



# EpiWatch

## (Predictive Disease Outbreak Dashboard)

- Problem Statement ID : PS 05
- Team Name : THE AUTOBOTS
- Team ID : HK032
- Team Members :Ayushi Sharma ( Team leader)  
Khushi vats  
Utkrisht rawat  
Reeyal singh oinam

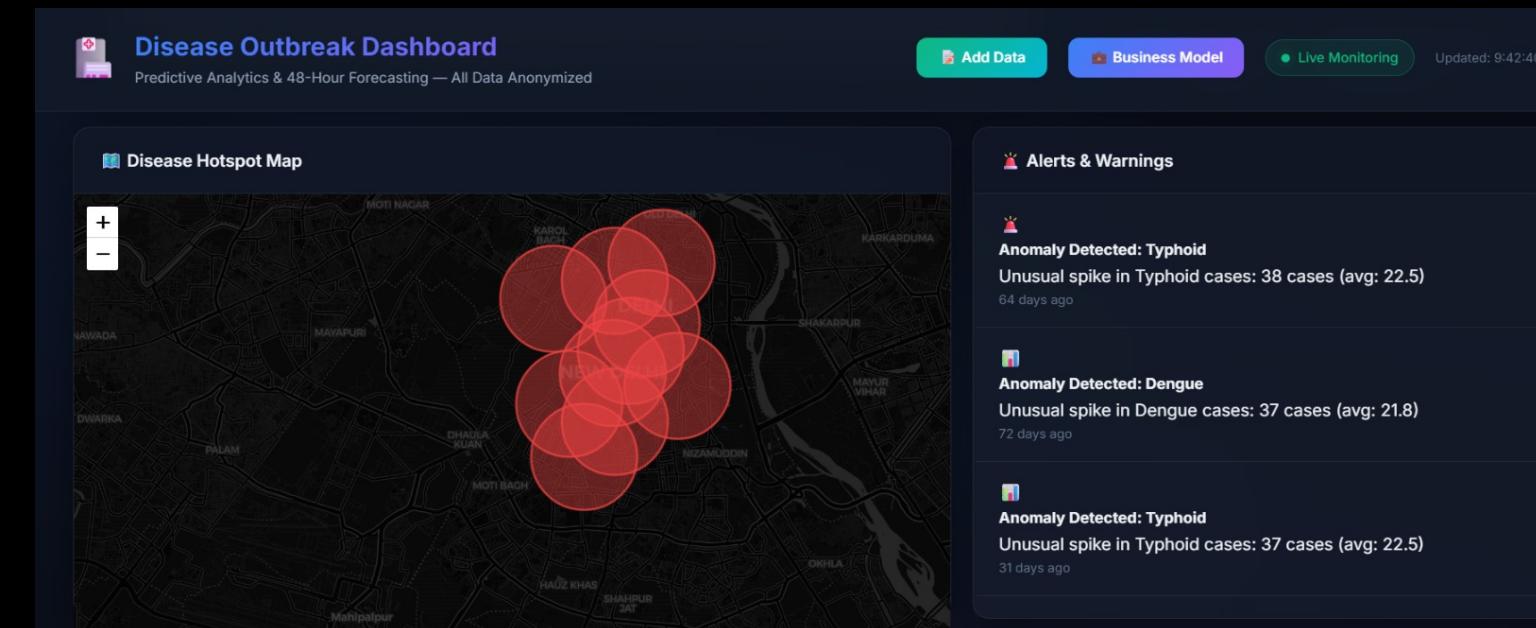


## Problem & SOLUTION

- Disease outbreaks spread rapidly
- Authorities respond after cases spike
- Hospital & water data are not integrated
- No real-time hotspot visualization

Result: Delayed response & increased health risk

### Prototype img 1.1



### Prototype img 1.2



- Integrates hospital & water quality data
- Detects abnormal case spikes
- Predicts outbreaks 48 hours in advance
- Classifies region-wise risk levels
- Displays hotspot heatmaps
- Generates automated alerts

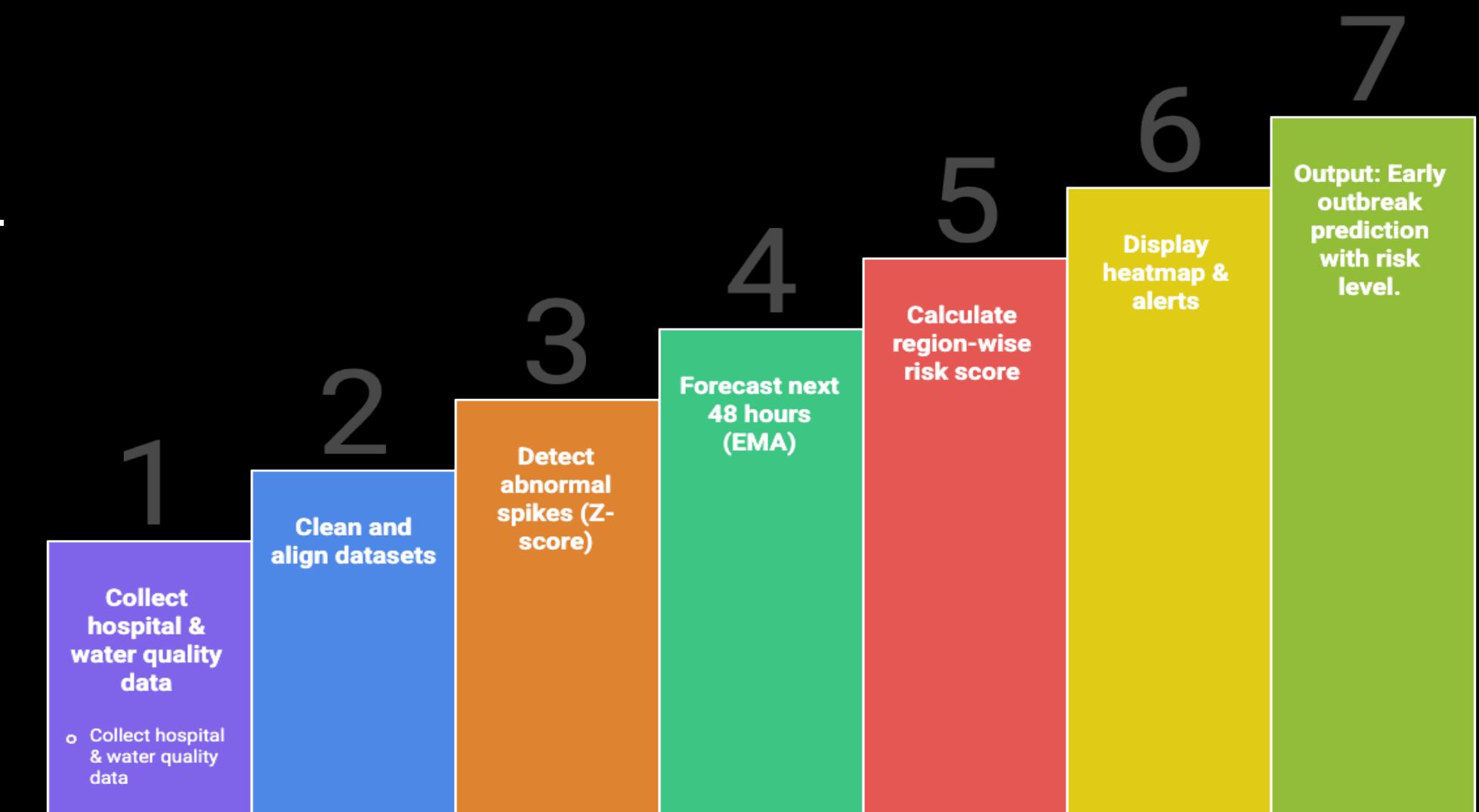


## Flow of Solution

- Collect hospital & water quality data
- Clean and align datasets
- Detect abnormal spikes (Z-score)
- Forecast next 48 hours (EMA)
- Calculate region-wise risk score
- Display heatmap & alerts

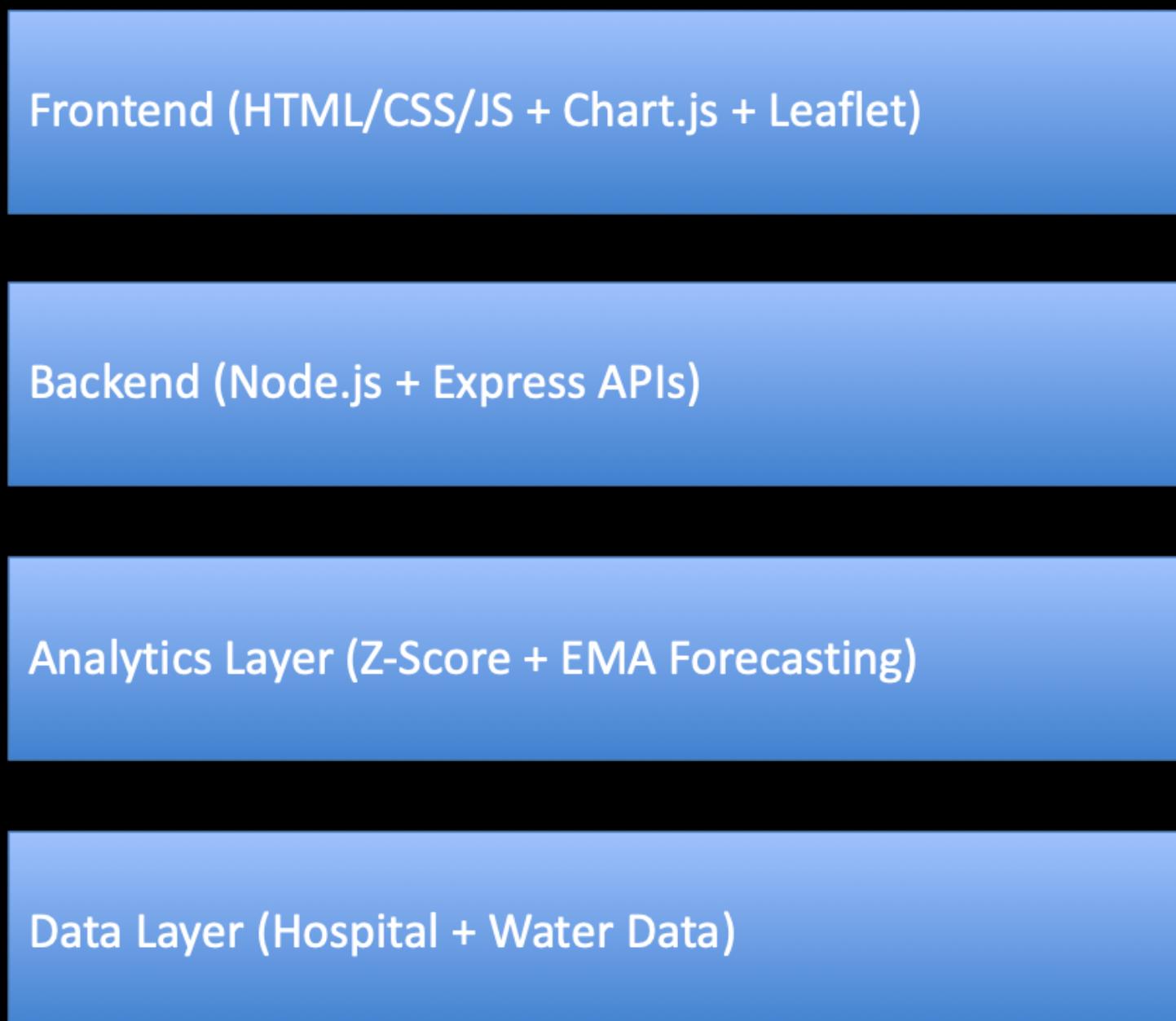
Output: Early outbreak prediction with risk level.

Early Outbreak Prediction Process



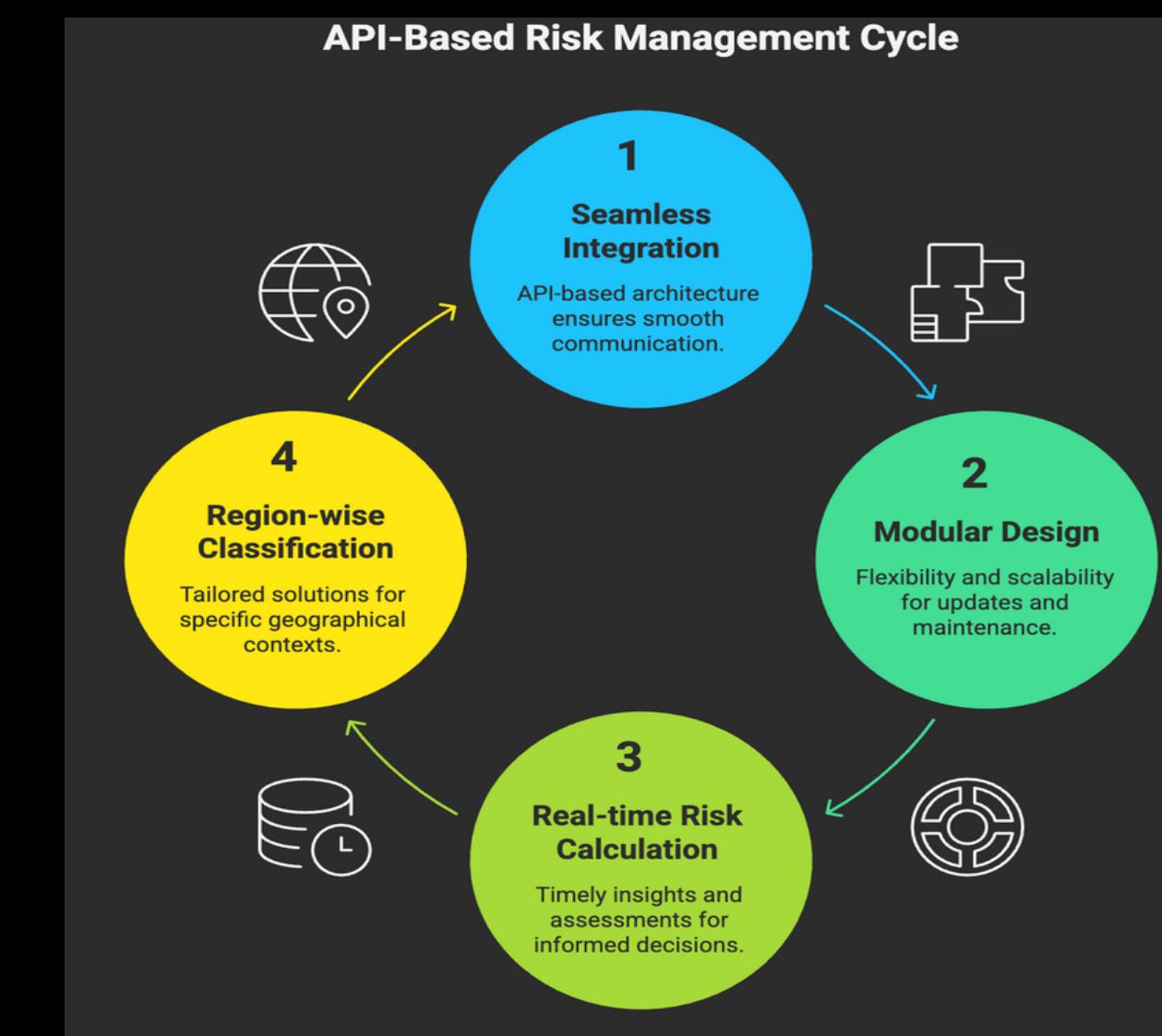


## TECH STACK & APPROACH



### Approach

- API-based architecture
- Modular design
- Real-time risk calculation
- Region-wise classification



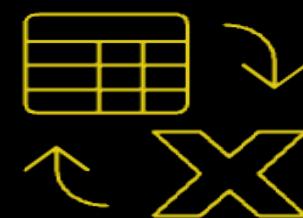


## UNIQUENESS & INNOVATION FACTOR

- Combines health + environmental data
- Predicts 48 hours in advance
- Real-time hotspot heatmap
- Hybrid statistical + forecasting model
- Severity-based alert system

### Air Quality Monitoring Features

#### Air Quality Monitoring Features



##### Data Combination

Combines health and environmental data for comprehensive analysis.



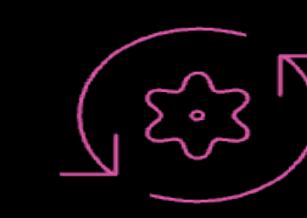
##### Predictive Power

Predicts air quality up to 48 hours in advance.



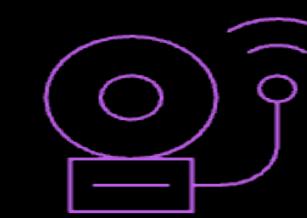
##### Hotspot Heatmap

Displays a real-time heatmap of air quality hotspots.



##### Hybrid Model

Utilizes a hybrid statistical and forecasting model.



##### Alert System

Implements a severity-based alert system for air quality issues.



## Feasibility & Challenges

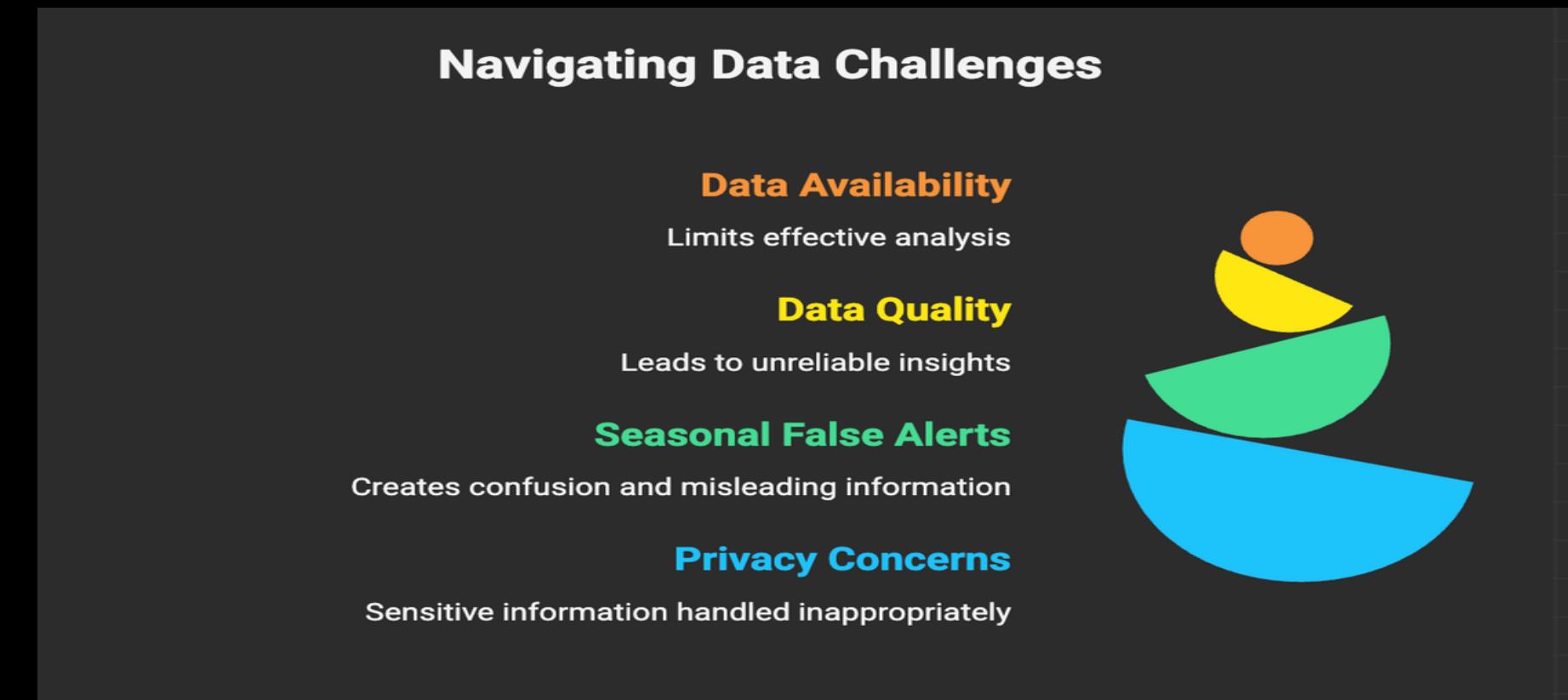
### Feasibility

- Scalable REST APIs
- Cloud-deployable
- Open-source technologies
- Easily integrable with real datasets



### Challenges

- Data availability
- Data quality issues
- Seasonal false alerts
- Privacy concerns





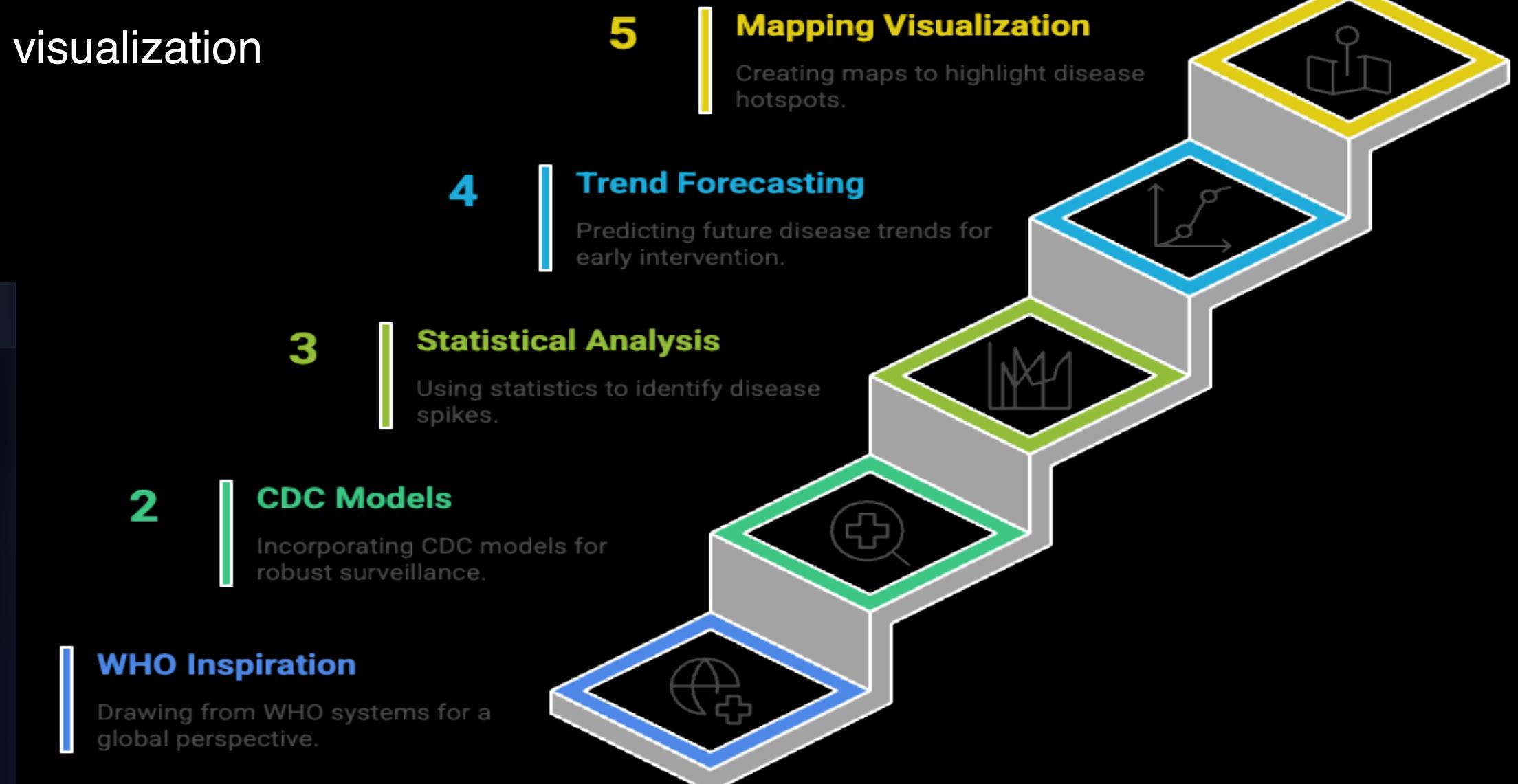
## Research & Reference

- Inspired by WHO outbreak monitoring systems
- Based on CDC disease surveillance models
- Uses statistical analysis for spike detection
- Applies trend forecasting for early prediction
- Utilizes mapping techniques for hotspot visualization

### Prototype img 1.3



### Building an Effective Disease Surveillance System





# HACK KRMU 5.0

SEGMENT	NEED	IMPACT
Municipal Corporations	Monitor water quality and disease patterns citywide	High Impact
State Health Departments	Early outbreak detection and resource allocation	High Impact
Hospitals & Hospital Networks	Prepare for patient surges in advance	Medium Impact
WHO / UNICEF / NGOs	Disease surveillance in developing regions	Global Impact
Water Supply Boards	Prioritize water treatment based on disease data	Operational



## Business Model

[← Back to Dashboard](#)

### Executive Summary

The Predictive Disease Outbreak Dashboard is a SaaS platform that helps government health departments, municipal corporations, hospitals, and NGOs predict disease outbreaks up to 48 hours in advance by integrating hospital admission data with water quality reports.

**Core Value Proposition:** Reduce outbreak response time from days to hours, saving lives and reducing healthcare costs by up to 40% through early detection and automated alerts.

SEGMENT	NEED	IMPACT
Municipal Corporations	Monitor water quality and disease patterns citywide	High Impact
State Health Departments	Early outbreak detection and resource allocation	High Impact
Hospitals & Hospital Networks	Prepare for patient surges in advance	Medium Impact
WHO / UNICEF / NGOs	Disease surveillance in developing regions	Global Impact
Water Supply Boards	Prioritize water treatment based on disease data	Operational



## Roadmap

PHASE	TIMELINE	MILESTONES
Phase 1 — MVP	Month 1-3	Core dashboard, fake data demo, pilot with 1 municipality
Phase 2 — Integration	Month 4-6	Real hospital + water data pipelines, SMS alerts
Phase 3 — ML Upgrade	Month 7-9	Advanced ML models (LSTM/ARIMA), weather data integration
Phase 4 — Scale	Month 10-12	Multi-city deployment, mobile app, API marketplace

### Projected Impact

Based on deployment in a city with 10 zones and ~10,000 monthly disease cases:

METRIC	BEFORE	AFTER	IMPROVEMENT
Outbreak detection time	5-7 days	12-24 hours	~85% faster
Response time	3-5 days	Same day	~80% faster
Healthcare costs	Baseline	Reduced	~30-40% savings
Data collection	Manual/weekly	Automated/daily	Real-time

### Competitive Advantage

- Predictive, not reactive:** Most existing systems only report past data — we forecast 48 hours ahead
- Cross-data correlation:** We uniquely combine water quality + hospital data for deeper insights
- Privacy-first:** Fully anonymized — no patient identity stored or shared (HIPAA/DPDP compliant)
- Low-cost deployment:** Runs on standard servers, no expensive infrastructure needed
- Easy to understand:** Simple, well-documented codebase that health IT teams can maintain

### Revenue Model

PLAN	PRICE	FEATURES	TARGET
Basic	₹25,000/month	Dashboard, daily reports, 5 zones	Small municipalities
Professional	₹75,000/month	All analytics, 48h forecast, 20 zones, SMS alerts	City corporations
Enterprise	₹2,00,000/month	Unlimited zones, API access, custom ML models, priority support	State governments, NGOs

#### Additional Revenue Streams

- Custom integration fees:** ₹5-10 lakhs one-time for hospital/water board data pipeline setup
- Training & consulting:** ₹50,000 per workshop for health department staff
- Data analytics reports:** Quarterly outbreak risk assessment reports

08