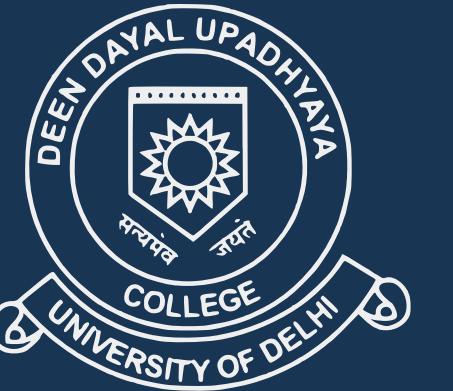


I-N  
Delhi Transport Corporation



# 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.

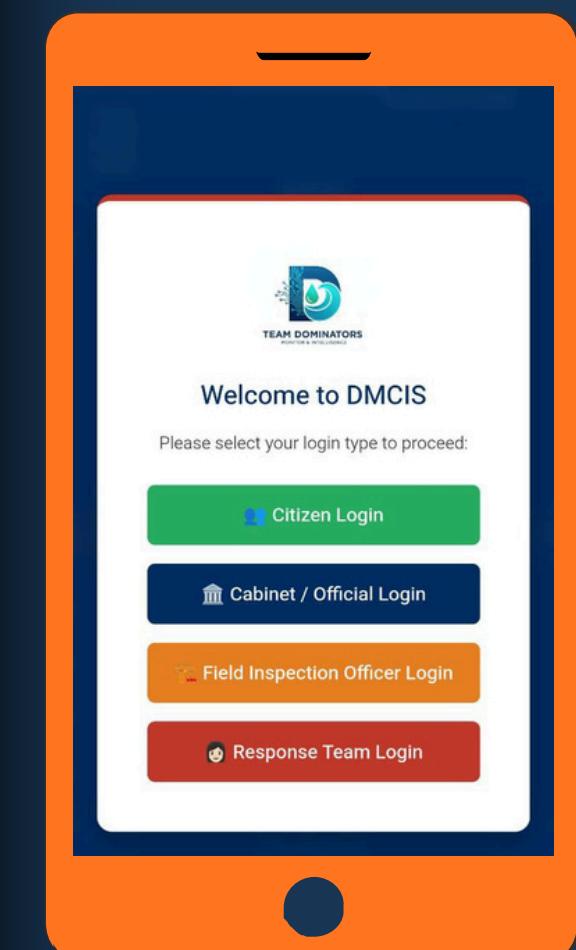
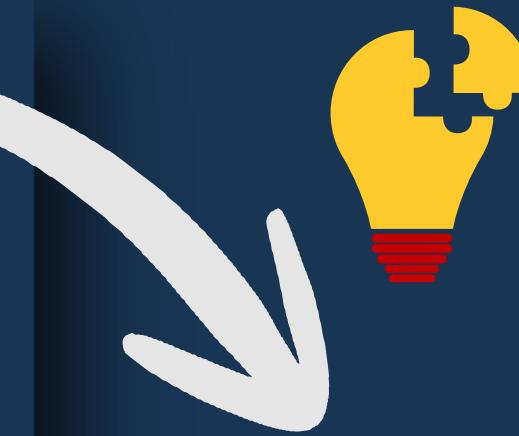
**WHAT  
MAKES  
US  
DIFFERENT  
?**

Our Working  
prototype!

# SOLUTION

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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



MONSOON  
PREPAREDNESS  
INDEX



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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



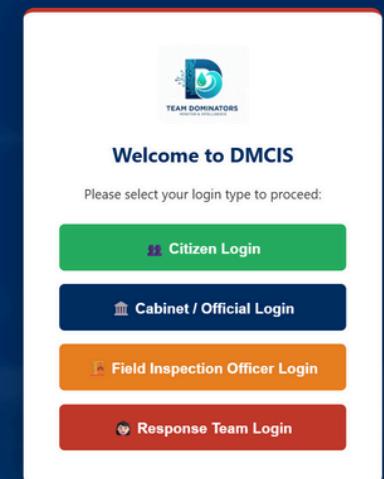
## AI ANALYTICS

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

Our Prototype



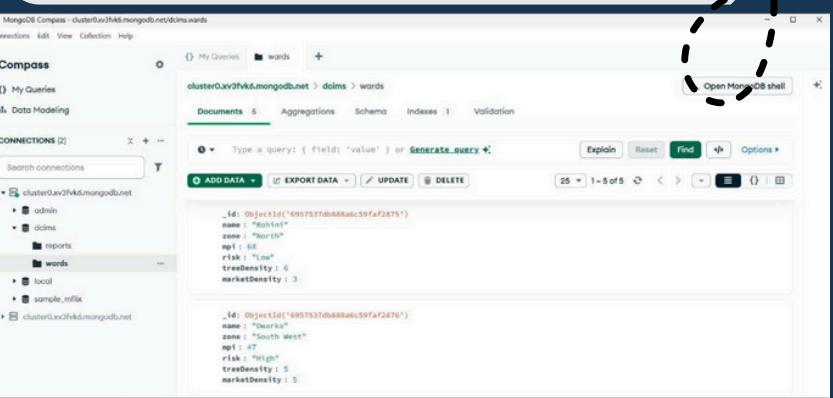
Our Frontend



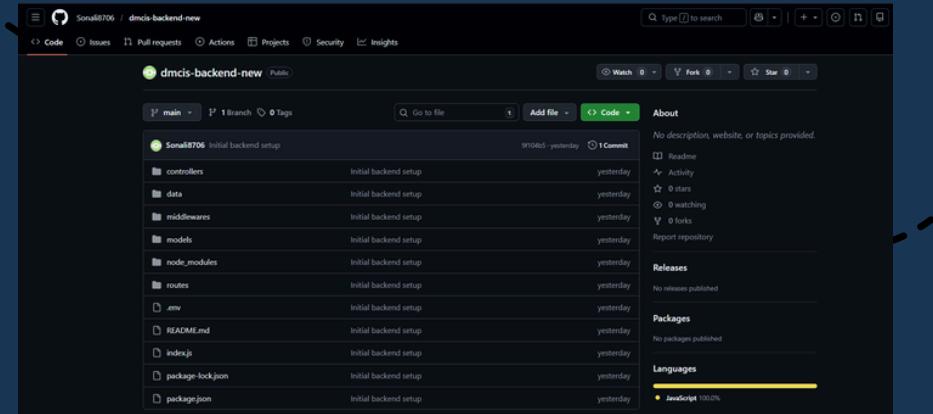
## Hardware



## Database

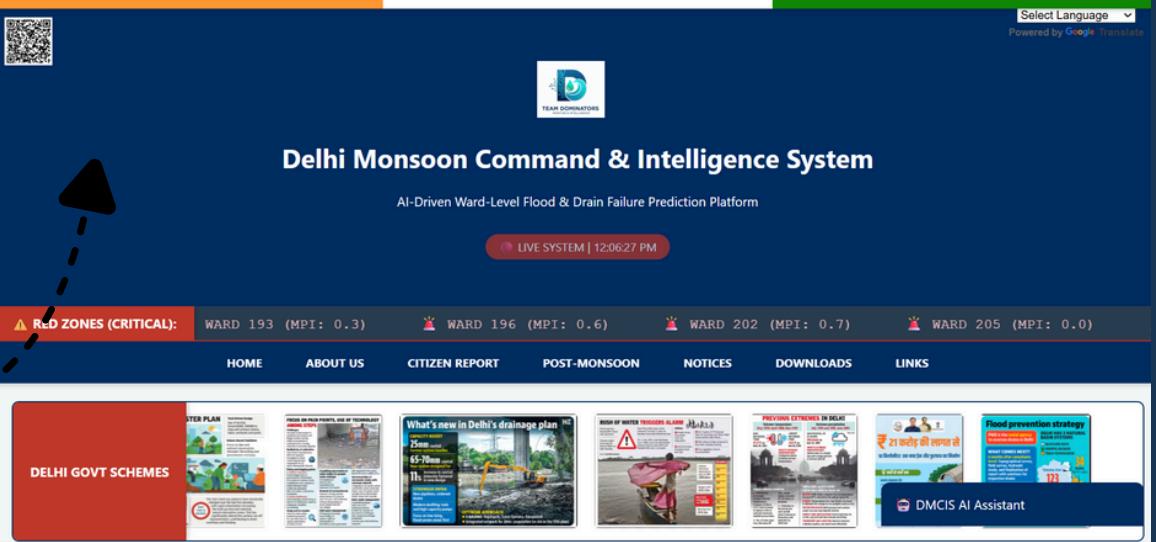


## Backend



## Delhi Monsoon Command & Intelligence System

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





# FEATURE/USP

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## 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

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