



VOLKSWAGEN GROUP
DIGITAL SOLUTIONS [INDIA]

i.ମୋବାଇଲିଟି ହାକ୍ 5.0

Powered By

H2S
HACK2SKILL

TEAM DETAILS

Team name: Phantom Troupe

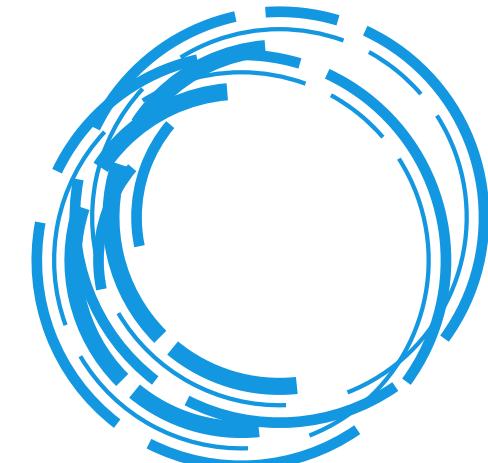
Team leader name: Nitesh Kumar

Problem Statement: Predictive Parking Space Marketplace

Revolutionizing Parking Space Marketplace

Brief About the Idea:-

- Our project aims to solve the problem of urban parking congestion by developing a real-time mobile app where users can view, book, and pay for parking slots in advance.
- The app displays live availability of parking spaces uploaded by area owners or managers, and automatically updates across all users using blockchain technology ensuring trust, transparency, and synchronization.
- If no slot is available, the app suggests the nearest alternative parking area and provides navigation on the map. Bookings are auto cancelled if the user doesn't arrive within 20 minutes, ensuring fair use of space.
- An integrated machine learning model predicts peak and rush hours, helping users plan trips efficiently and owners manage demand.
- Overall, the system creates a seamless, data-driven, and secure parking experience, reducing congestion and saving time.



Existing Ideas

ParkChain's Innovation

Static availability or rely on manual updates

Provides real-time visibility of nearby parking slots using Solidity-based blockchain smart contracts.

Disconnected features

Allows advance booking & secure payments, reducing search time and traffic. Auto-cancellation of inactive bookings ensures fair use of spaces.

Focus only on current availability

Adds reinforcement learning for rush hours and future slot availability not just current status



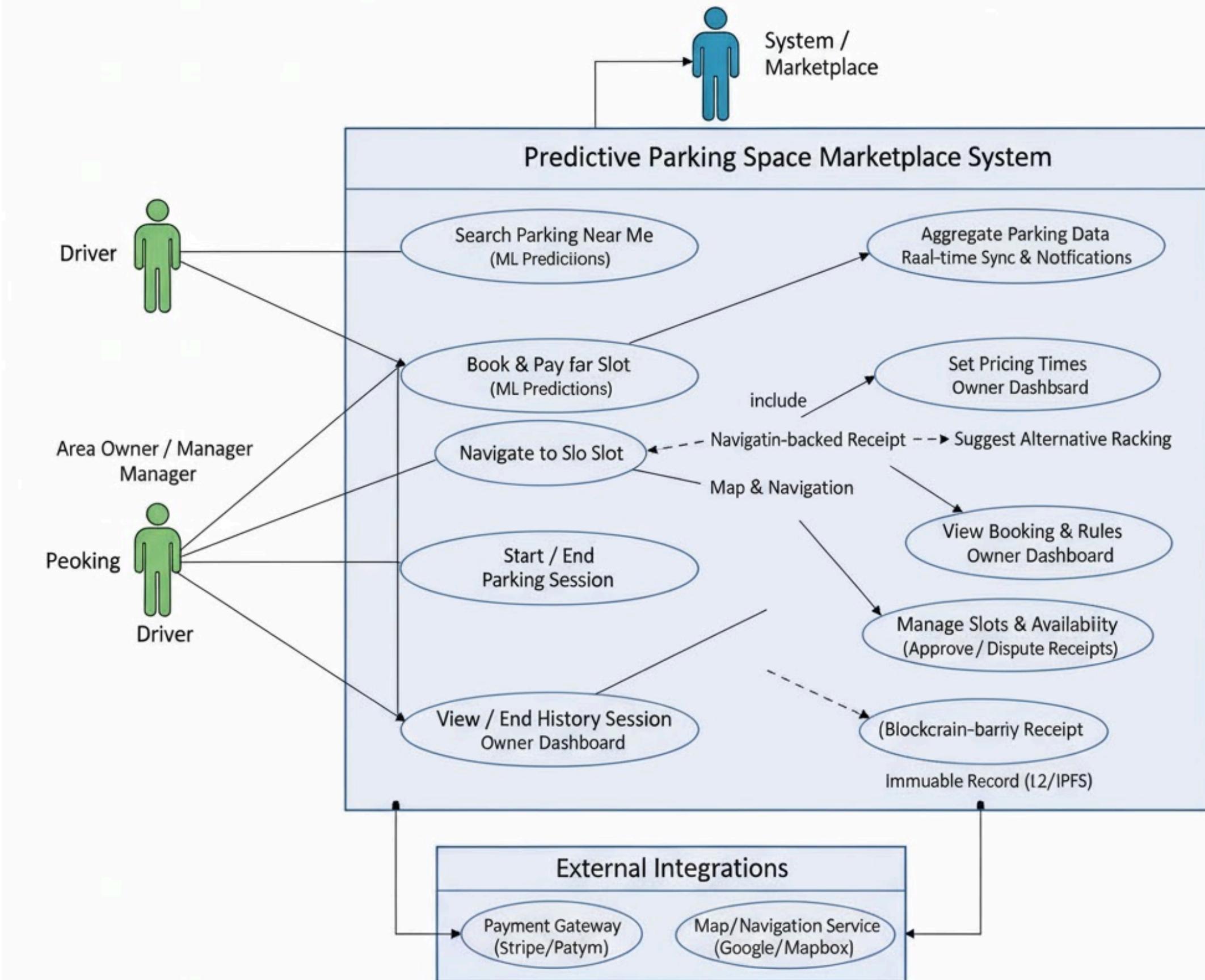
Unique Selling Proposition (USP)

- Blockchain-powered trust & transparency no double bookings or tampering.
- AI-driven predictions for smarter parking decisions.
- Seamless, end-to-end experience: find, book, pay, navigate, park.
- Benefits both drivers (time & fuel saved) and owners (higher occupancy & automated management).

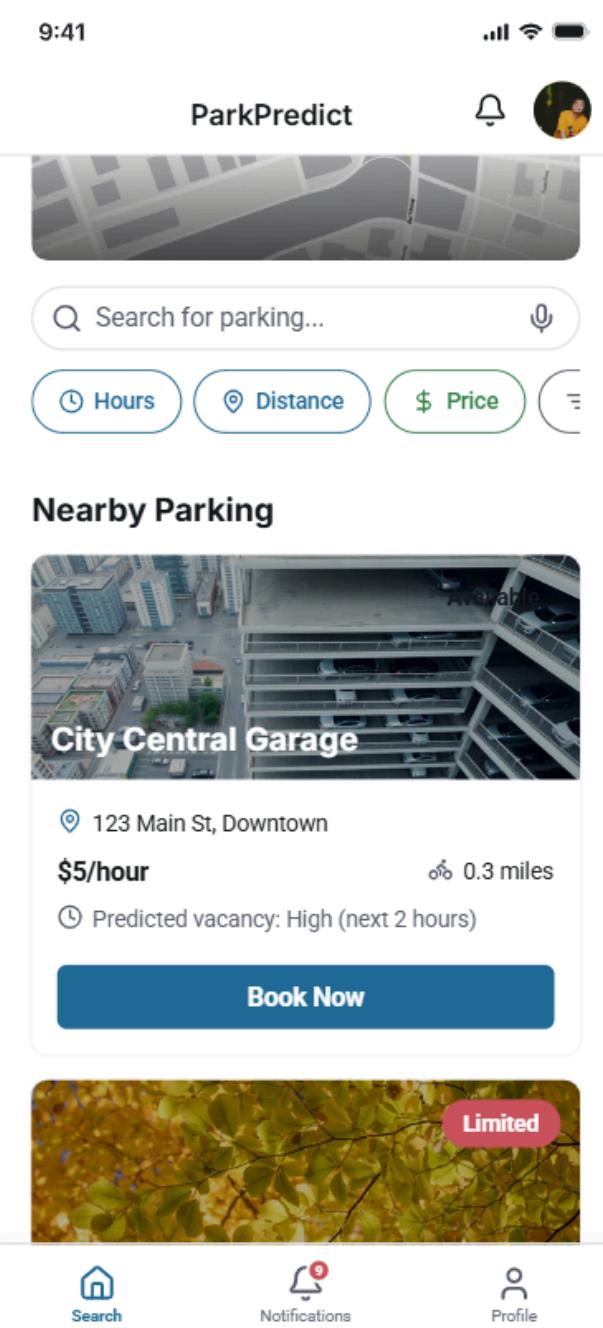
FEATURES

- 1 Real-time Parking availability**
View live status of nearby parking slots
- 2 Advance Slot Booking**
Reserve a slot for specific hours before arrival.
- 3 Secure Online Payment**
Pay directly through integrated gateways or in-app wallet.
- 4 Secure Online Payment**
Pay directly through integrated gateways or in-app wallet.
- 5 Auto Cancellation**
If the user doesn't arrive within 20 minutes, the booking is automatically released.
- 6 Advance Slot Booking**
Reserve a slot for specific hours before arrival.
- 7 Navigation Assistance**
Get turn-by-turn directions to the booked slot.
- 8 AI-based Prediction**
Machine Learning predicts rush hours and peak times.
- 9 Blockchain Integration**
Ensures transparent, tamper-proof, and synchronized bookings across all users.
- 10 Smart Suggestions**
Suggests nearest available parking if a location is full.

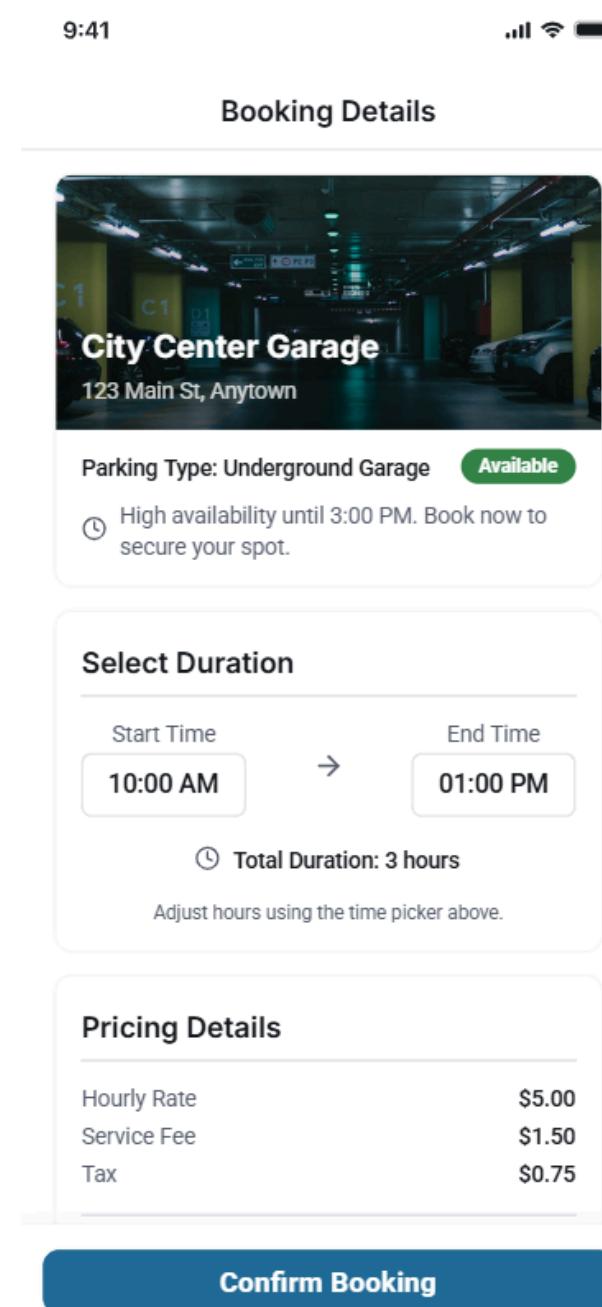
Process flow diagram or Use-case diagram



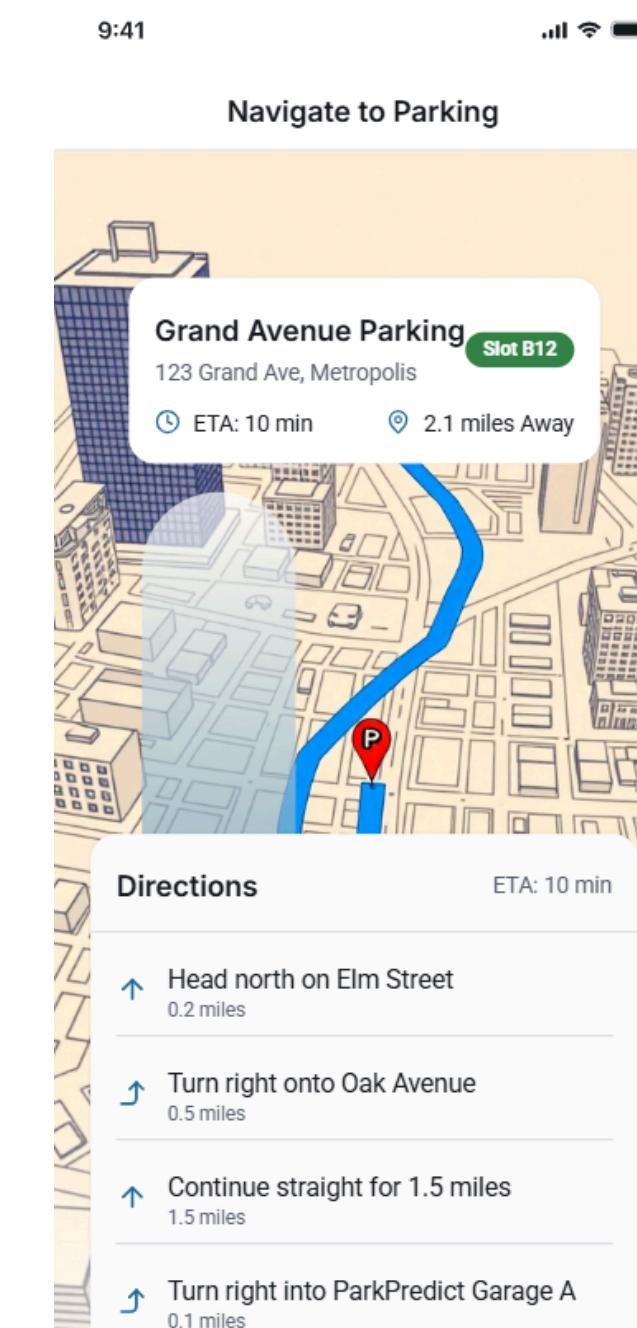
Mock diagrams of the proposed solution ~



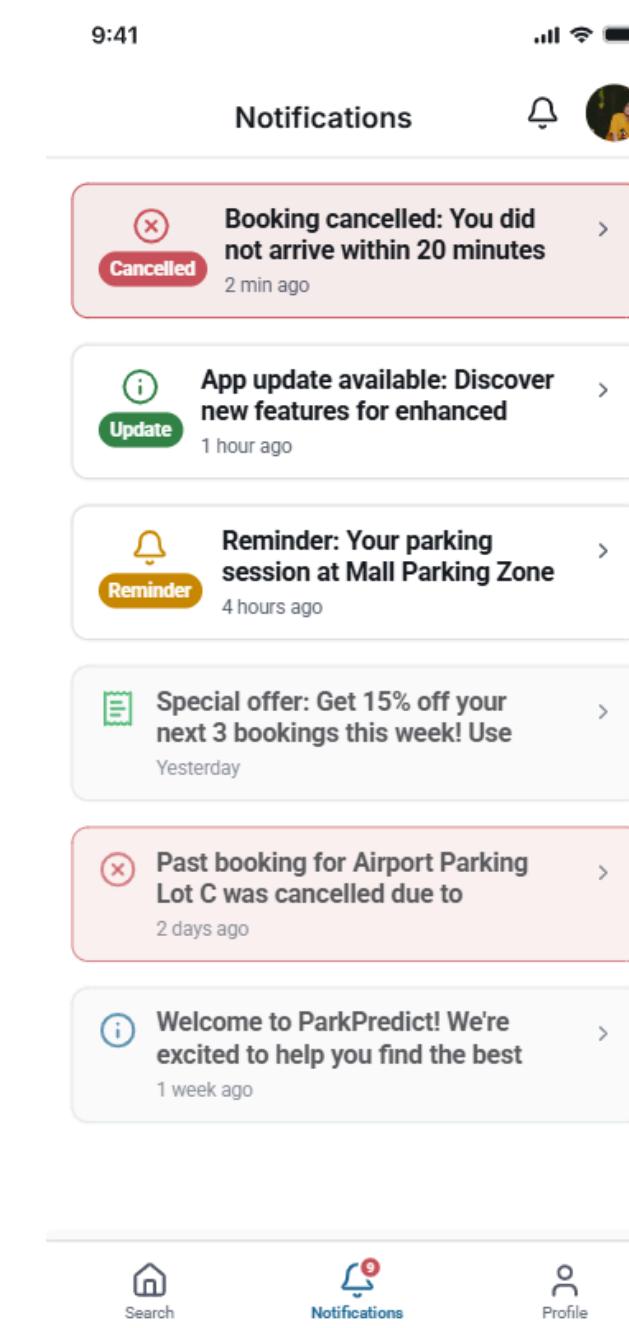
Search &
Availability



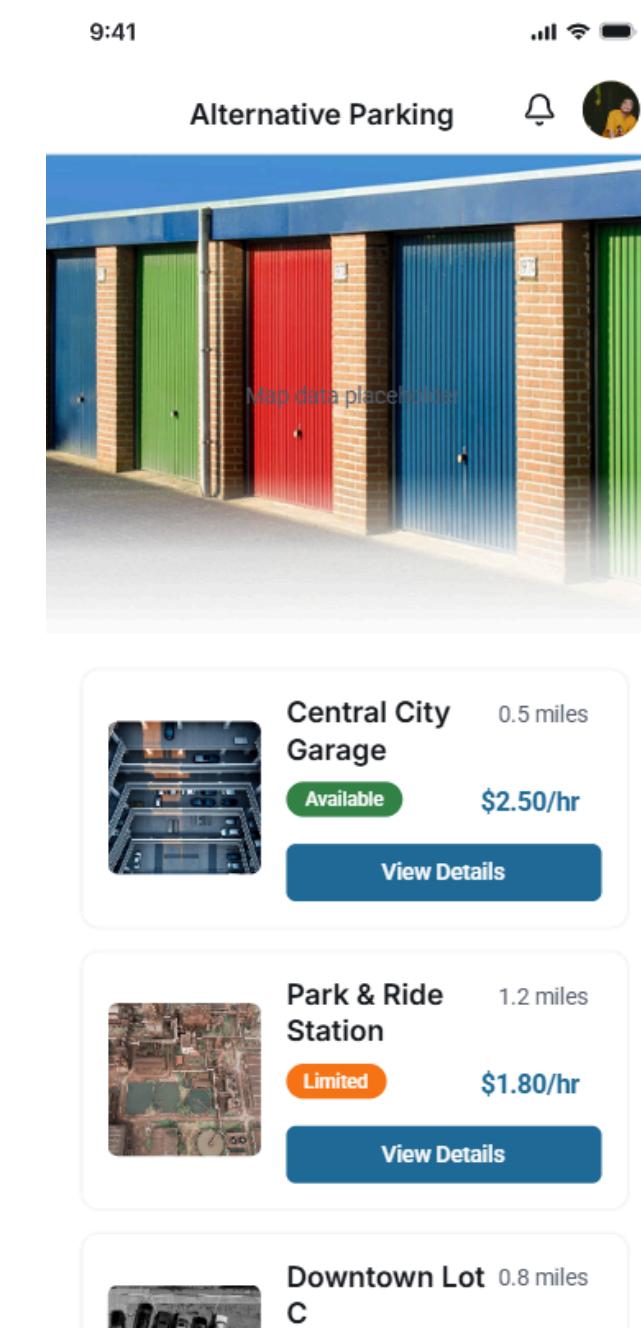
Book Parking



Navigate to Slot



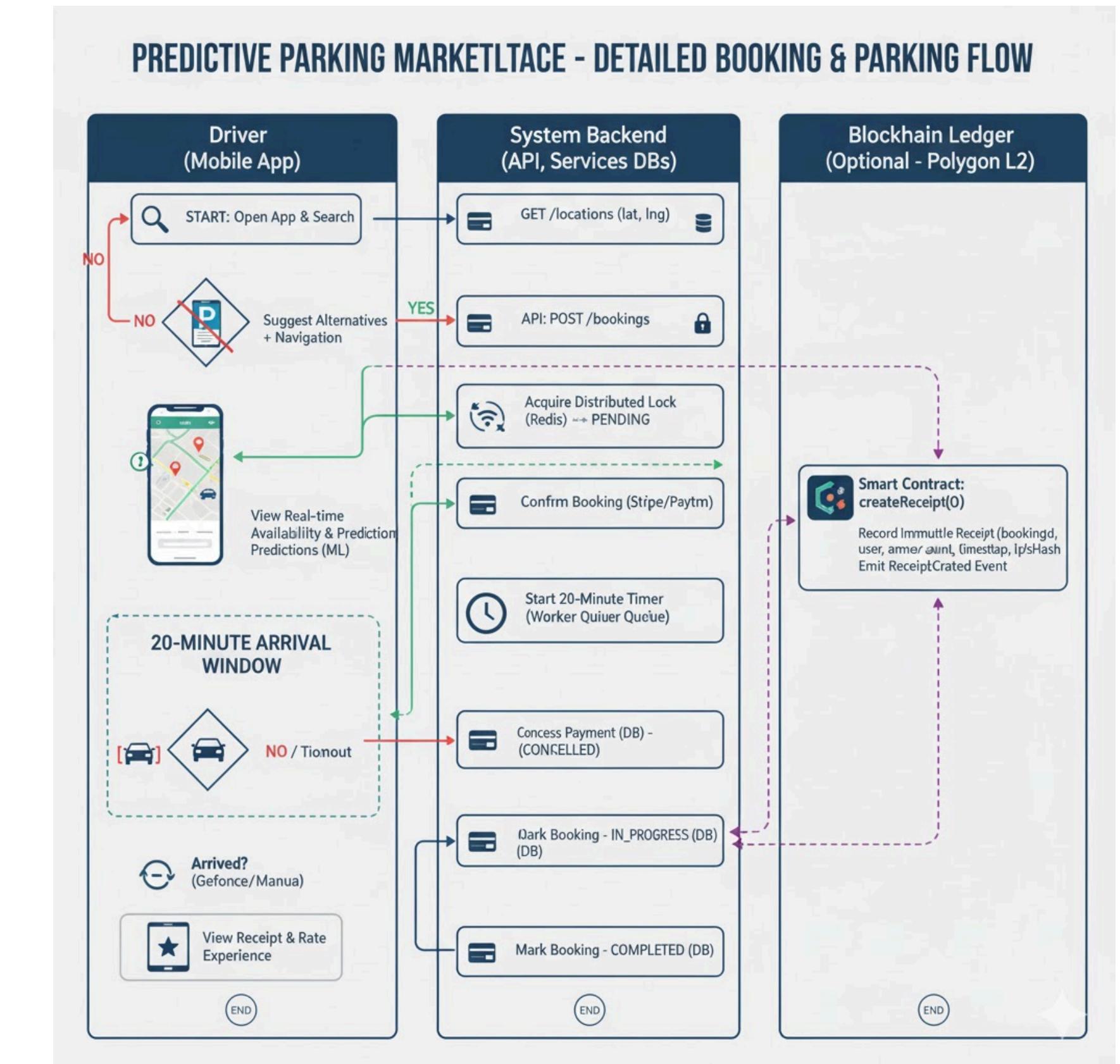
Booking Canceled



Alternative
Parking

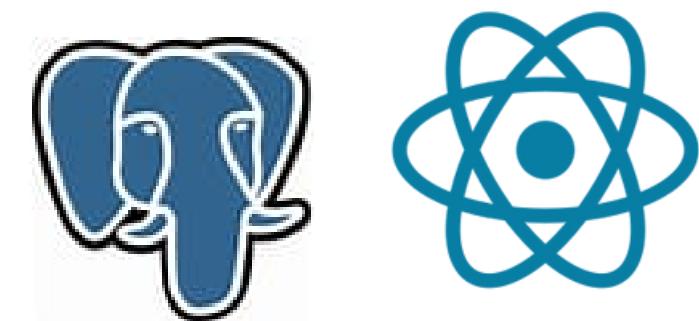
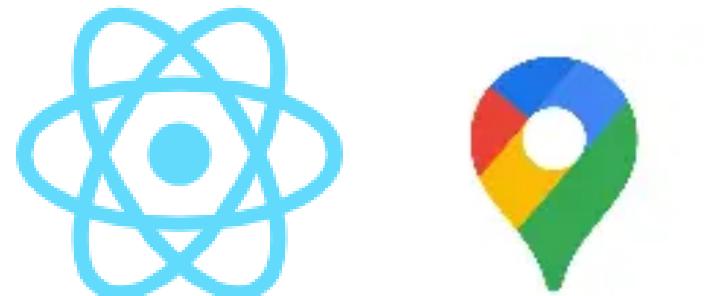
Key Architectural Highlights

- Microservices/API Driven:** The System Backend operates via APIs, suggesting a service-oriented or microservices architecture.
- Real-time & Predictive Analytics:** The use of ML for Prediction Predictions indicates an element of data science and real-time processing to enhance the user experience.
- Concurrency Control:** The Acquire Distributed Lock (Redis) is crucial for ensuring that a parking spot can only be booked by one user at a time in a distributed system.
- Asynchronous Processing:** The Worker Queue for the 20-Minute Timer suggests background, asynchronous job processing to handle time-sensitive tasks without blocking the main API thread.
- Payment Integration:** Direct integration with external payment gateways .
- Web3/Decentralization:** The Blockchain Ledger adds a modern Web3 component for creating verifiable, permanent transaction records.



TECHNOLOGIES USED IN PARKCHAIN

FRONTEND



BACKEND





VOLKSWAGEN GROUP
DIGITAL SOLUTIONS [INDIA]

i.mobilothon 5.0

Powered By **H2S**
HACK2SKILL

THANK YOU