

AADHAAR SERVICE SATURATION FORECAST & DYNAMIC RESOURCE MANAGEMENT

AN AI DRIVEN APPROACH TO LOAD
BALANCING AND CITIZEN CONVENIENCE

Team Name : VISIONEERS

Team Leader: Gargi Gupta

Team Members: Pranjal Jayswal

Komal Kamal
Tulsi Kewat

CURRENT CHALLENGES IN AADHAAR SERVICE DELIVERY

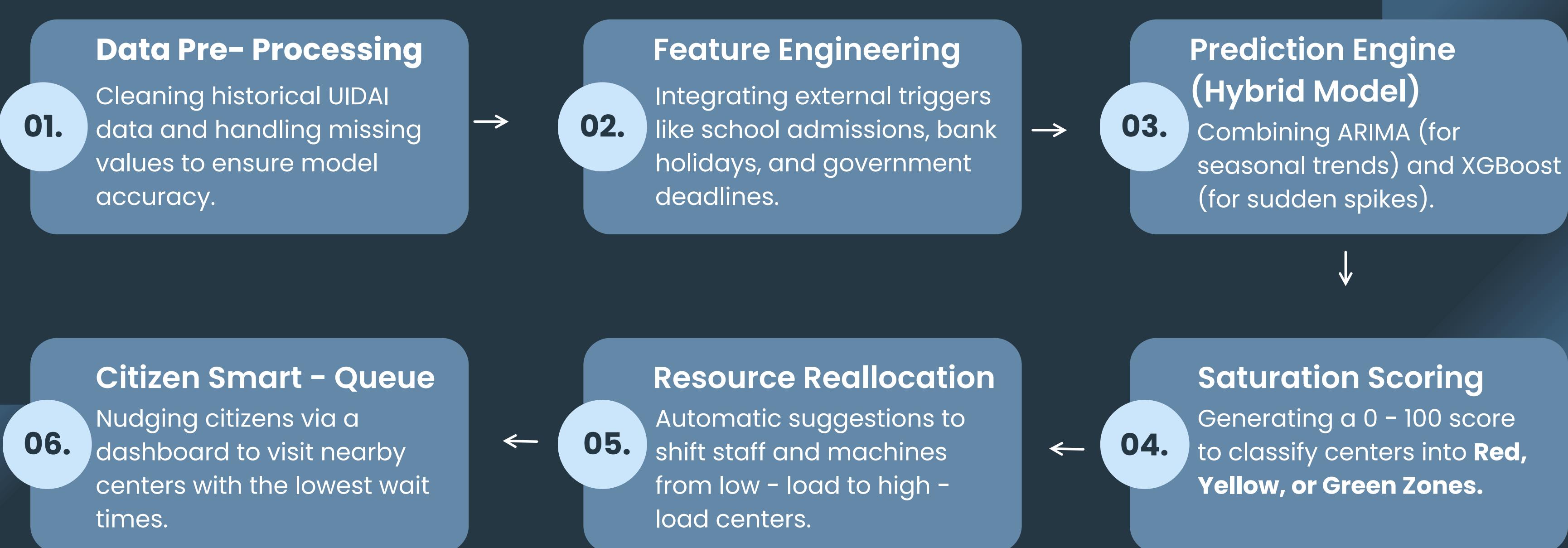


- Unpredictable Surges
- Resource Imbalance
- Citizen Frustration
- Static Scheduling

*Current systems don't adapt to real time demand.

**Scheme Launch → Sudden Crowd →
System Crash → Public Trouble**

PROPOSED SOLUTION: AI- DRIVEN FORECAST & MANAGEMENT



DEEP DIVE: PREDICTION ENGINE & SATURATION LOGIC

Tech Stack:

- **Language:** Python 3.x
- **Models:** ARIMA (Time-series analysis for historical trends) + XGBoost (Handling sudden surges/outliers).
- **Libraries:** Pandas (Data Handling), Scikit-Learn (ML modeling), Plotly (Dashboard visualizations).

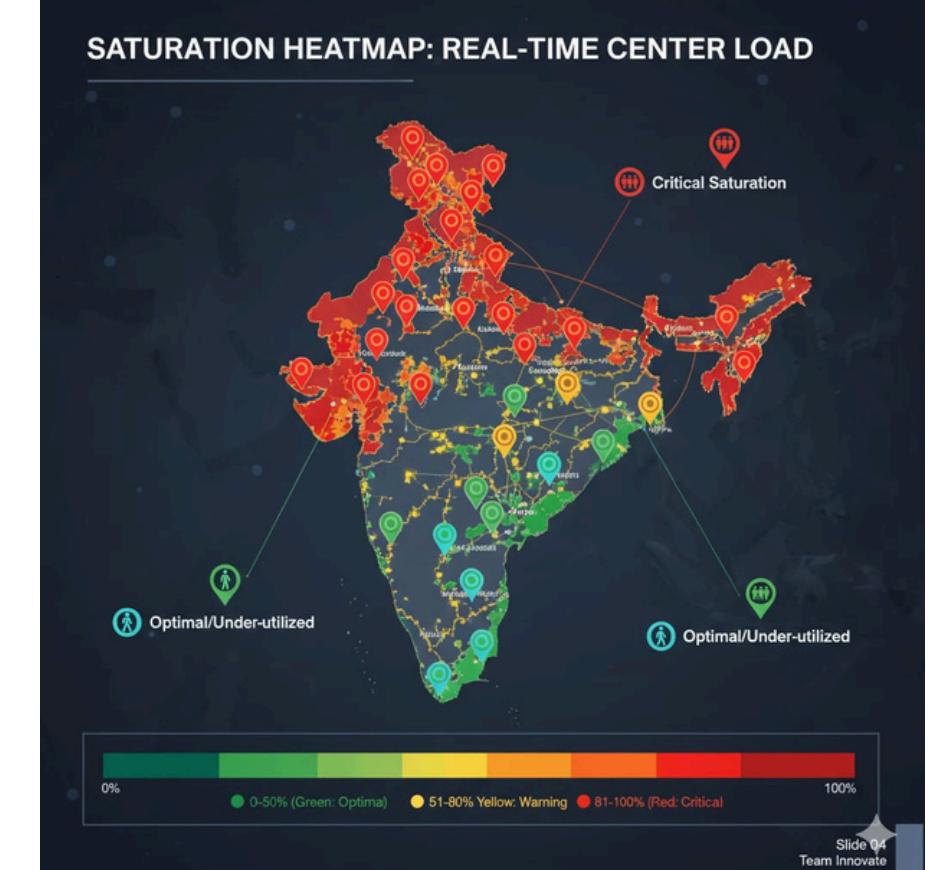
Saturation Scoring Logic:

$$\text{Score} = (0.4 * H) + (0.4 * E) + (0.2 * R)$$

- H (Historical) : Past crowd data.
- E (External) : Deadlines, schemes, holidays.
- R (Real - time) : Current queue length.

The Saturation Scale:

Score Range	Zone	Status
0 - 50	Green	Optimal: Resources are free.
51 - 80	Yellow	Warning: Crowd increasing.
80 - 100	Red	Critical: Need immediate staff shifting.

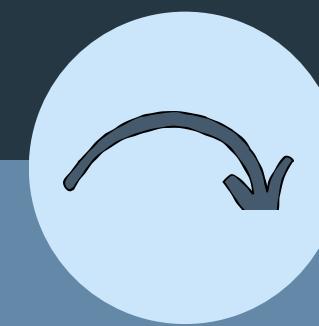


SMART ALLOCATION : TURNING INSIGHTS INTO ACTION



The Reallocation Logic

- Trigger
- Scan
- Suggestion



Center A ← Machine
Staff Movement
← Center B



Expected Impact

- Wait Time Reduction
- Operational Efficiency
- Stress Management

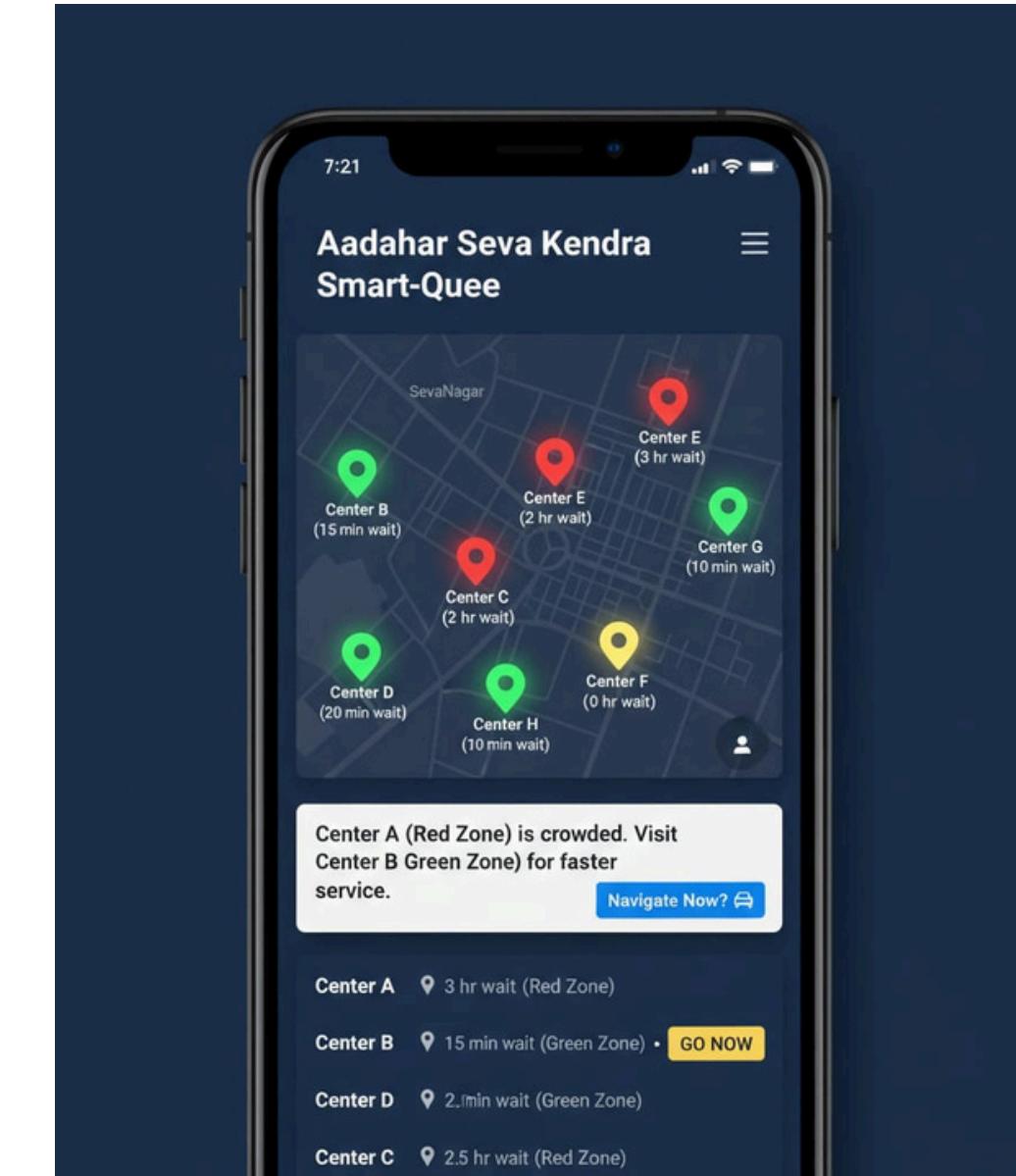
CITIZEN EMPOWERMENT: SMART QUEUE DASHBOARD

The Nudge Logic : Get Notified

Alert: "Current wait time at Center A is 3 hours. Nearby Center B has only 15 minutes wait time. Would you like to navigate there?"

Impact on Citizen

- Time Saving.
- Better Planning.
- Crowd Distribution.



THE WAY FORWARD : SCALING FOR NATIONAL IMPACT

PAN – India Implementation



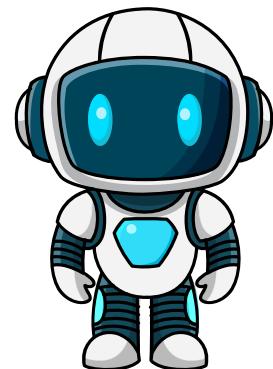
- **National Rollout :** The prototype can be scaled across all 14,000+ Aadhaar Centers (Aadhaar Seva Kendra) in India.
- **Centralized UIDAI Dashboard :** A unified command center for UIDAI officials to monitor real - time saturation levels across any state or district.

Multi – Sector Adaptation

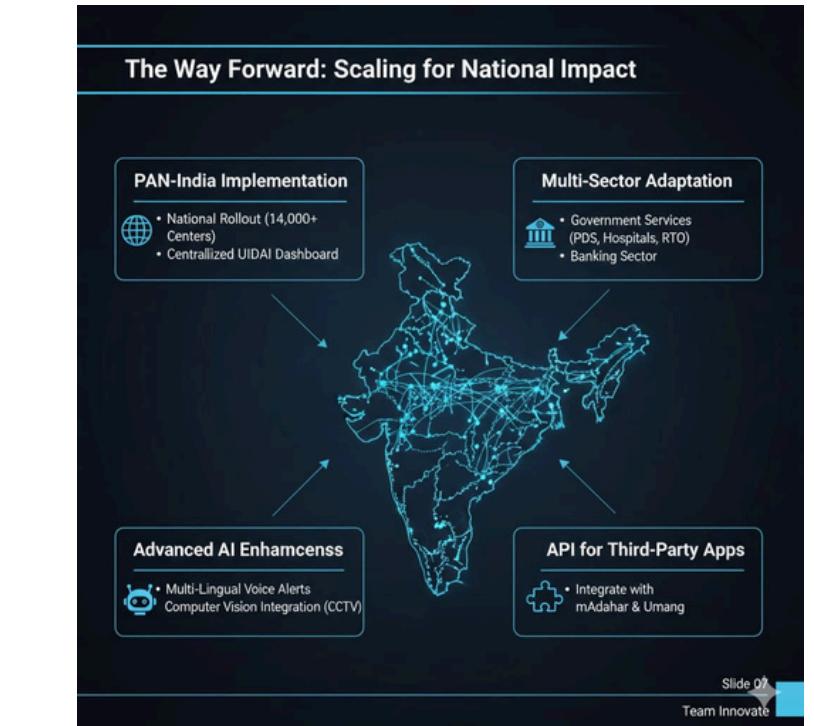


- **Government Services:** The same predictive logic can be applied to Ration Shops (PDS), Government Hospitals (OPD queues), and RTOs.
- **Banking Sector :** Managing footfall at rural and urban bank branches during peak hours or financial year endings.

Advanced AI Enhancements



- **Multi - Lingual Voice Alerts :** Integration with IVR and Voice Assistants (like Alexa or Google Assistant) to guide citizens in their local languages.
- **Computer Vision Integration :** Using existing CCTV feeds at centers to count real - time crowds with even higher precision than manual data.



PROTOTYPE

Click here to view Live Prototype:

<https://uidai-app-prototype-qkyappujzvvgqrbiu4tp4e.streamlit.app/>

ID Aadhaar Service Saturation Dashboard

Official Smart Governance Portal - Resource Optimization Engine

Real-time Demand Triggers

Govt Scheme Active (+20%) Public Holiday (+10%) Bank Deadline (+15%)

Total Centers: 5 Avg Wait Time: 79 m Critical Centers: 1 Active Boost: +0%

Live Saturation Status Matrix

Center Name	Historical Load	Real-Time Queue	Active Counters	Staff Efficiency	Latitude	Longitude	Saturation Score
0 ASK - Napier Town	65	80	5	0.900000	23.168000	79.932000	68
1 ASK - Wright Town	40	35	3	0.850000	23.163000	79.928000	39
2 ASK - Vijay Nagar	85	95	6	0.950000	23.201000	79.895000	87
3 ASK - Ranjhi	50	55	4	0.700000	23.185000	79.980000	51
4 ASK - GCF Jabalpur	30	20	2	0.800000	23.190000	79.960000	28

Regional Load Heatmap

Digital India Initiative | UIDAI Command Dashboard
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ID Aadhaar Service Saturation Dashboard

Official Smart Governance Portal - Resource Optimization Engine

Real-time Demand Triggers

Govt Scheme Active (+20%) Public Holiday (+10%) Bank Deadline (+15%)

Generate E-Token

Select Center: ASK - GCF Jabalpur
Full Name as per Aadhaar: xyz
Book Appointment

Center Statistics

Center Saturation: 28%

Official E-Token UID-9399 Generated!

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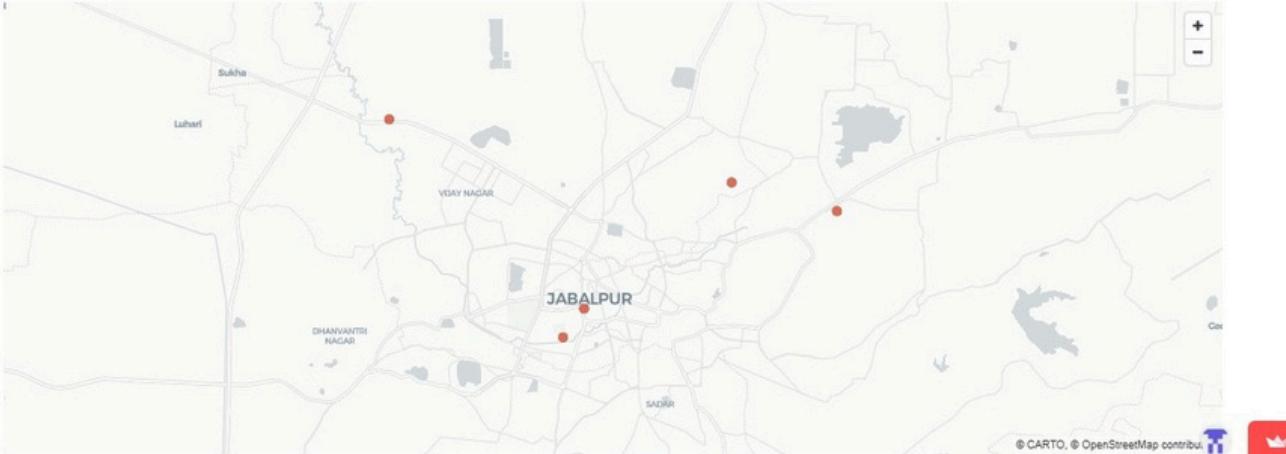
 AADHAAR

ID Aadhaar Service Saturation Dashboard

Official Smart Governance Portal - Resource Optimization Engine

GIS Center Locator

📍 Nearest ASK located: ASK - Napier Town (1.85 KM away)



UIDAI Official

Portal Access: Citizen

Service Selection:

- Overview
- Citizen Portal
- Center Locator Map**
- Admin Strategic Dashboard
- Forecast & Insights

Mock GPS Lat: 23.17

Mock GPS Lon: 79.95

 AADHAAR

ID Aadhaar Service Saturation Dashboard

Official Smart Governance Portal - Resource Optimization Engine

⚠️ Access Restricted. Official Login Required.

UIDAI Official

Portal Access: Citizen

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- Overview
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 AADHAAR

ID Aadhaar Service Saturation Dashboard

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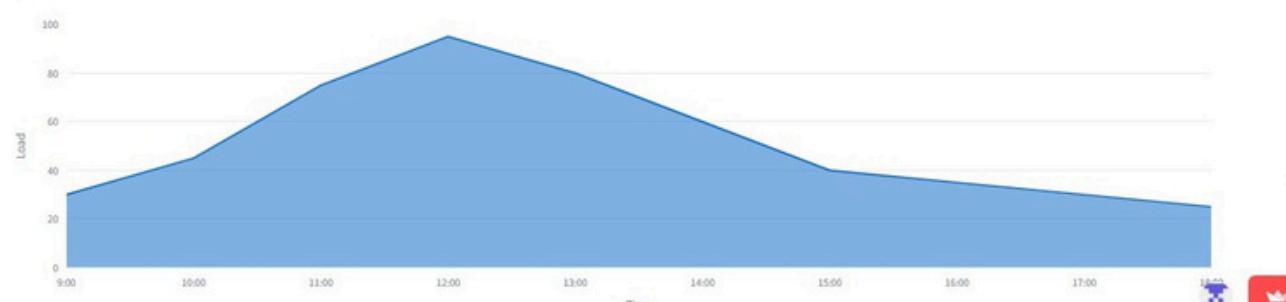
Administrative Command Center

⚠️ STRATEGIC ALERT: ASK - Vijay Nagar Capacity Breached.

Execute Resource Shifting

Order dispatched to UIDAI Regional Office.

Regional Demand Prediction

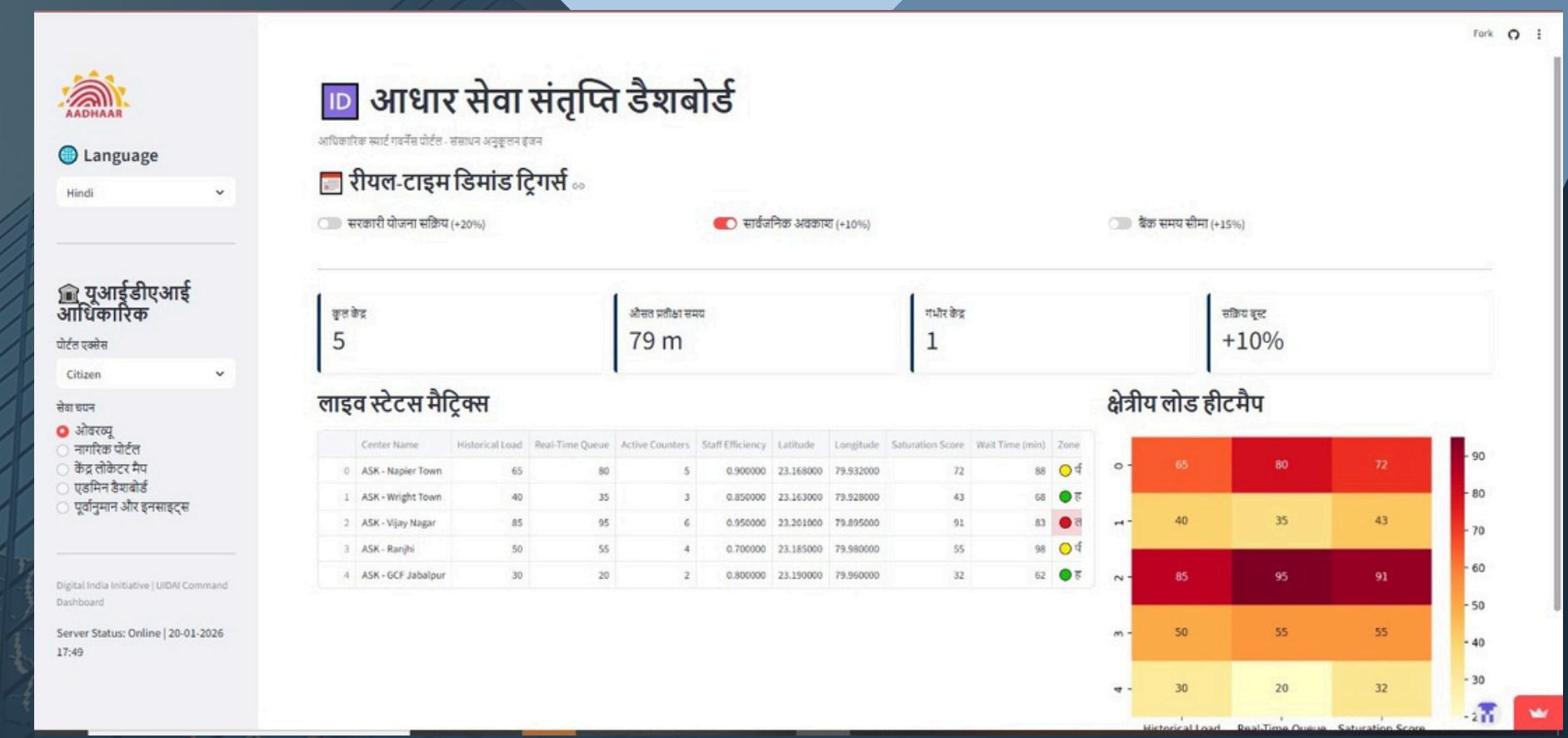
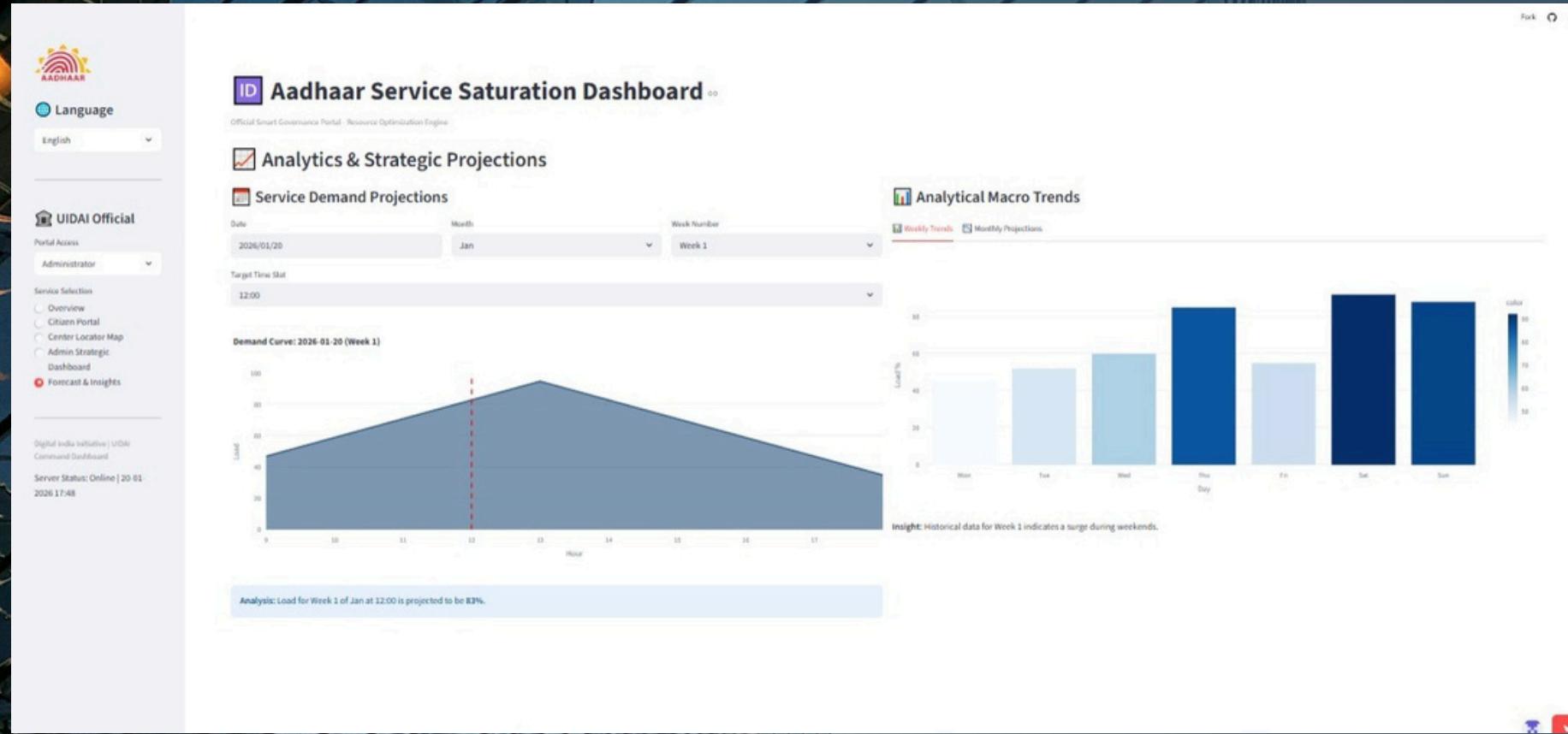


Load

Time

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PREDICTING CROWD, MANAGING
RESOURCES, AND EMPOWERING
CITIZENS.

THANK YOU