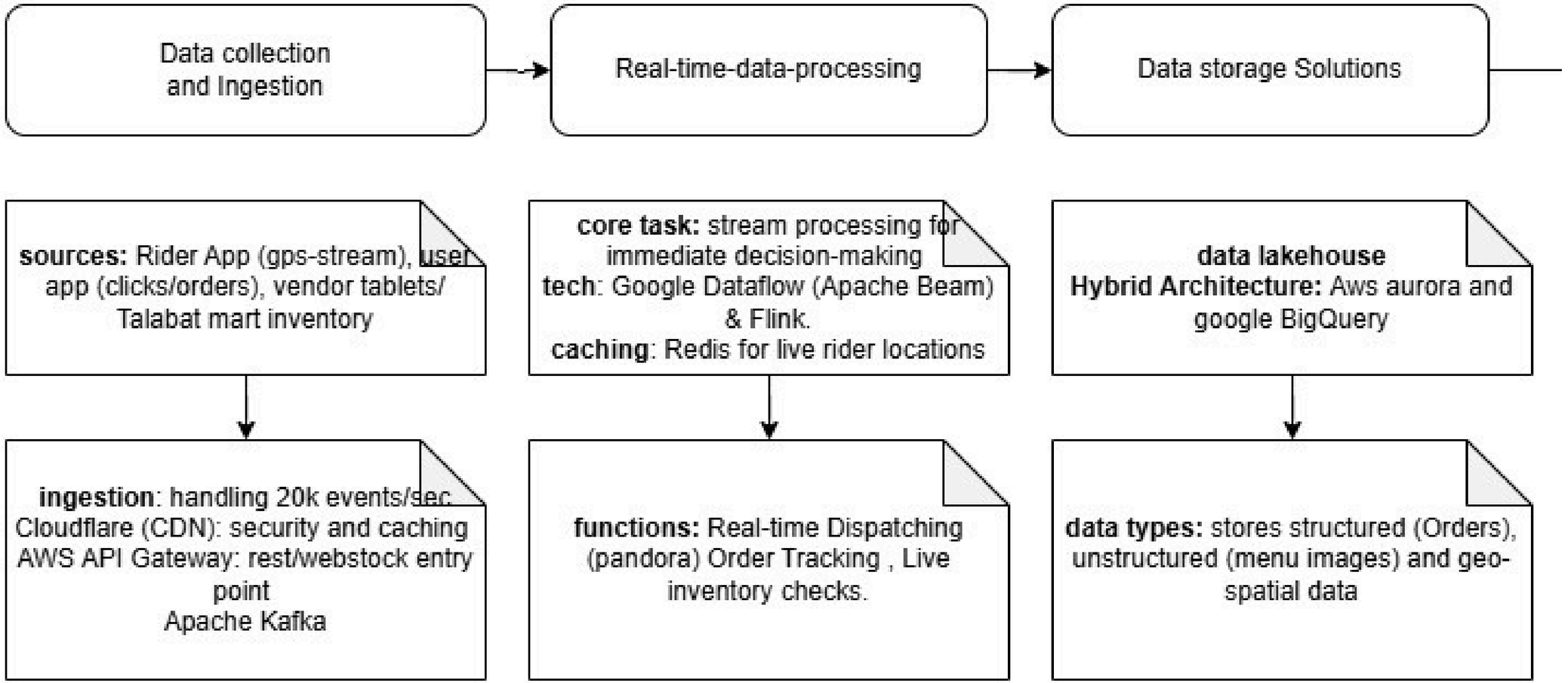
Talabat’s Abstracted Data Pipeline Flow:

Full the pipe-line:



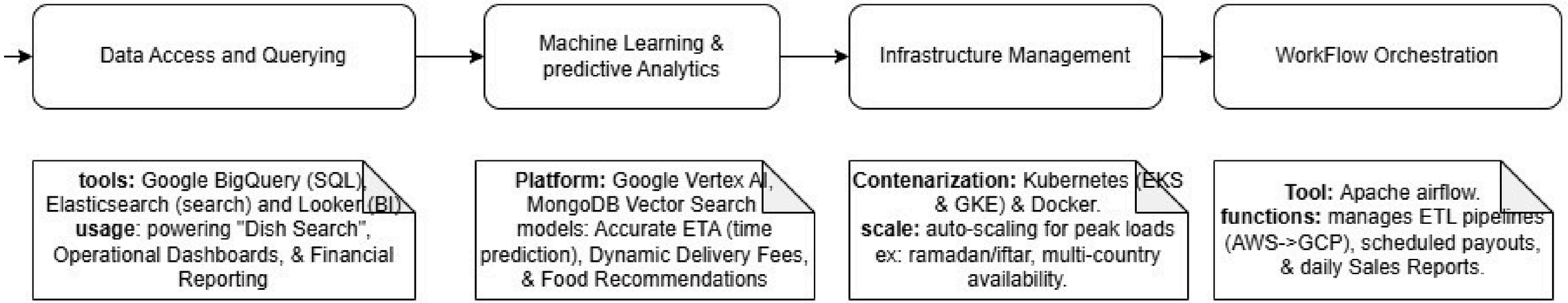
Talabat's Abstracted Data Pipeline Flow:

First part of the pipe-line:



Talabat’s Abstracted Data Pipeline Flow:

Second part of the pipe-line:



Summary of the Data pipe-line:

- 1. Data Collection
  - Main Goal: Capture high-velocity user signals and fleet location data to drive the logistics engine.
  - Key Inputs: Rider GPS pings (every 5s), User "Add to Cart" events, Restaurant "Kitchen Status."
- 2. Ingestion Layer
  - Main Goal: Buffer massive spikes in traffic (e.g., during Iftar or rain) to prevent backend crashes.
  - Tech: AWS API Gateway (Entry) & Apache Kafka (Buffering).
- 3. Real-Time Processing
  - Main Goal: Execute instant logistics logic (matching riders to orders) and clean raw data for analysis.
  - Tech: Pandora Engine (Dispatch) & Google Dataflow (Stream Processing).
- 4. Hybrid Storage
  - Main Goal: Separate "Hot" operational data (orders/payments) from "Cold" historical data (analytics).
  - Tech: AWS Aurora (Transactional) & Google BigQuery (Analytical Warehouse).
- 5. Data Access & BI
  - Main Goal: Empower business teams to track performance and enable fast food discovery for users.
  - Tech: Looker (Dashboards) & Elasticsearch (App Search Bar).
- 6. AI & Machine Learning
  - Main Goal: Optimize operations through prediction (ETA accuracy) and increase sales via personalization.
  - Tech: Vertex AI (Training Models) & MongoDB Vector Search (Recommendations).
- 7. Orchestration
  - Main Goal: Automate complex workflows to ensure financial reports and system updates run on time.
  - Tech: Apache Airflow (Scheduler).

References:

- Engineering & Architecture
  - Talabat Tech Blog: Official engineering posts detailing microservices, Go language usage, and AI projects like "tLabel."
  - Delivery Hero Tech Hub: Global architecture case studies defining the shared "Pandora" logistics engine.
- Cloud Infrastructure
  - AWS Case Study ("Talabat Improves Reliability"): Confirms the migration to Amazon Aurora and ElastiCache for the operational "Hot Path."
  - Google Cloud Customer Story ("Delivery Hero AI"): Confirms the use of BigQuery, Looker, and Vertex AI for the analytical "Cold Path."
  - MongoDB Case Study: Details the Vector Search implementation for the real-time recommendation engine.

Thank you