

# Smart Parking Management System

Data-Driven Cities: Conference for the Urban Common Good

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# Make use of your data

What data are we collecting?

How is the data collected and analyzed?

How the collected information informs the public (CoK) to make better decisions for the public good.

# Introduction

- Rwanda has 221,000 registered vehicles
- Of which 40,000 are in Kigali alone
- The number of vehicles is increasing rapidly (about 12% per year)
- Increase in 2.20% traffic growth despite the government efforts to extend the road infrastructure and network

# Background

- One of the major challenges of increased urbanization is increased no. of vehicles and environmental protection.
- With the growth of the vehicles on the streets, **availability of parking space** has become a major problem.
- Leading to considerable negative impacts on the;
  - Commuter experience and time,
  - Traffic related pollution & congestion
  - Quality of life of residents & visitors
  - Parking fee collection (fraud & evasion)
  - Operational efficiency



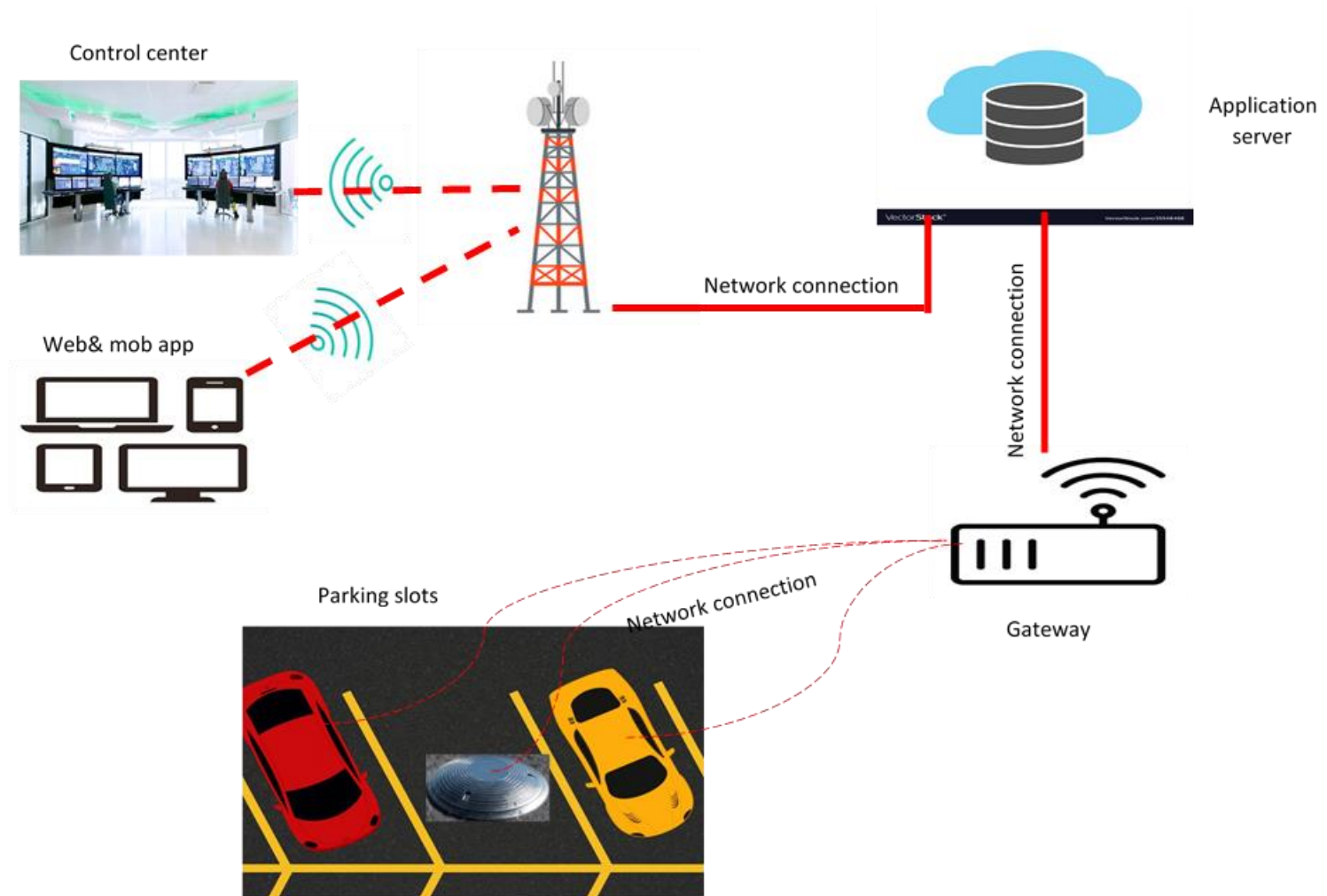
# Background

- Effective & sustainable parking solutions is still a daunting exercise for the City of Kigali (CoK)
- Smart parking solutions are needed to enhance regulated parking spots





# Smart Parking High Level Architecture



# Data Types and Benefits



- **Sensor Data:** detects parking spot occupancy and provides real-time information
  - ParikApp also allows users to **find** free and/or book parking spots
- **Payments & Transaction data:** made through a Mobile App (**ParikApp**) or through other channels; USSD, MOMO or bank cards
- **User behavior:** The system avails; transactions data, payment history, and user patterns that can be used to generate insights in parking behavior or more.

# ParikApp

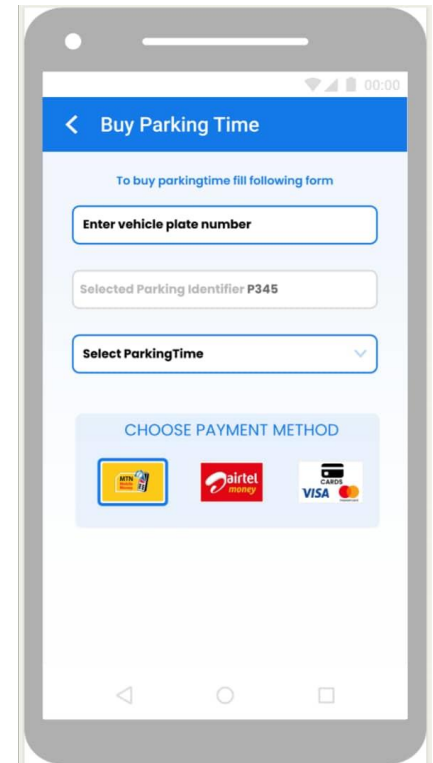
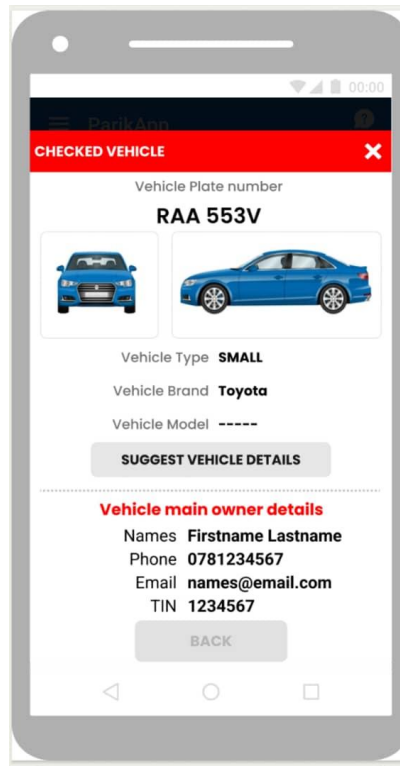
- Find Parking spots near you
- Buy parking time
- Register vehicle





# ParikApp

- Vehicle identification
- Payments done via USSD, MOMO or Bank



# ParikApp Admin Dashboard

Vehicle Details:

Types, brand, model, owner, owner's phone number

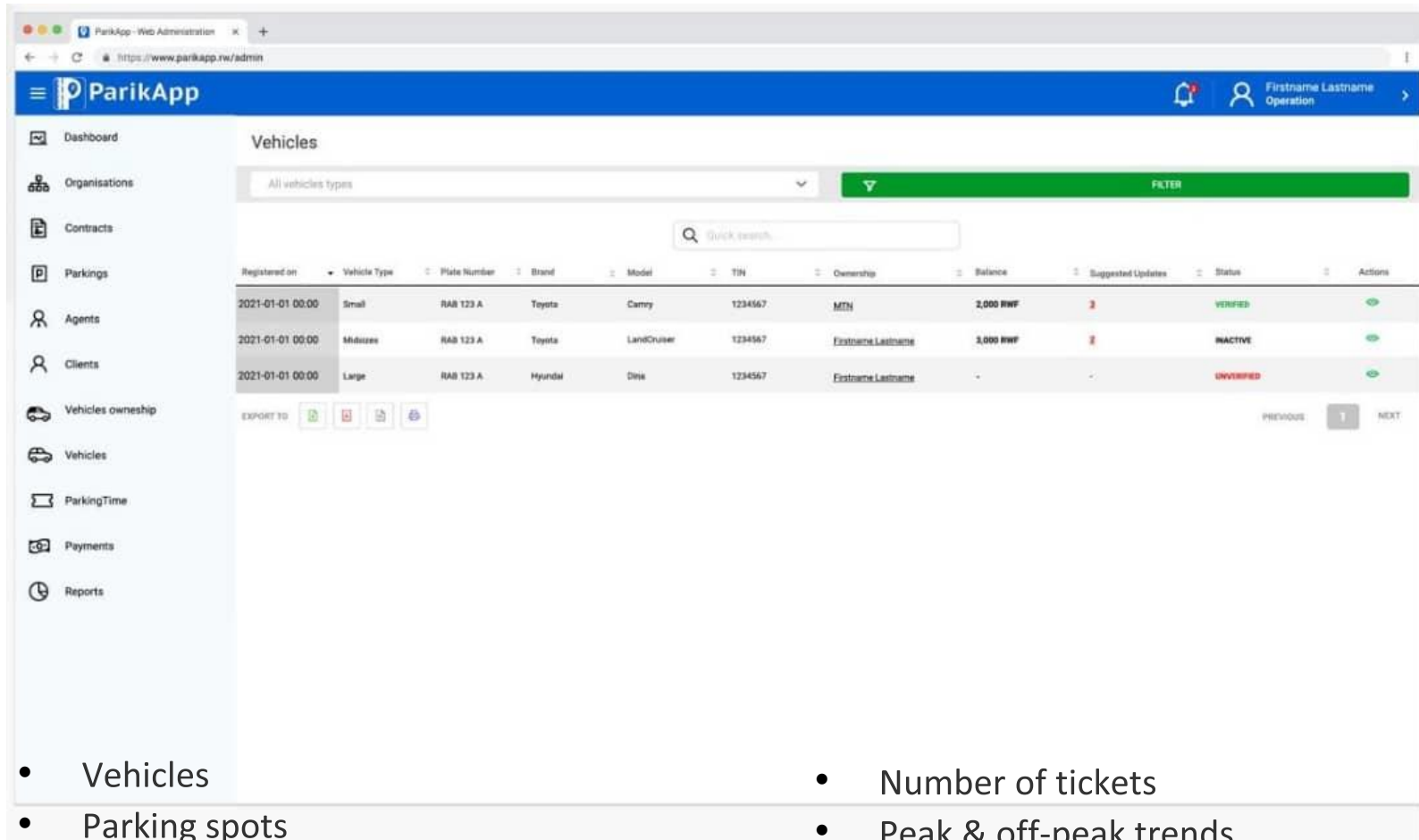
The screenshot displays the ParikApp Admin Dashboard. The left sidebar contains navigation links: Dashboard, Contracts, Parkings, Agents, Vehicles, ParkingTime, Payments, and Reports. The main content area is titled "Vehicle RAA 554V" and shows "CURRENT DETAILS" for a vehicle with plate number RAA 554V, type Small, brand Toyota, and model Rav4. It also lists owner information: Owner Name: Firstname lastname, Owner Phone: 0781234567, and Owner Email: names@gmail.com. Two car images are shown. Below this is the "SUGGESTED DETAILS" section, which includes a search bar and a table of suggested vehicles.

Suggested on	Vehicle Type	Vehicle Brand	Vehicle Model	Vehicle Front View Picture	Vehicle Side View Picture	Suggested by	Suggestion status	Actions
2021-01-01 00:00	Small	TOYOTA	Rav4			AgentFirstname Lastname (078123456)	APPROVED	<button>APPROVE</button> <button>REJECT</button>
2021-01-01 00:00	Medium	TOYOTA	Rav4200			AgentFirstname Lastname (078123456)	REJECTED	<button>APPROVE</button> <button>REJECT</button>
2021-01-01 00:00	Small	TOYOTA	Rav3			AgentFirstname Lastname (078123456)	PENDING	<button>APPROVE</button> <button>REJECT</button>

At the bottom of the suggested details section, there is an "EXPORT TO" button with icons for CSV, PDF, Excel, and Print. On the right side of the dashboard, there are navigation controls: "PREVIOUS", a page number "1", and "NEXT".

# ParikApp Admin Dashboard

Payments:  
USSD, MOMO, Bank



The screenshot displays the ParikApp Admin Dashboard. The left sidebar contains a menu with the following items: Dashboard, Organisations, Contracts, Parkings, Agents, Clients, Vehicles ownership, Vehicles, ParkingTime, Payments, and Reports. The main content area is titled 'Vehicles' and features a dropdown menu for 'All vehicles types', a green 'FILTER' button, and a 'Quick search' input field. Below these is a table with columns: Registered on, Vehicle Type, Plate Number, Brand, Model, TIN, Ownership, Balance, Suggested Updates, Status, and Actions. The table contains three rows of data. At the bottom of the table, there is an 'EXPORT TO' section with icons for PDF, Excel, CSV, and Print, and pagination controls for 'PREVIOUS', '1', and 'NEXT'.

Registered on	Vehicle Type	Plate Number	Brand	Model	TIN	Ownership	Balance	Suggested Updates	Status	Actions
2021-01-01 00:00	Small	RAB 123 A	Toyota	Camry	1234567	MTN	2,000 RWF	2	VERIFIED	
2021-01-01 00:00	Midsize	RAB 123 A	Toyota	LandCruiser	1234567	Firstname Lastname	3,000 RWF	1	INACTIVE	
2021-01-01 00:00	Large	RAB 123 A	Hyundai	Stela	1234567	Firstname Lastname	-	-	UNVERIFIED	

EXPORT TO:

PAGINATION: PREVIOUS 1 NEXT

- Vehicles
- Parking spots
- Parking Time
- Number of tickets
- Peak & off-peak trends



**Thank You**  
**Q&A**