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Delhi Transport Corporation



HACK4DELHI

Pitch Directly to the Government. Build for the Nation.

Team Name :
Delta Unit

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PROBLEM STATEMENT

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SMART PARKING CAPACITY ENFORCEMENT FOR MUNICIPAL CORPORATIONS

01. Enforcement & Visibility Gap in Municipal Parking

- No real-time capacity monitoring across 430+ MCD parking sites
- Manual inspections are non-scalable and reactive

- Contractors exceed permitted capacity to maximize profits
- Weak enforcement leads to municipal revenue loss

03. Citizen Impact & Urban Traffic Congestion

02. Revenue Leakage & Contractor Non-Compliance

- Lack of parking visibility causes traffic congestion & overcharging
- Erodes citizen trust in municipal systems

OPERATIONAL REALITY

- Parking capacity enforcement is reactive, not preventive
- Peak-hour violations remain undetected
- Enforcement staff cannot scale with city-wide infrastructure

FINANCIAL & LEGAL EXPOSURE

- Excess vehicles generate unaccounted revenue for contractors
- Post-violation penalties lack continuous digital evidence
- Weak auditability limits legal and contractual enforcement

URBAN & CITIZEN CONSEQUENCES

- Parking search traffic worsens road congestion
- Overcharging incidents reduce citizen confidence
- Absence of transparency weakens smart city outcomes



SOLUTION



PARKSURE – Smart Parking Capacity Enforcement System

How PARKSURE addresses the issues:

#1 Real-time capacity enforcement

Works across Windows and Linux, wiping all user + hidden data areas.

#2 Automated violation detection

Cryptographically verifiable proof for audits & compliance.

#3 Tamper-proof accountability

One-click, step-by-step interface—accessible to everyone.

#4 Citizen-centric transparency

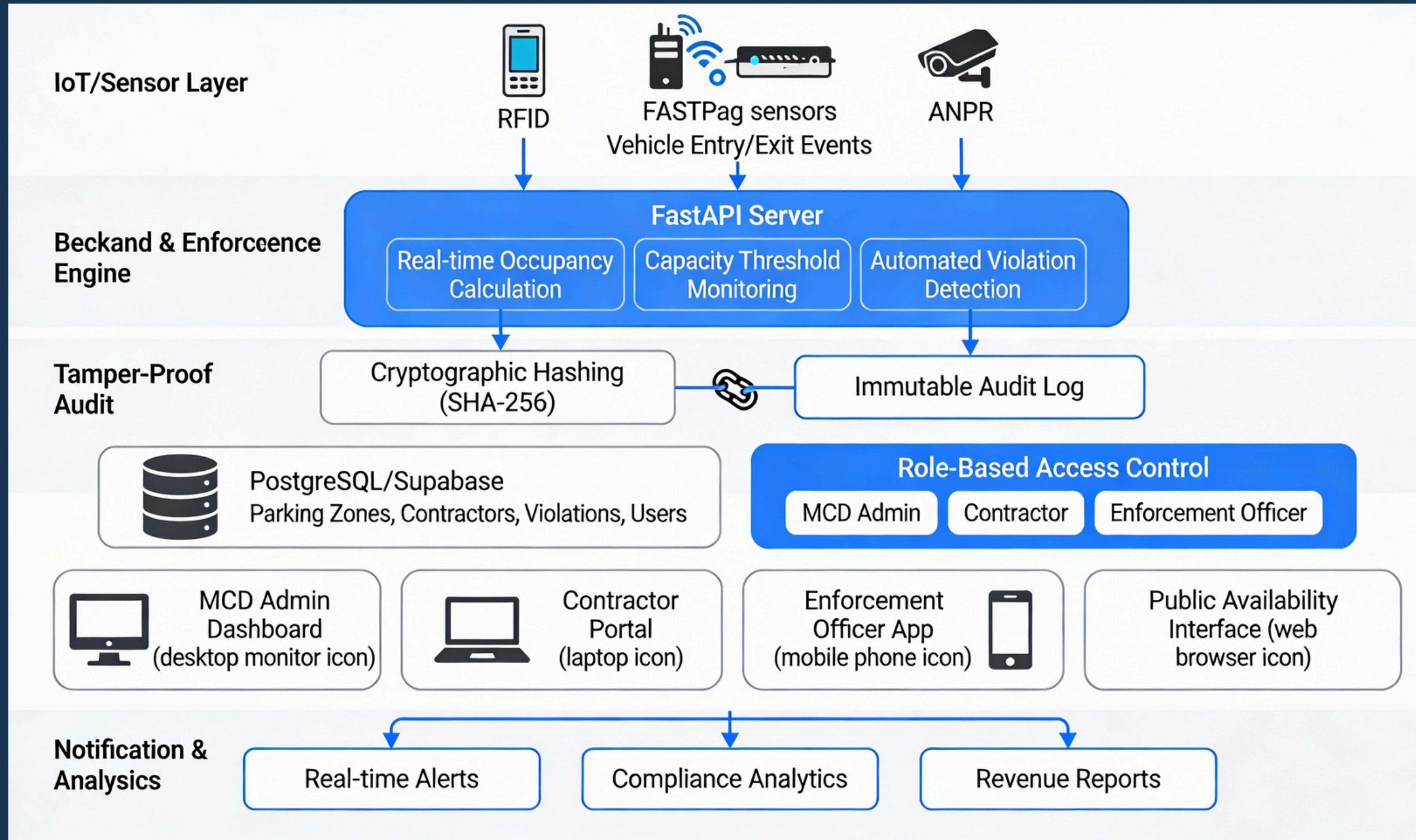
Runs via bootable USB/ISO (offline) NIST SP 800-88 compliant.

Innovation and uniqueness of the solution:

- Enforcement-first design (not just payment digitization)
- Tamper-proof digital audit trail inspired by blockchain principles
- IoT-agnostic architecture (FASTag / RFID / ANPR ready)
- Scalable across 430+ parking sites without adding manpower
- Offline-tolerant enforcement workflows
- Aligned with Smart City & municipal governance goals

ARCHITECTURE

Architectural Flowchart:



Key Integrations

- IoT inputs (RFID / FASTag / ANPR - simulated)
- FastAPI-based enforcement services
- PostgreSQL / Supabase for secure data storage
- Web dashboards and public APIs

System Outputs

- Real-time capacity status per parking zone
- Automated violation alerts and audit logs
- Compliance and revenue analytics
- Public parking availability information



TECHNOLOGY USED

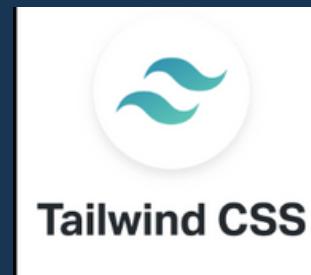


Technologies to be used:

supabase

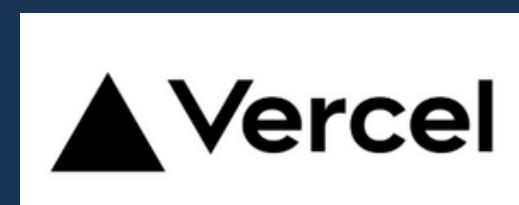


React + NEXT.js



python™

FastAPI



Functionality:

- Continuously tracks vehicle entry and exit to maintain accurate, real-time parking occupancy across zones
- Automatically detects overcapacity violations and generates time-stamped compliance records
- Maintains tamper-proof audit logs to ensure transparent, verifiable enforcement and reduce disputes
- Provides role-based access for municipal officials, contractors, enforcement officers, and citizens

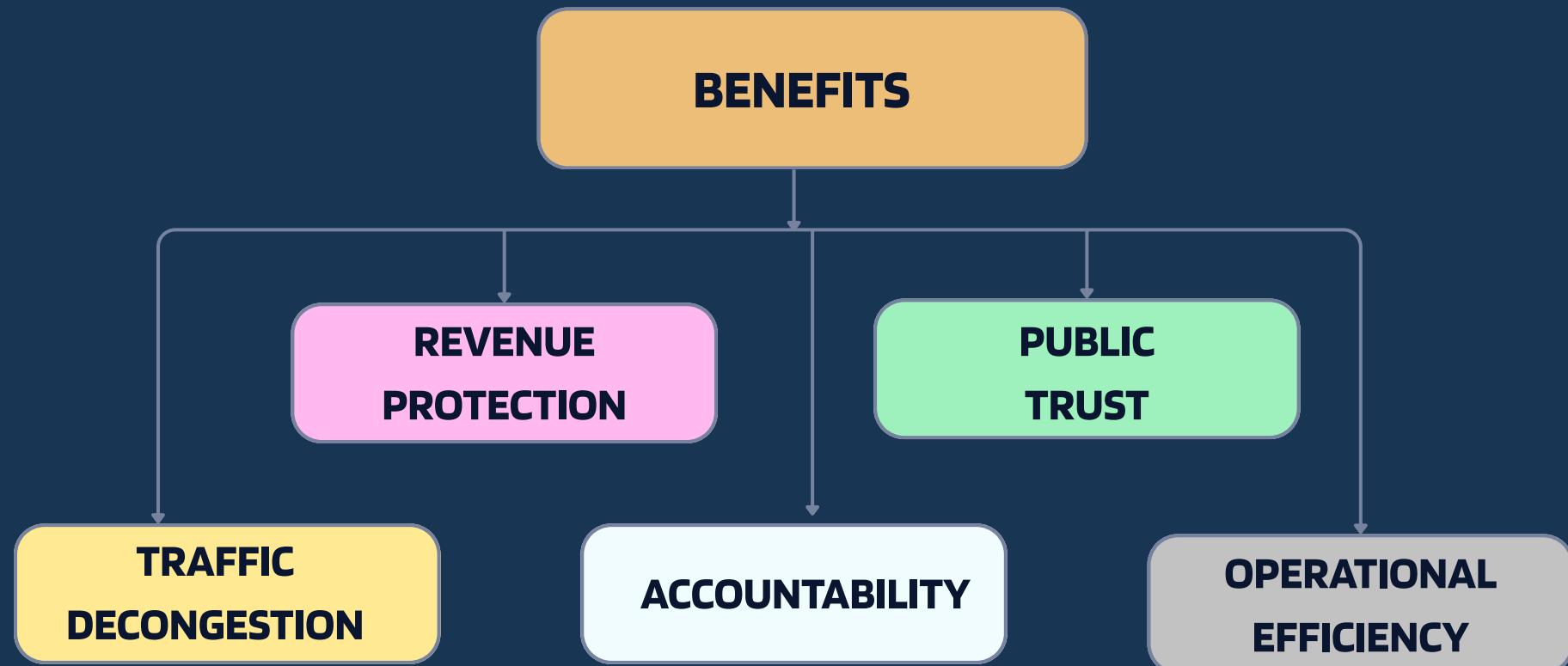


Scalability:

- Scales seamlessly from pilot deployment to hundreds of parking sites across the city without increasing enforcement manpower
- Handles high volumes of real-time parking events during peak hours with consistent performance and low latency
- Supports multi-ward and multi-zone expansion through centralized monitoring and control
- Enables rapid rollout by integrating with existing parking infrastructure with minimal additional hardware



FEATURE/USP



Potential Impact on the Target Audience

Citizens: Reduced congestion, fair parking, better accessibility

Municipal Authorities (MCD): Revenue protection, automated enforcement,

Parking Contractors: Clear compliance, fewer disputes, operational clarity

Enforcement Officers: Faster inspections, reduced workload, digital evidence

City & Environment: Lower congestion emissions, efficient urban mobility

Key Features / Unique Selling Points:

Real-Time Capacity Enforcement:

Continuously monitors parking occupancy and detects overcapacity violations as they occur.

Tamper-Proof Audit Trail:

Creates immutable, time-stamped parking records to ensure transparent and legally defensible enforcement.

Enforcement-First Design:

Focuses on contractor compliance and revenue protection rather than only payment digitization.

Multi-Stakeholder User Experience:

Provides tailored interfaces for municipal officials, contractors, enforcement officers, and citizens.

Infrastructure-Light Deployment:

Integrates with existing parking infrastructure without requiring major hardware upgrades.

REFERENCES/LINKS

• Municipal Parking Capacity Management	• Link
• Real-Time Parking Occupancy Monitoring Systems	• Link
• Contract Compliance in Public–Private Parking Models	• Link
• Urban Traffic Congestion due to Parking Inefficiencies	• Link
• Revenue Leakage in Municipal Parking Operations	• Link
• Tamper-Proof Audit Trails in Civic Systems	• Link
• Source Code Repository –Smart Parking Enforcement	• Link
• Live Deployment – Smart Parking Capacity Enforcement System (PARKSURE)	• Link



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THANK YOU