Smart & Sustainable
Traffic Routing
PRAGATI DHARA
Green Mind Hackathon 2025

Our Team

Ritika Mathur

Infosys Technology Architect with 14+ years in cloud-driven digital transformation, sustainable innovation, and low-carbon infrastructure. ESG CoE contributor, committed to client sustainability, leading workshops on environmental responsibility, energy-efficient applications, and greener footprints for a better planet.

Vaibhav Kulkarni

Senior Technology Architect at Infosys with 24+ years of experience in platform strategy, AI-driven solutions, and sustainability-focused architectures. Active contributor to hackathons and innovation programs, delivering scalable and intelligent enterprise platforms.

Prerak Jain

Technology Lead at Infosys specializing in Generative AI & cloud solutions, passionate about sustainability & innovation. Thriving on designing impactful architectures, delivering client-focused solutions, & continuously upskilling to stay ahead in emerging technologies & digital transformation.

The Daily Reality

Picture this: It's 8 AM in Bangalore. Tanya, a software engineer, has been sitting in her car for 45 minutes. She’s moved just 2 kilometers. Her AC is running, fuel burning, and she's watching her phone's battery drain as fast as her patience..

The Daily Reality

Tanya isn't alone. 50 million Indians face this every single day

The Daily Reality

⏳ **While we wait…**

💸 **₹1,500 crores burned daily in fuel**

🌍 **400 million kg of CO_2 released every day**

🏊 **Enough to fill 160,000 Olympic swimming pools with greenhouse gases**

The Daily Reality

🤔 **But what if she — and millions like her**
🌱 **Could become part of the solution**
💪 **Instead of just victims of the problem?**

OUR VISION

Citizen-Powered Green Mobility

We envision Indian cities where every commuter is a sustainability champion - where your daily drive doesn't just get you to work, it helps build a greener India.

The Pragati Dhara Way

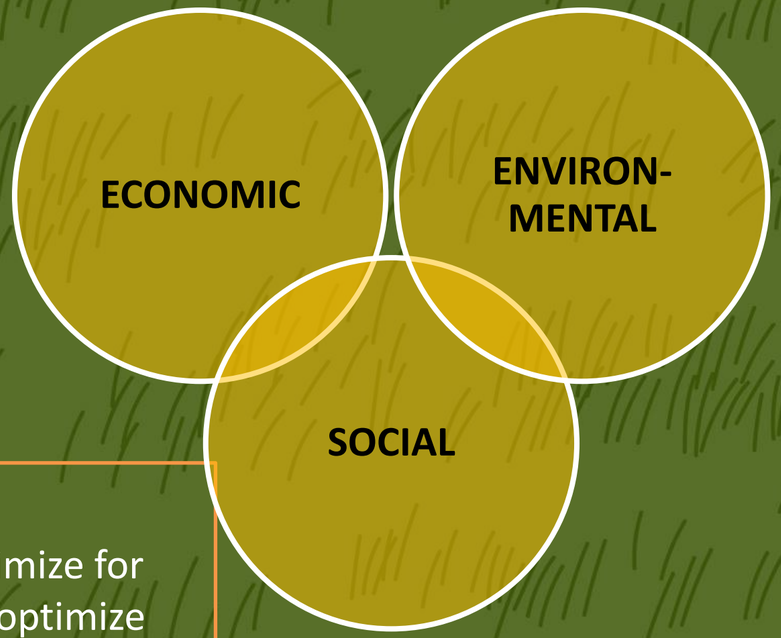
- **Crowd-Powered Green Intelligence** : Citizens contribute data, not just consume routes
- **Sustainable AI** : Energy-efficient algorithms that save carbon, not consume it
- **Rewards That Matter** : Tangible benefits for eco-friendly choices
- **Truly Indian** : Vernacular AI for every Indian, not just English speakers

"Pragati Dhara means 'Progressive Flow'
Transforming traffic from a problem citizens endure into a solution citizens create."

Major AI Traffic Implementations in India

- **Bengaluru Adaptive Traffic Control System (BATCS)**
- **Pune** Expressway Intelligent Traffic Management System (ITMS)
- **Chandigarh** Integrated Traffic Management System (ITMS)
- **Delhi NCR** - AI-based Predictive Analytics for Traffic Surges
- **Mumbai** - AI Adaptive Traffic Signals

Problem Statement: The Triple Crisis



The Fatal Gap

Navigation apps optimize for speed. City systems optimize for flow. But nobody optimizes for sustainability. Nobody empowers citizens. Nobody rewards green choices.

Economic Hemorrhage

- ₹1,500 crores evaporating daily in wasted fuel
- 2.5+ hours lost per commuter in Tier-1 cities
- 30% productivity drain = ₹4 lakh crores annual GDP loss

Environmental Emergency

- 400M kg CO_2 daily from traffic congestion alone
- 45% of urban air pollution from vehicles
- 6 of world's 10 most polluted cities are in India
- We're falling behind on India's 2030 climate commitments (45% emission reduction target)

Social Disconnect

- 600M smartphone users, yet zero participation in traffic solutions
- Citizens are passive victims, not active contributors
- No rewards for sustainable choices
- Existing solutions: expensive infrastructure, slow deployment, limited coverage

The opportunity : Perfect timing

Why is this the perfect moment for Pragati Dhara?

Market Reality

- **Urban mobility market** growing at 15% annually
- **600M smartphone users** : built-in distribution channel
- **2M+ EVs** on roads (3x growth in 2 years) = eco-conscious user base ready

The opportunity : Perfect timing

Why is this the perfect moment for Pragati Dhara?

Policy Tailwinds

✅ **Smart City Mission 2.0** - ₹48,000 crores allocated

✅ **Green Credit Program** - rewards for environmental actions

✅ **Corporate ESG mandates** - companies MUST track emissions

✅ **SDG 11 commitments** - sustainable cities by 2030

✅ India's 45% **emission reduction target** by 2030

The opportunity : Perfect timing

Why is this the perfect moment for Pragati Dhara?

Technology Convergence

- Edge AI maturity (TensorFlow Lite)
- 5G rollout enabling real-time data
- UPI ecosystem proving micro-transaction viability
- Cloud costs down 60% in 3 years

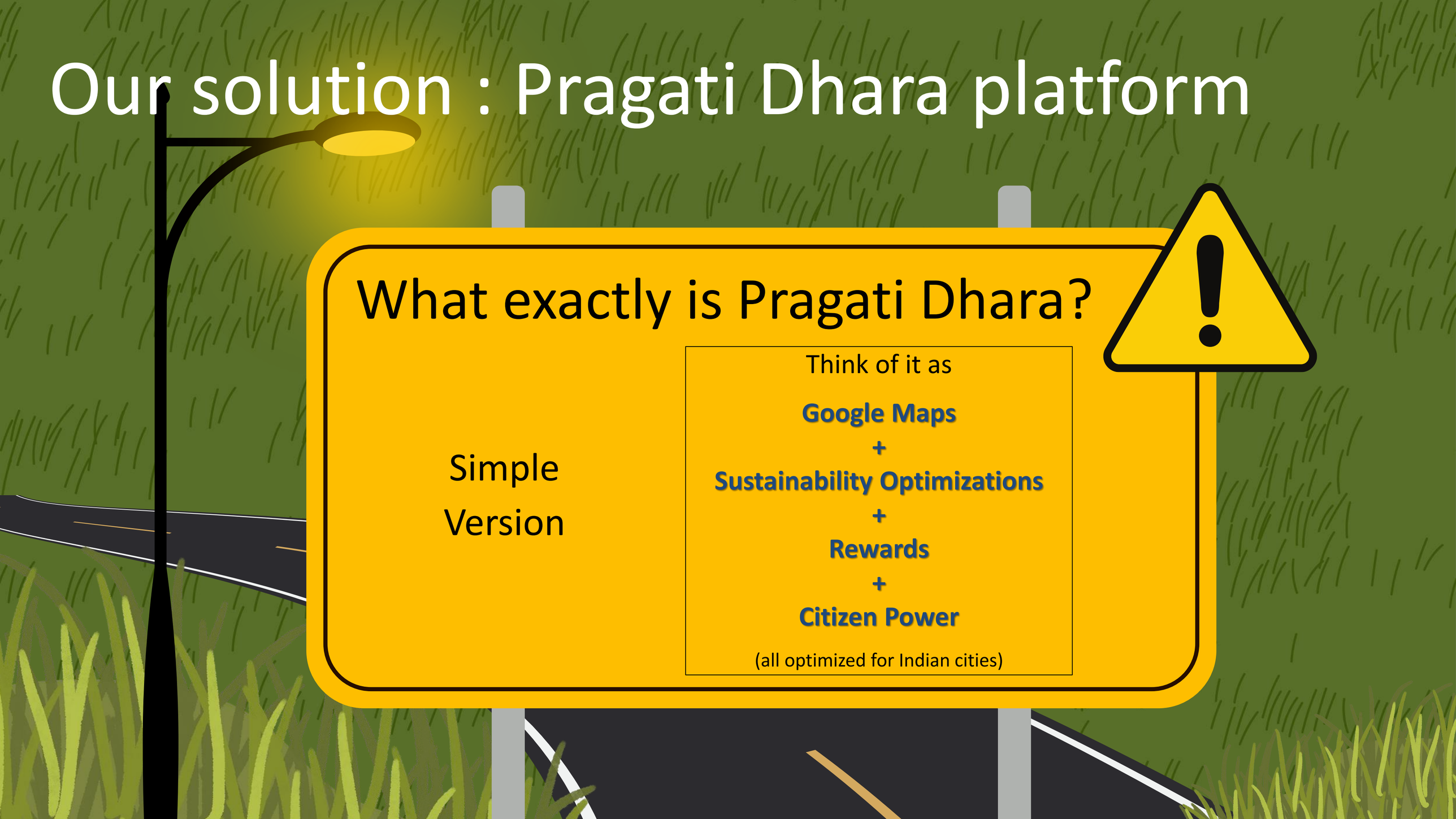
The opportunity : Perfect timing

Why is this the perfect moment for Pragati Dhara?

Social Shift

- **Post-pandemic**: 73% Indians prioritize sustainability (Nielsen 2024)
- **Gen Z/Millennials**: 84% willing to pay for green solutions

Our solution : Pragati Dhara platform



Our solution : Pragati Dhara platform

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Four Pillars of Innovation

Crowd-Sourced Green Intelligence

- **Real-time traffic data** from every user's phone (anonymous, encrypted)
- **Incident reporting**: "Accident on Highway 1" → Reroute 10,000 users in 30 seconds
- **Community-verified** hotspots and road conditions
- **Privacy First**: Federated learning = your data never leaves your device

Sustainable AI Engine

- **Smart Routing**: Google Maps integration for route calculation + our sustainability layer.
- **AI Intelligence**: Qwen 2.5 (1.5B parameters) - optimized for CPU via Ziroh Labs
- **Traffic Prediction**: AI models predict congestion 1 hour ahead
- **Vehicle Intelligence**: Emission calculations for various vehicle types.
- **Green AI Architecture**: CPU-only processing via Ziroh Labs, Qwen 2.5 1.5B model, Optimized compute, Intelligent caching, Hybrid approach
- **LLM Features**: Natural language trip planning, incident report analysis, personalized eco-tips
- **Our AI carbon footprint**: 75% lower than GPU-based alternatives.

Green Points Economy

Earn Points

- **Eco-route**: 10 points/km
- **Carpool**: 25 points/ride
- **Off-peak travel**: 15 points/trip
- **Accurate reporting**: 5 points/incident

Redeem Rewards

- ₹100 = 1000 points (fuel discounts)
- EV charging credits
- Retail vouchers (Amazon, Flipkart)
- Insurance discounts (partnership with ICICI Lombard)

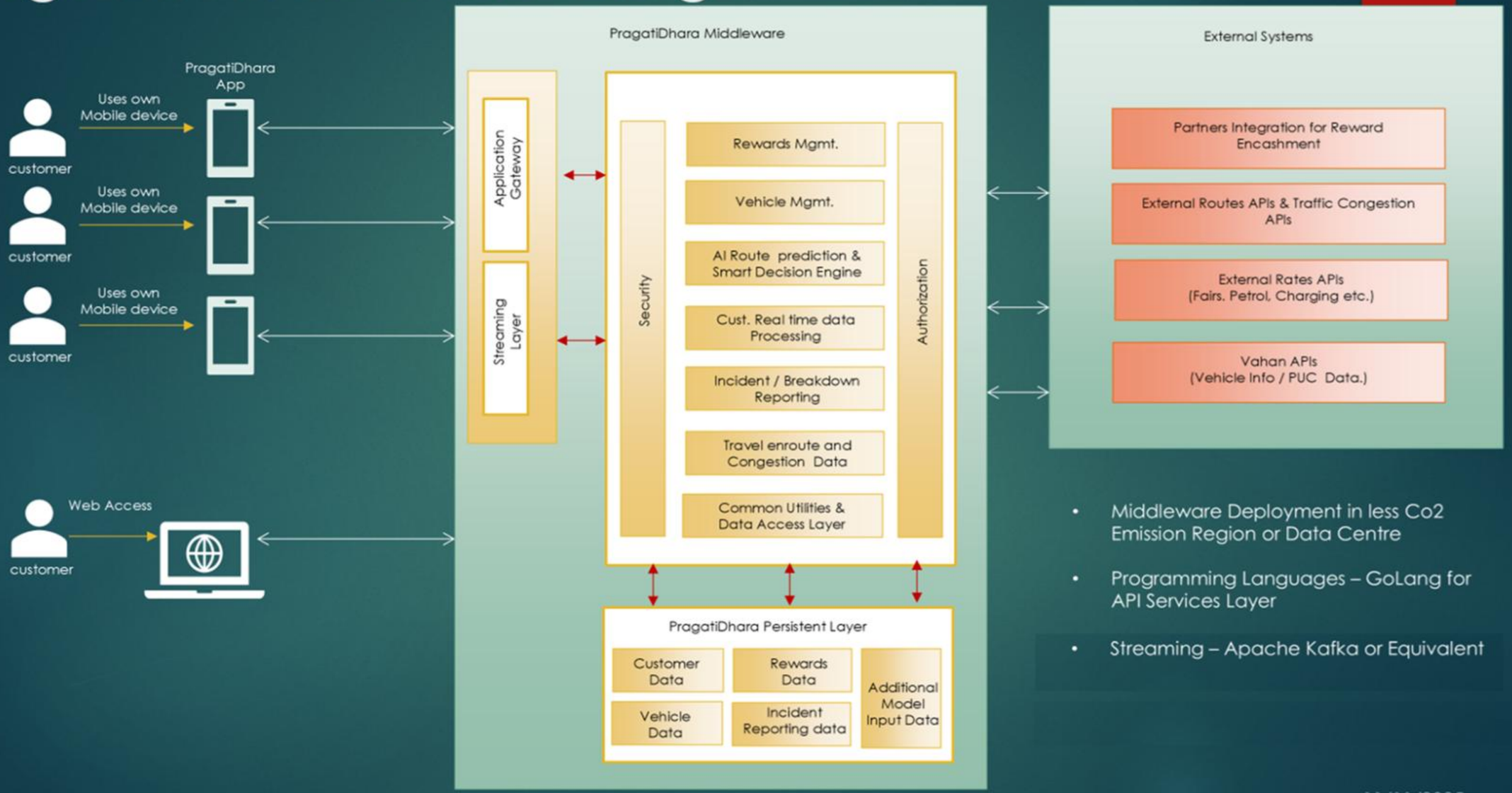
Gamification

- Leaderboards, badges, city challenges

Ecosystem Integration

- **Navigation backbone:** Google Maps API for route calculation and real-time traffic
- **Sustainability layer:** Our AI analyzes Google routes and adds eco-scoring
- **Plug into existing apps:** Enhance Ola, Uber with sustainability insights via API
- **Smart City ready:** ATCS integration for signal optimization
- **Corporate ESG:** Track employee commute emissions (SEBI-compliant reporting)

High Level Solution Design



- Middleware Deployment in less Co2 Emission Region or Data Centre
- Programming Languages – GoLang for API Services Layer
- Streaming – Apache Kafka or Equivalent

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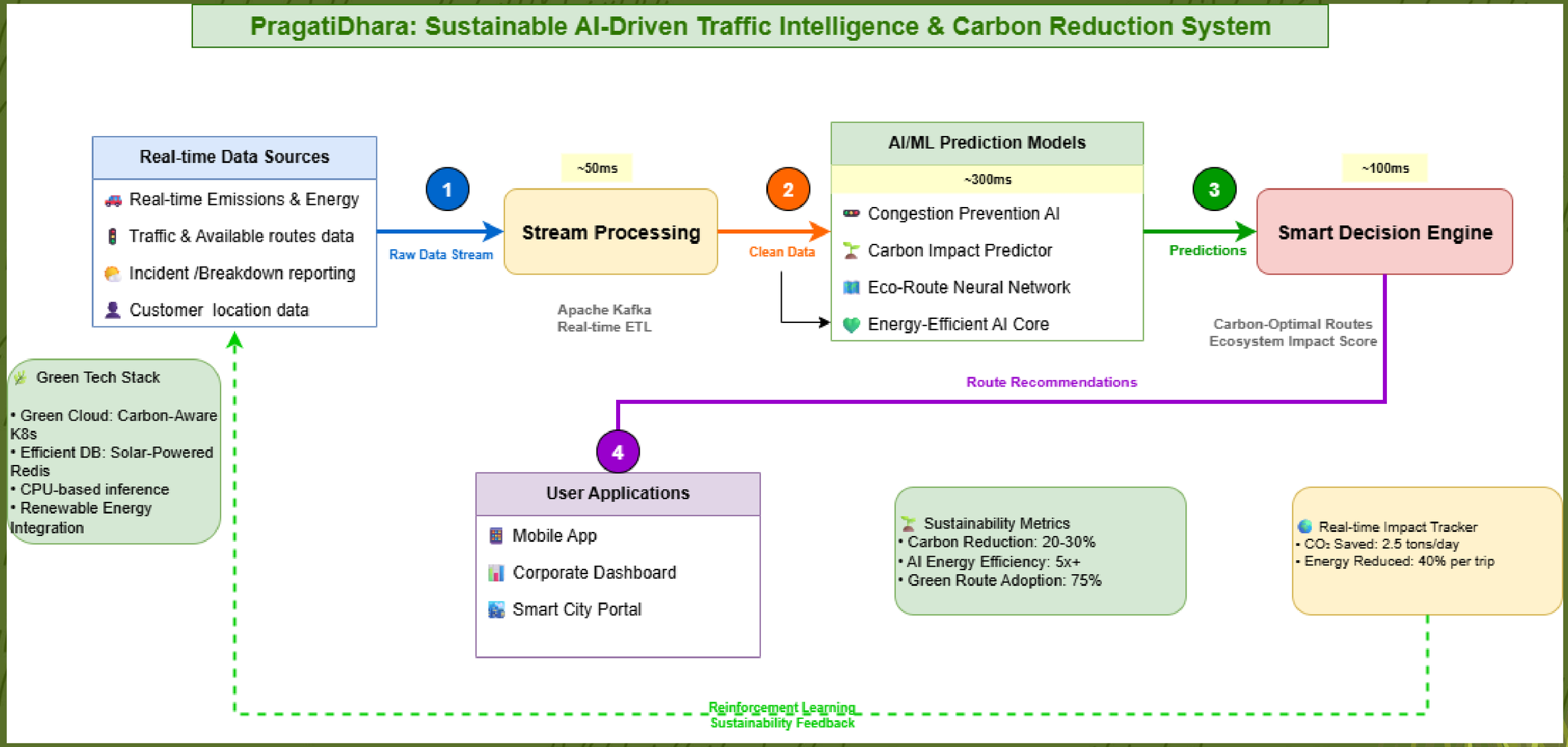
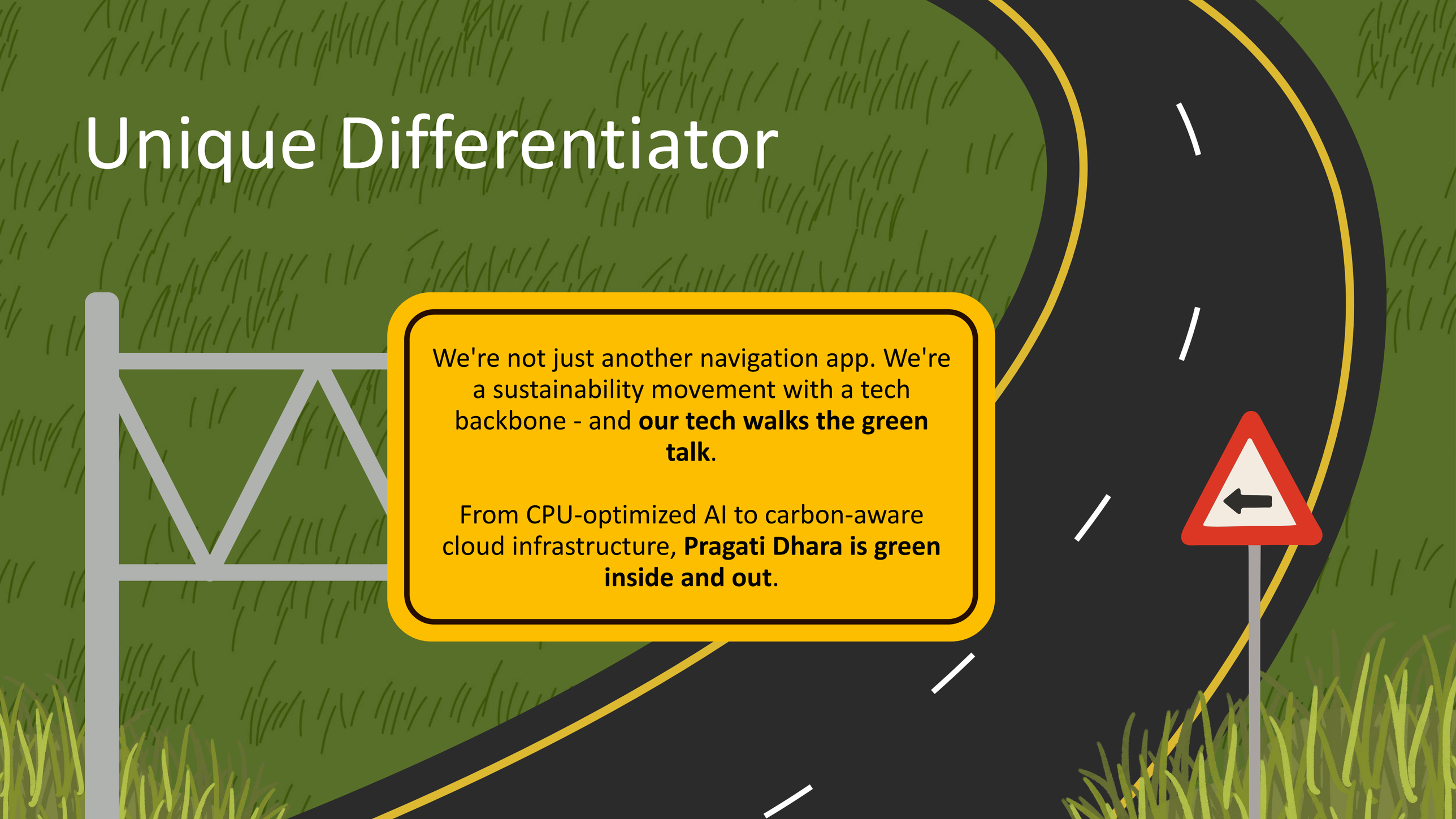
AI Prediction and Smart Decision Engine flow



Unique Differentiator

We're not just another navigation app. We're a sustainability movement with a tech backbone - and **our tech walks the green talk**.

From CPU-optimized AI to carbon-aware cloud infrastructure, **Pragati Dhara is green inside and out**.



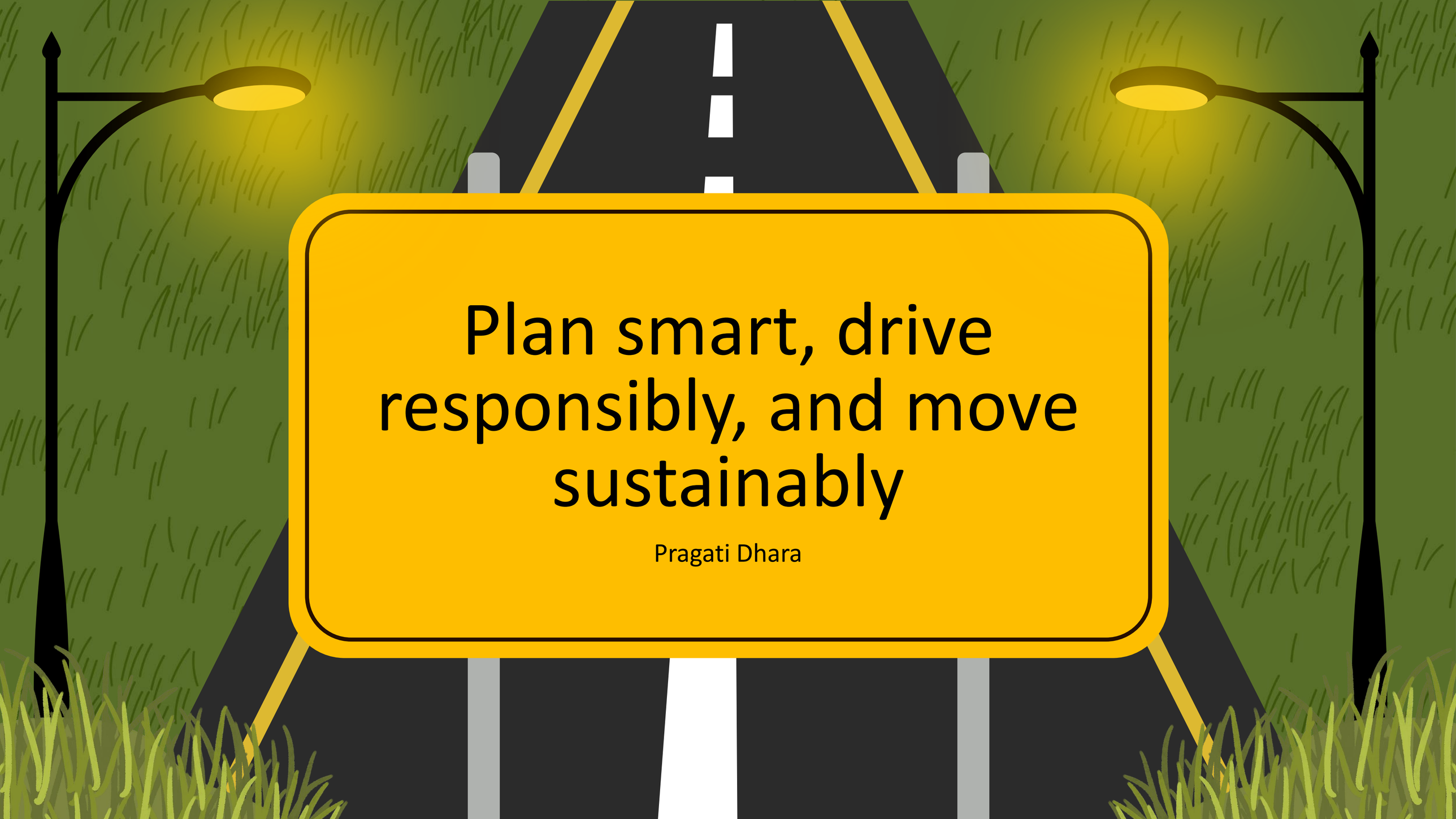
Pragati Dhara
Live Demo

Why Pragati Dhara Wins

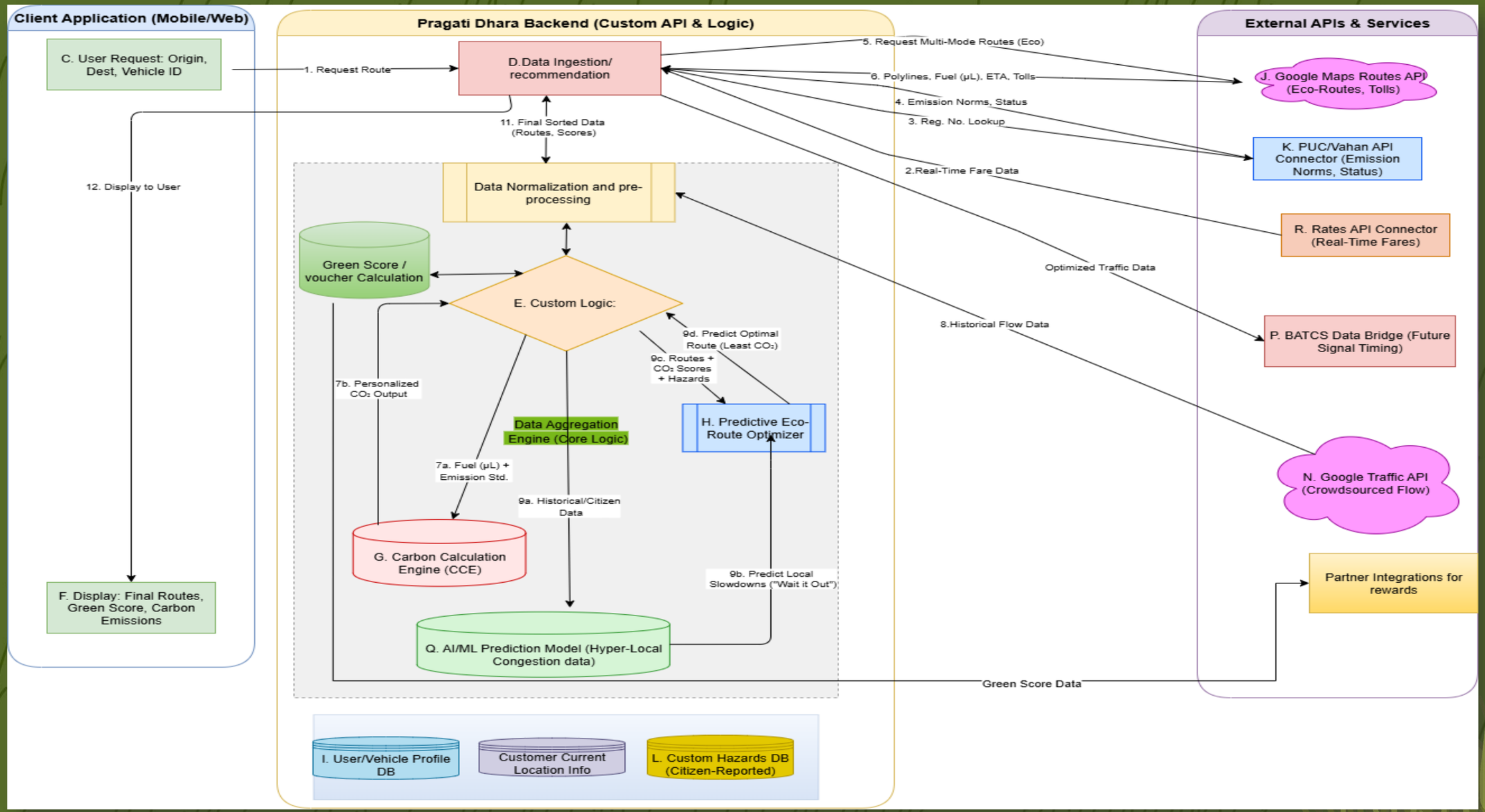
Quick comparison

You might ask: Don't Google Maps and Uber already do this?

What you need	Google Maps	Uber/Ola	Pragati Dhara
Eco-routing	Basic (fuel-efficient)	❌	✅ AI-powered sustainability layer on top of Google Maps
Sustainability rewards	❌	Ride credits only	✅ Green Points for all green choices
Crowd intelligence	Limited	Drivers only	✅ All citizens contribute
AI Technology	Cloud GPUs	Cloud GPUs	✅ CPU-optimized (Ziroh Labs + Qwen 2.5)
LLM Features	Basic suggestions	❌	✅ Qwen 2.5 1.5B for conversational AI
ESG/Corporate integration	❌	❌	✅ SEBI-compliant reporting
Smart City API	❌	❌	✅ Plug-and-play ATCS
Sustainability = Core Mission	❌	❌	✅ **YES**


Plan smart, drive responsibly, and move sustainably
Pragati Dhara

Thank you

Appendix

Detailed Solution Sketch