



QueueTrack

Innovation in Public Transport Digitization

Liza Nyambura Nduru - BSc. Information Technology, DeKUT

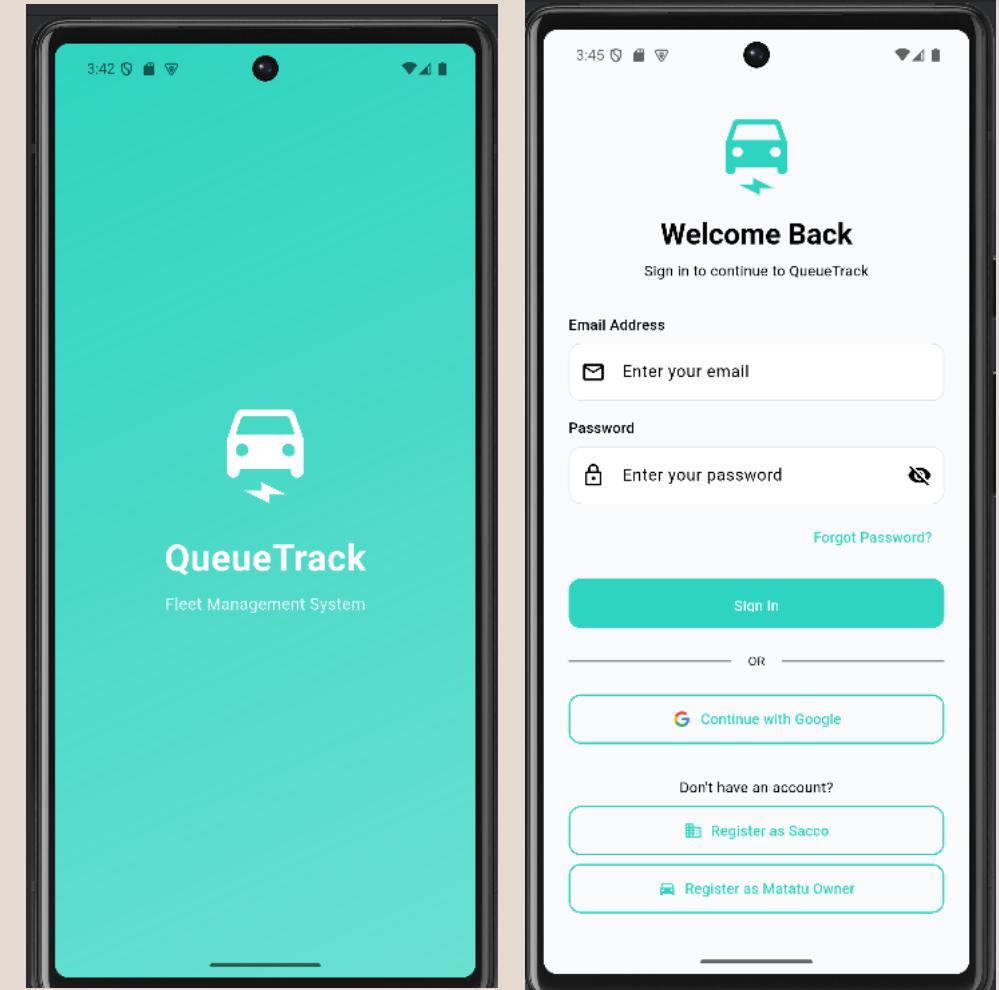
The Challenge in Public Transport

1. Chaos and fights at matatu stages.
2. No clear queue order.
3. Time wasted by passengers.
4. Unfair turn-taking and corruption.
5. No data or digital record keeping.



Introducing QueueTrack

1. Digital registration of matatus as they arrive.
2. Real-time queue updates.
3. Notifications for drivers when it's their turn.
4. Cloud-based data for tracking operations.



Goals of QueueTrack

1. Promote fairness and accountability
2. Enhance efficiency in stage management
3. Improve passenger satisfaction
4. Provide transport data insights
5. Support Kenya's digital transformation



Fairness



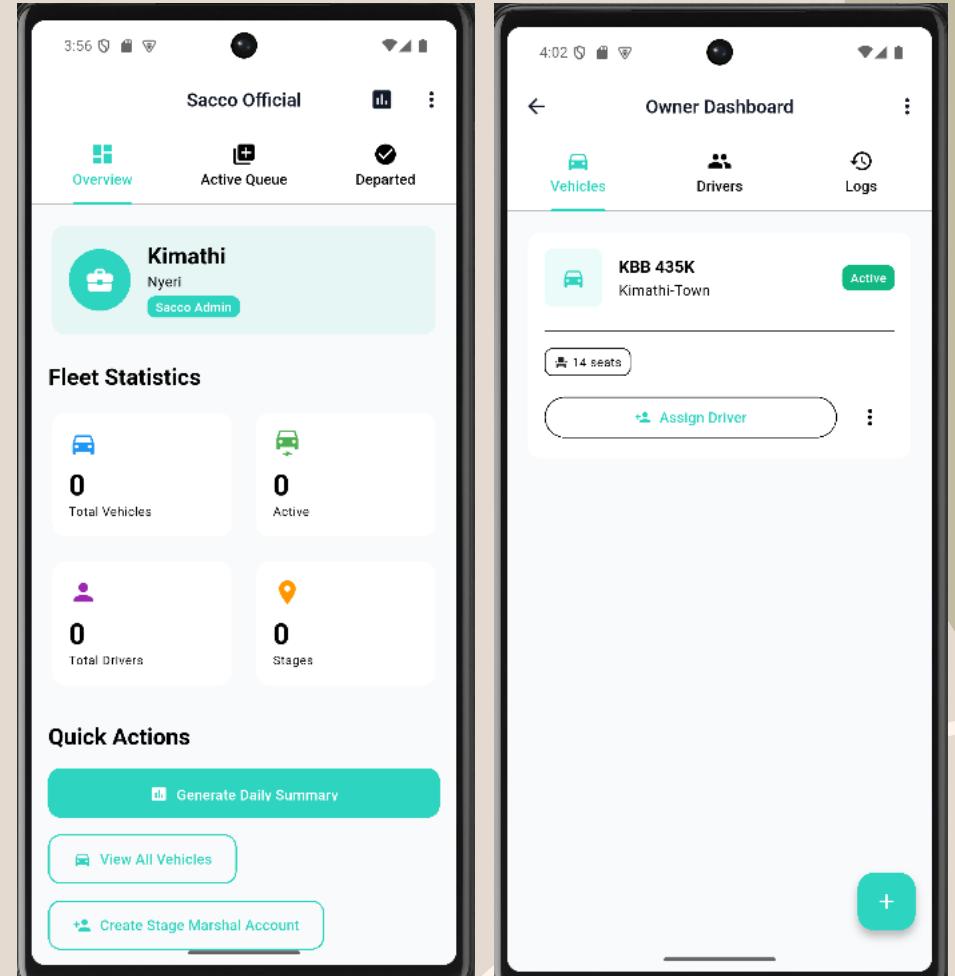
Efficiency



Data

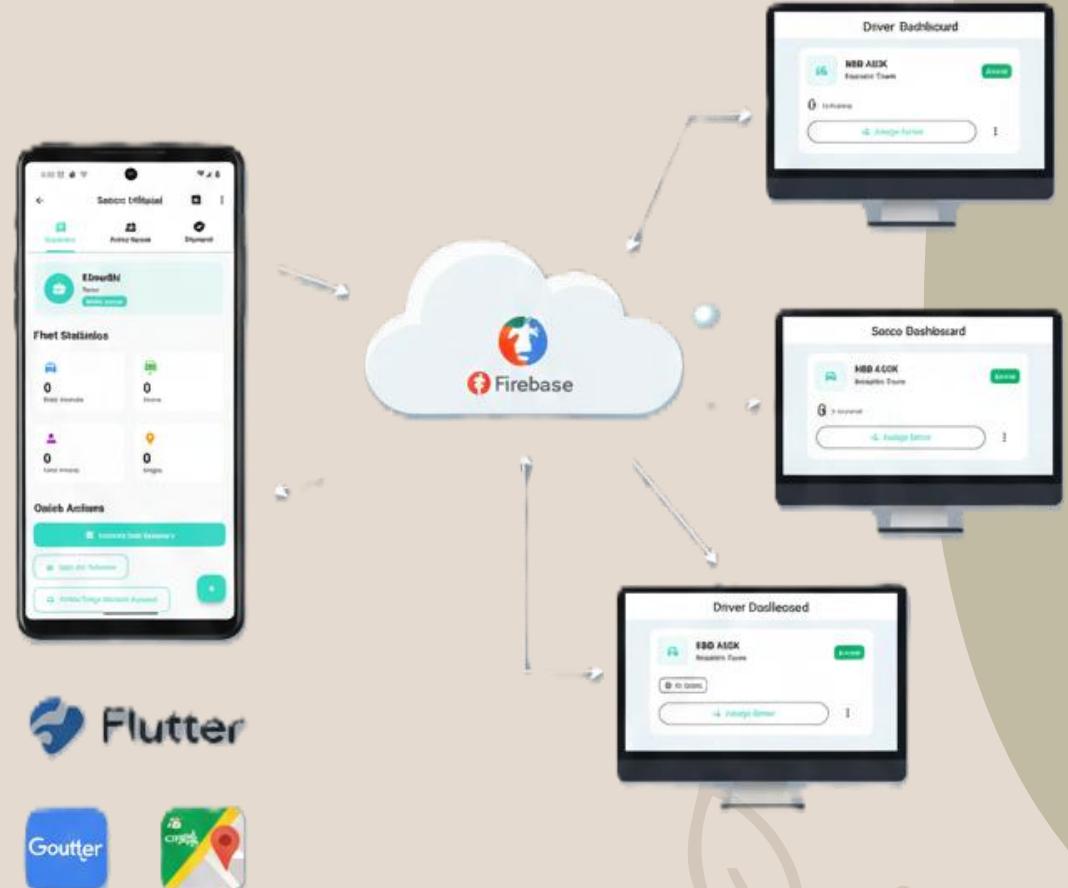
System Design and Functionality

- **Left Side:** Owner Dashboard screenshot
- **Right Side:** SACCO Dashboard screenshot
- Owner Dashboard: Registers drivers and assigns vehicles.
- SACCO Dashboard: Manages fleet statistics and registers stage marshals.
- Real-time Data Storage: All driver, vehicle, and queue data is securely stored in Firebase Cloud Database.



Technology Stack

- **Frontend:** Flutter (for mobile and dashboard interfaces)
- **Backend:** Firebase (handles authentication, serverless functions, and logic)
- **Database:** Firestore (real-time cloud data storage)
- **APIs:** Google Maps API for route and location tracking
- **Notifications:** Firebase Cloud Messaging for driver and SACCO alerts



The Real-World Impact of QueueTrack

For Drivers

Fair, digital turn-taking - no more stage fights or bribery.

Real-time updates reduce waiting frustration.

Increased trust between drivers and SACCOs.

For Passengers

Shorter queues and organized boarding.

Better safety through monitored vehicle data.

Confidence knowing matatus follow a transparent system.

For SACCOs & Stage Marshals

Automated record-keeping and fleet insights.

Real-time performance tracking for each driver.

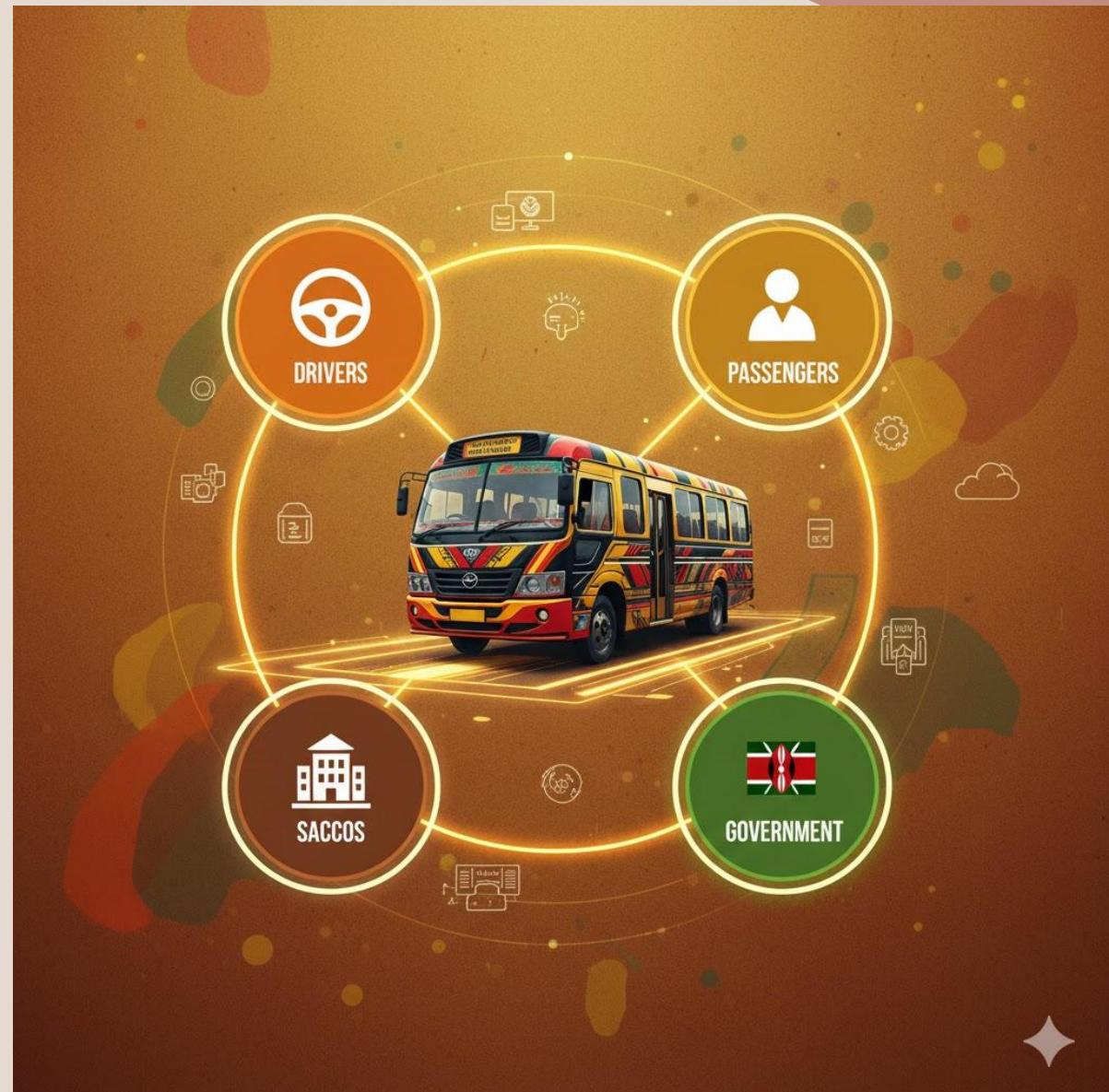
Accountability through digital reports.

For Government & Policy Makers

Access to transport analytics and crowd patterns.

Easier regulation through data-driven insights.

Supports Kenya's *Smart City* and *Digital Economy* goals.



The Road Ahead for QueueTrack

Digital Payments

Add M-PESA & e-ticketing for cashless travel.

Enable SACCO revenue tracking & transparency.

AI Integration

Use AI to predict traffic and optimize routes.

Leverage Firebase + Google Maps for real-time data.

Platform Expansion

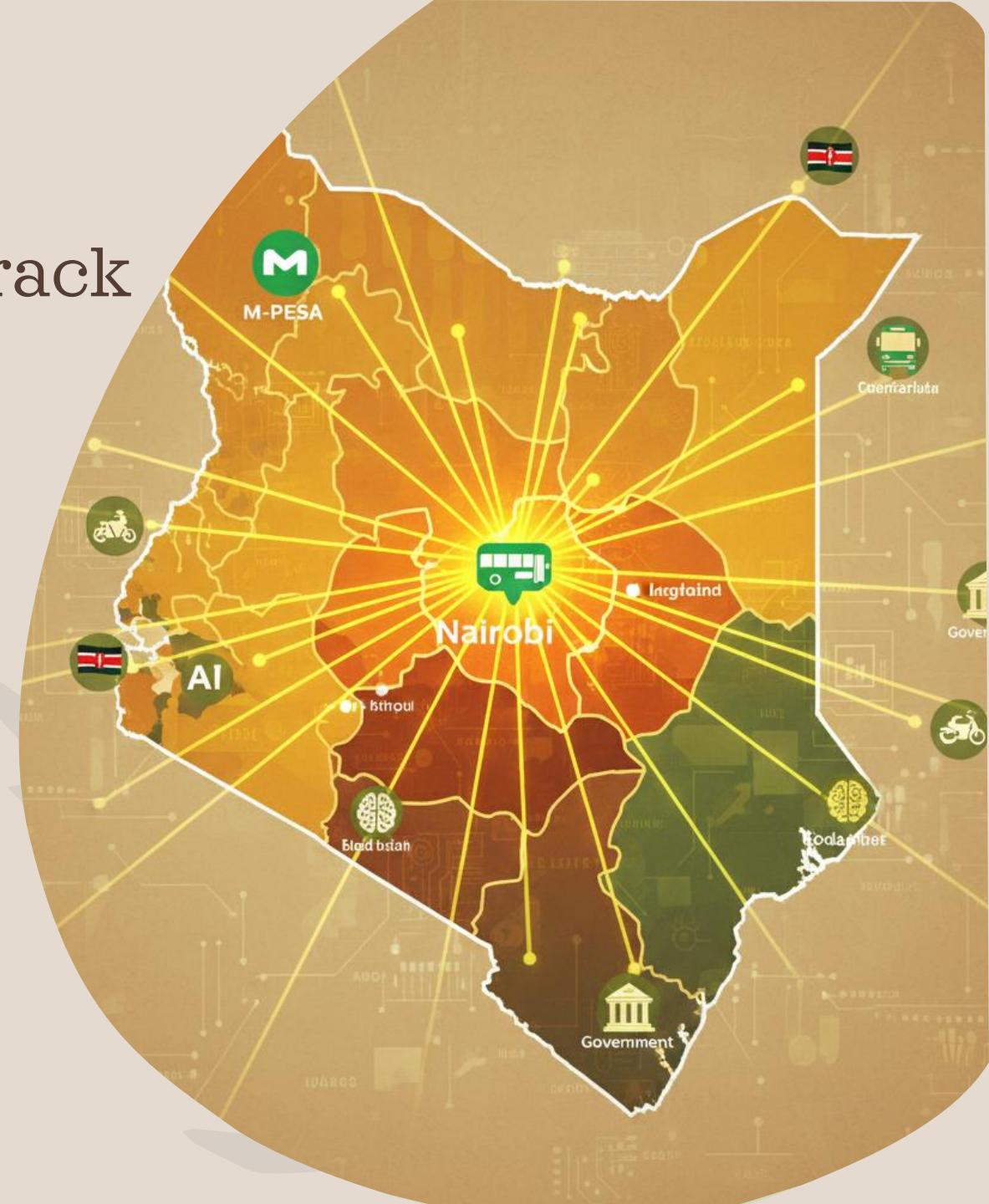
Include boda-boda and long-distance bus parks.

Standardize queue systems across all transport modes.

Strategic Partnerships

Collaborate with NTSA & county governments.

Align with Kenya's Smart City vision and mobility goals.



Social & Cultural Impact

Empowering Innovators

Inspires African youth to solve local challenges through tech.

Promoting Order & Fairness

Digitizes the informal transport sector for accountability.

Encouraging Tech Entrepreneurship

Motivates students and developers to build community-driven solutions.





Thank you

LIZA NYAMBURA NDURUHU
C025-01-0806/2022

lizanduruahu@gmail.com
BSc.Information Technology