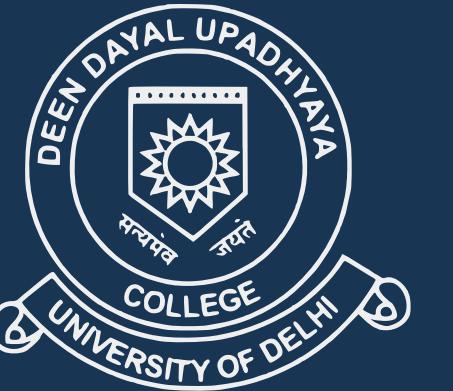


I-N
Delhi Transport Corporation



HACK4DELHI

Pitch Directly to the Government. Build for the Nation.

Team Name : Dominators

B.Tech- IT 2029

Indira Gandhi Delhi Technical University for Women
(IGDTUW)

Members name and Affiliation:

- 1.) Swikriti Singh- Team Leader
- 2.) Sonali K. Jha- Team Member
- 3.) Ria Saraswat- Team Member



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PROBLEM STATEMENT

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Domain : Civic Tech



Delhi faces recurring water-logging during the monsoon season leading to traffic paralysis, infrastructure damage, economic losses, and public safety risks.

Despite the availability of rainfall data, drainage records, and complaint systems, municipal response remains largely inactive.

As a result, pump deployment, desilting, traffic diversion, and emergency response are often delayed, increasing citizen inconvenience and governance pressure.



The challenge is not rainfall – it is the lack of predictive, data-driven decision support for urban flood management.

Problem Statement: 4

RECURRING URBAN WATER LOGGING & LACK OF PREDICTIVE MONSOON PREPAREDNESS IN DELHI

TRAFFIC PARALYSIS



INFRASTRUCTURE DAMAGE



LACK OF PREPAREDNESS



NO INTEGRATED SYSTEM



DELAYED RESPONSE



CITIZEN INCONVENIENCE & GOVT PRESSURE

Current problems





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SOLUTION DESCRIPTION

- INTEGRATED PLATFORM COMBINING HISTORICAL DATA, MPI, DRAIN CHOKING PROBABILITY , APIS
- PREDICTS AND MAPS WATER-LOGGING HOTSPOTS AS PER THE WARDS OF NEW DELHI.
- ASSESSES MONSOON PREPAREDNESS USING DATA-DRIVEN SCORING.
- PROVIDES REAL-TIME RISK VISIBILITY FOR MUNICIPAL AUTHORITIES.
- ENABLES PROACTIVE PLANNING AND EARLY RESPONSE THROUGH ACTIONABLE INSIGHTS.

Unlike traditional flood maps or post-event reporting tools, this system focuses on predicting governance failure before visible flooding occurs, enabling preventive action rather than reactive response.

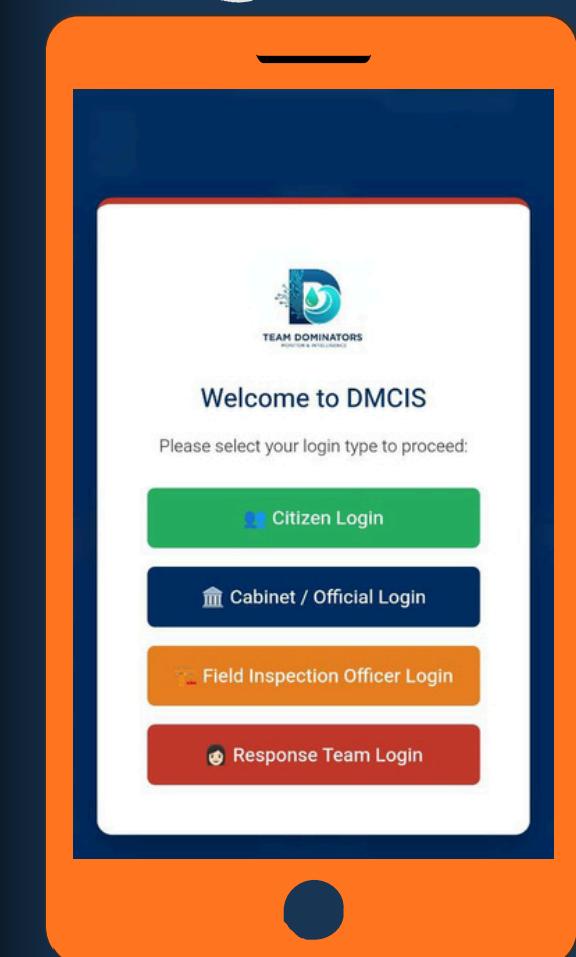
**WHAT
MAKES
US
DIFFERENT
?**

Our Working
prototype!

SOLUTION



This solution transforms monsoon management from reactive response to predictive urban governance.



GIS-BASED CITY
DASHBOARD



WARD-WISE
RISK HEATMAPS



PREDICTIVE RISK ENGINE : USES RAINFALL,
DRAINAGE, AND HISTORICAL DATA



COST EFFECTIVE
LOW COST
HARDWARE
SENSOR



DECISION SUPPORT
SYSTEM, PUMP
DESLTING



CITIZEN
REPORTING
INTERFACE

I-N



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ARCHITECTURE

THE SYSTEM FOLLOWS A FIVE-LAYER MODULAR ARCHITECTURE :

FRONTEND:

NETLIFY-HOSTED, INTERACTIVE
MAP, DASHBOARD, CITIZEN REPORT

BACKEND:

HANDLES API REQUEST, DATA
AGGREGATION, AI INTEGRATION (RISK
COMPUTATION LOGIC)

DATABASE:

STORE REAL TIME DATA AND HISTORIC
DATA, FLOOD HOTSPOT, CITIZEN REPORT

DATA SERVICES:

LIVE AND ARCHIVED WATER
DATA INTEGRATION

CLOUD

INFRASTRUCTURE:

MONGODB CLOUD FOR DATABASE HOSTING





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TECHNOLOGY USED

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FRONTEND

- HTML-STRUCTURE
- CSS-STYLING
- JAVASCRIPT-SCRIPT&API
- MAP LIBRARIES-INTERACTIVE MAPS(LAYERS,ZOOM, MARKERS)
- VERCCEL-FRONTEND HOSTING & DEPLOYMENT

BACKEND

- NODE.JS-SERVER-SIDE RUNTIME
- EXPRESS.JS-REST API FRAMEWORK
- RESTFUL API-DATA COMMUNICATION
- RENDER-DEPLOYMENT

DATABASE

- MONGODB- SQL DATABASE
- MONGOCOMPASS-STORING JSON DATA



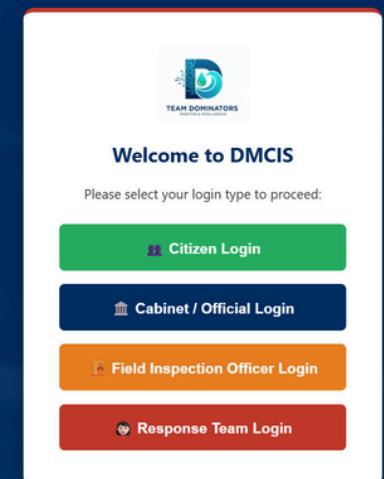
AI ANALYTICS

- RULE BASED+ML LOGIC
- 1) DRAIN CHOCKING PROBABILITY(PRE-RAIN)
- 2) FLOOD HOTSPOT IDENTIFICATION
- 3) STATISTICAL RISK SCORING MODELS

Our Prototype



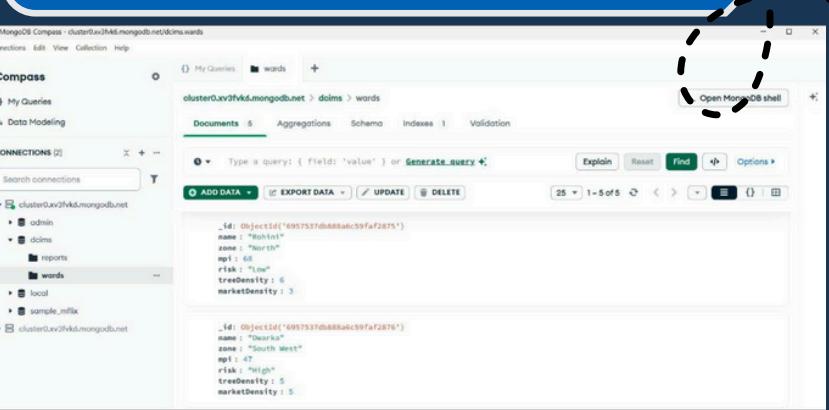
Our Frontend



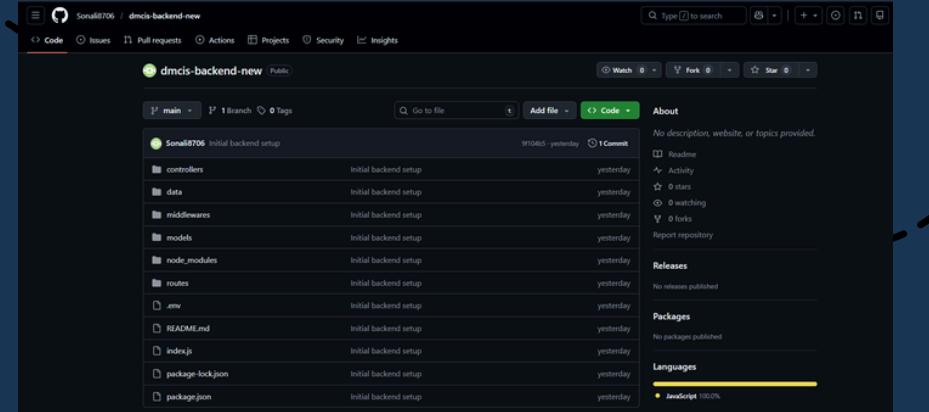
Hardware



Database

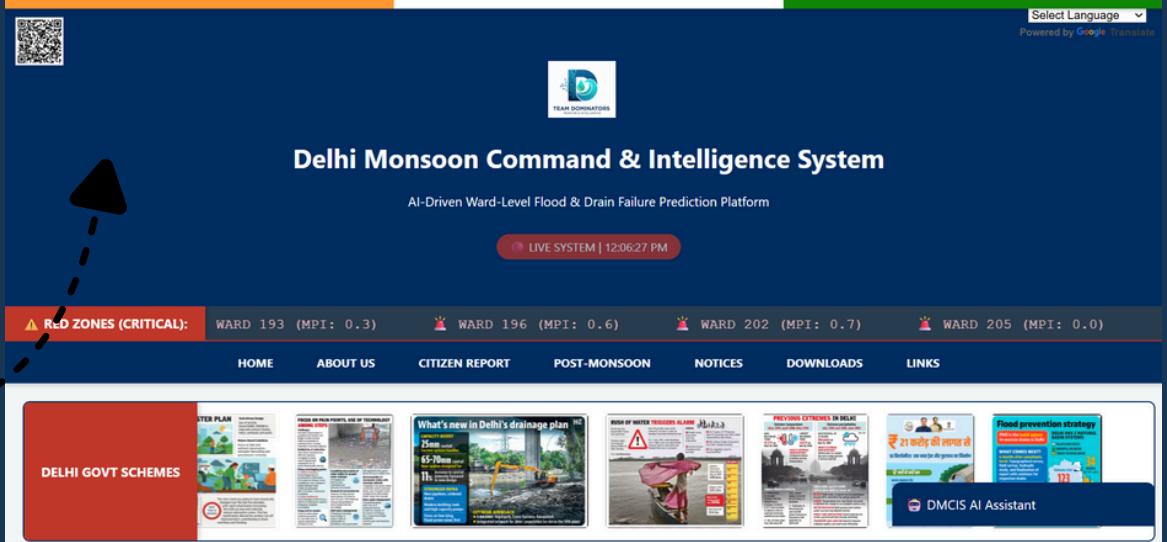


Backend



Delhi Monsoon Command & Intelligence System

AI-Driven Ward-Level Flood & Drain Failure Prediction Platform





FEATURE/USP

I-N

KEY FEATURES

- 1.) Ward-Level Monsoon Preparedness Index
 - Quantifies readiness of each ward.
- 2.) GIS-Based Risk Mapping
 - Colour-coded visualization of water-logging risk across Delhi .
- 3.) Extreme Rainfall Simulation
 - Allows authorities to stress-test the city before rainfall events .
- 4.) Action Recommendation Engine
 - Suggests desilting, pump deployment, and traffic planning .



CLEAR, MINIMAL,
AND
AUTHORITATIVE
USER
EXPERIENCE

FOCUS ON
PREDICTING
FAILURE NOT
JUST
FLOODING

DECISION-
CENTRIC
INTERFACE
DESIGNED FOR
OFFICIALS, NOT
DEVELOPERS

COMBINES
ANALYTICS,
SIMULATION,
AND ACTIONS
IN ONE
PLATFORM



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REFERENCES/LINKS

I-N

REFERENCES (OFFICIAL DATA SOURCES)

1.) Rainfall data- <https://mausam.imd.gov.in/>

2.) Delhi Wards & Zones Information-
<https://mcdonline.nic.in/portal/zones>

3.) Delhi Disaster Management Authority-
<https://ddma.delhi.gov.in/ddma/floods>

4.) IEEE ML Based Rainfall Prediction-
<https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=10320349>

LINKS (OUR PORTAL)

1.) Full stack Live Web Application : Dominators

<https://dmcis-hack4delhi-indiainnovates.vercel.app/>

The website responds after 10-15 seconds(Backend loading time)

2.) Frontend Repository - GitHub

<https://github.com/swikritidominators/DMCIS--Hack4Delhi-IndiaInnovates>

3.) Backend API Live

<https://dmcis-backend-new.onrender.com/>

4.) Backend Repository - GitHub

<https://github.com/Sonali8706/dmcis-backend-new>

5.) Database Platform MongoDB Atlas

mongodb+srv://swikritibluetooth_db:tzddlyuro9MZ9fSI@cluster0.xv3fvk6.mongodb.net/dcims?appName=Cluster0



THANK YOU

Full Stack Web Application- DMCIS

<https://dmcis-hack4delhi-indiainnovates.vercel.app/>

Video Demonstrating our Vision-

https://drive.google.com/file/d/1LvB5CkhGTc_O_VDYoAFZeACCn03zvxTZ/view?usp=sharing