



Problem Statement: Coastal Threat Alert System

HARBOR WATCH

From data delusion to decisive action for Gujarat's coast

Team: Runtime Terrors

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INTRODUCTION

Every cyclone, every surge, every hour of silence costs lives & livelihoods.

India's coastlines already have data, alerts, bulletins...

But for the officer in charge → it's a flood of numbers, PDFs, and jargon.

What's missing? Clarity. Precision. Actionability.

That's where we step in.

"We don't predict the weather. We empower the people who must act on it."

Your Virtual Disaster Assistant for Gujarat's Coast

A decision-enabler dashboard for disaster management officers.

Ingests IMD, INCOIS, satellite, and historical data → outputs localised, actionable insights.

Translates broad bulletins into taluka/village-specific threat levels & playbooks.

Real-time alerts & ops logging via SMS, app, and IVRS → so communities and officials act before damage spreads.

Every action is tracked, auditable, and fed back into learning loops for stronger resilience.

"We don't give you more data. We give you the exact decision you need, when you need it."

WHO WE SERVE

Designed for the officer, beneficial for all.

PRIMARY END USER:
DISTRICT DISASTER MANAGEMENT AUTHORITY

OTHER DIRECT USERS:
STATE EMERGENCY OPERATIONS CENTRE (SEOC)
GSDMA, MUNICIPAL OFFICERS, CIVIL DEFENCE

BENEFICIARIES:
FISHERFOLK & COASTAL COMMUNITIES
ENVIRONMENTAL NGOS
PORTS AND INDUSTRIES

THE PROBLEM TODAY



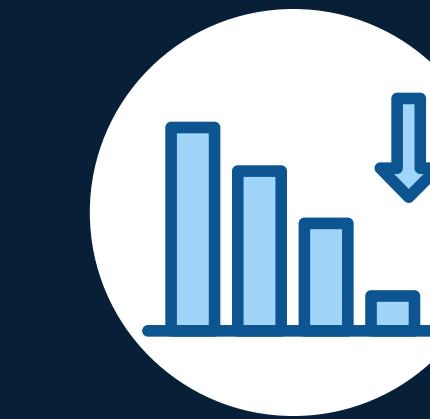
FRAGMENTED
SOURCES



NO SINGLE OPS
PICTURE



GENERIC ALERTS



WEAK LAST MILE
FEEDBACK

OUR PØV

DØNT CØMPETE WITH IMD. CØMPLETE IMD.

We consume authoritative alerts, then compute local impact and assign actions

Same color code as IMD for consistency, our layers add resources, timing, owners

Integrate to India's **SACHET** for official dissemination; adds ops logging and after-action learning.

SOLUTION SNAPSHOT



IMPACT ENGINE

(Who/what is exposed in my district now?)



OPS CONSOLE

(Assign, notify, track, escalate and audit)



THREAT RULES ENGINE

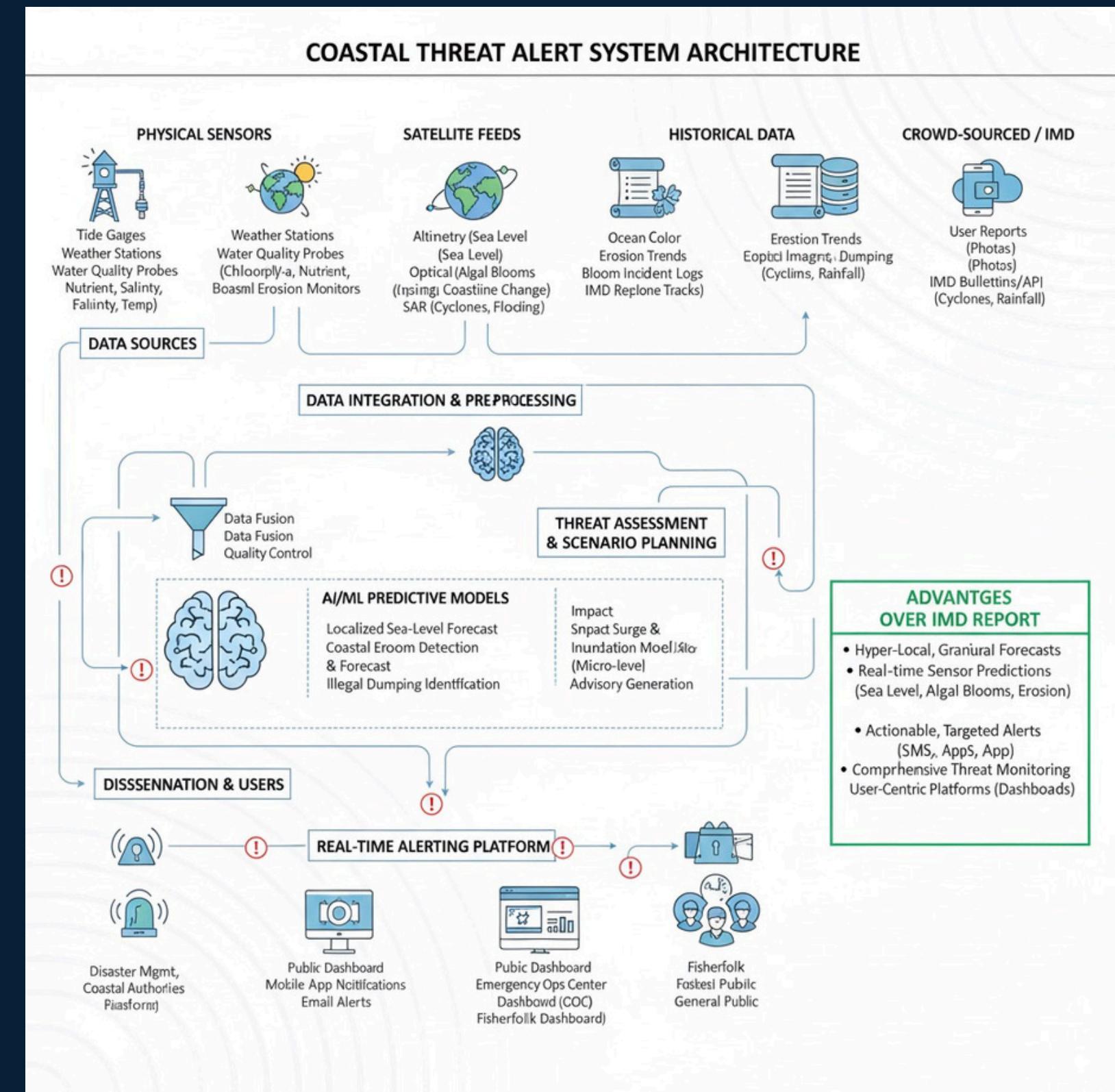
Translate scientific thresholds, more district specific actions



COMMUNITY LAYER

Gujarati voice calls and SMS for fisherfolk and coastal wards

ARCHITECTURE



ARCHITECTURE: THE DASHBOARD



LIVE MAP

IMD Overlays, flood and erosion risks, assets



THREAT CARDS

As per taluka/ward, with levels, ETA, confidence, affected assets



ACTION PANEL

one tap playbooks, auto drafted CAP message



Ops LOG

Time stamped actions, recipients reached, photos and completion status

OPERATIONS LOG and DISSEMINATION

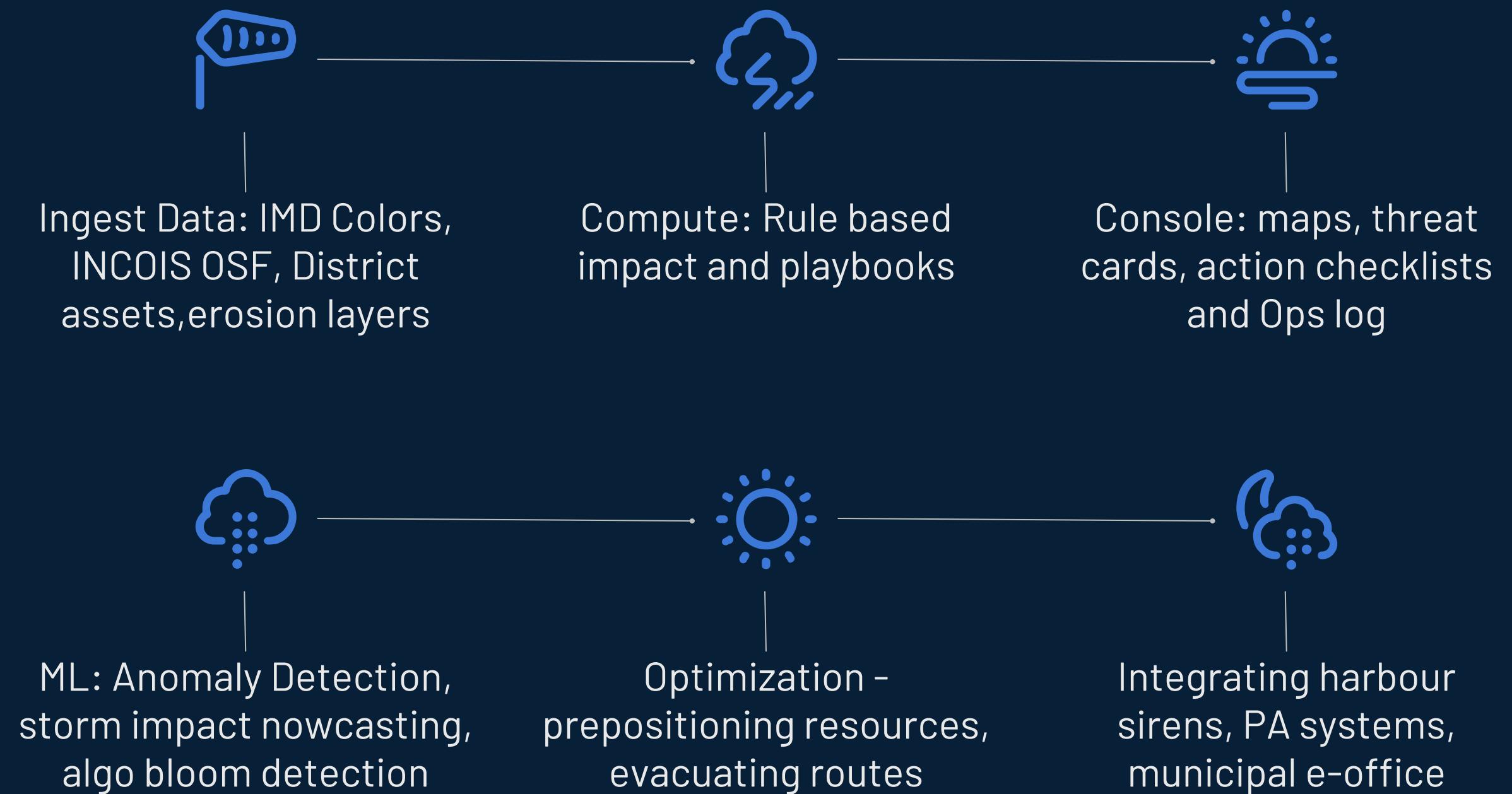
For a governance edge - if it is not logged, it did not happen.

- Immutable, time synced action ledger
- Auto collect delivery receipts
- After action reviews
- Makes inquiries evidence based, improves annual DDMPs (District Plans)

Using the pipes India already built:

- CAP/SACHET Integration for geo targeted SMS and cell broadcast
- INCOIS Ecosystem compatibility
- IVRS+Whatsapp for ward level resident updates

IMPLEMENTATION PLAN



TECH STACK

INGESTION	Python, scheduled pulls
STORAGE	Postgres, PostGIS
APIs	FastAPI
FRONTEND	React, Leaflet, D3
ML	PyTorch, Geopandas
NOTIF	CAP Formatter, IVRS microservice
DEVOPS	Docker, Github Actions

IMD Notifications Now

Print

India Meteorological Department/ भारत मौसम विज्ञान विभाग
CWC AHMEDABAD / सी.डब्ल्यू.सी अहमदाबाद
[Coastal Weather Bulletin](#)

DAILY TWO Bulletin Valid for 12 hrs from 22 UTC of 2025-08-29 to 10 UTC of 2025-08-30

Synoptic Situation	DUE TO ACTIVE MONSOON CONDITIONS, SQUALLY WEATHER VERY LIKELY TO PREVAIL ALONG & OFF NORTH AND SOUTH GUJARAT COAST.
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North Gujrath coast

Wind	SOUTH WESTERLY/ WEST, 20 - 25 KNOTS GUSTING TO 35 KNOTS
Weather	FAIRLY WIDESPREAD RAIN/ THUNDERSTORM
Visibility	MODERATE BECOMING POOR IN RAIN/THUNDERSHOWERS
Sea Condition	VERY ROUGH TO HIGH
Port Signal	ISSUED- LOWER LOCAL CAUTIONARY SIGNAL-III (LCS-III) AT PORTS OF NORTH GUJARAT NAMELY JAKHAU, MANDVI (KUTCH), MUNDRA, SIKKA, NEW KANDLA, NAVLAKHI, BEDI, JAMNAGAR, SALAYA
Storm Surge/Tidal Warning	NIL

WEATHER WARNING
for next 7 days for Gujarat State Diu, Daman, Dadra & Nagar Haveli

DAY-1

Heavy to very heavy rains at isolated places with isolated extremely heavy falls very likely in the districts of in the districts of Gujarat region namely Surat, Tapi and Navsari.

Heavy to very heavy rains very likely at isolated places in the district of Gujarat region namely Aravalli, Kheda, Panchmahal, Mahisagar, Narmada, Bharuch, Dang, Valsad and in Daman, Dadra and Nagar Haveli.

Heavy rains very likely at isolated places in the districts of Gujarat region namely Sabarkantha, Gandhinagar, Ahmedabad, Anand, Dahod, Vadodara and Chhota Udepur; in the district of Saurashtra- Kutch namely Amreli, Bhavnagar, Gir Somnath and in Diu.

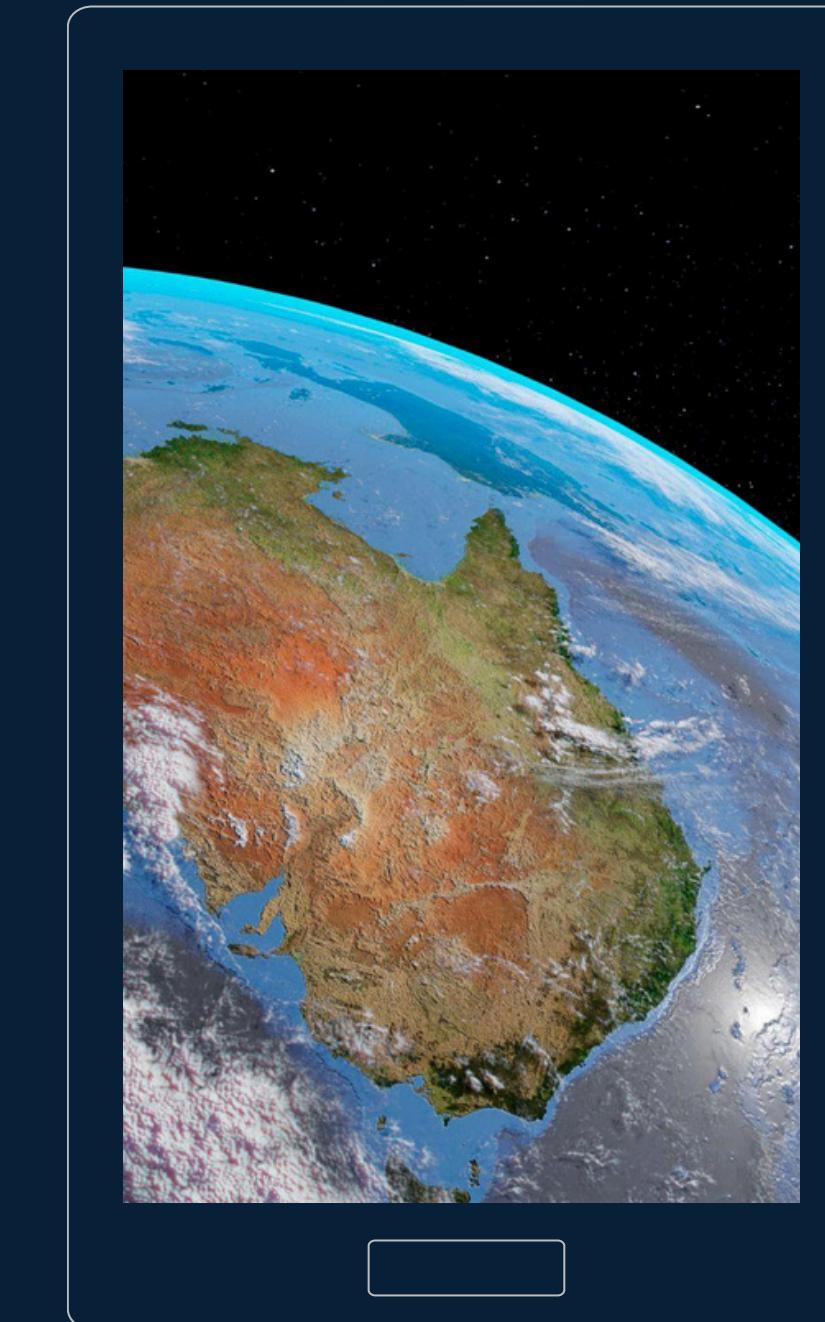
Light thunderstorm with lightning and surface wind 30-40 kmph accompanied with light to moderate rain very likely at isolated places in all the districts of North Gujarat Region namely Banaskantha, Patan, Mehsana, Sabarkantha, Gandhinagar, Aravalli, Kheda, Ahmedabad, Anand, Panchmahal, Dahod and Mahisagar; in all the districts of South Gujarat Region namely Vadodara, Chhota Udepur, Narmada, Bharuch, Surat, Dang, Tapi, Navsari, Valsad and in Daman, Dadra and Nagar Haveli; in all the districts of Saurashtra- Kutch namely Surendranagar, Rajkot, Jamnagar, Porbandar, Junagadh, Amreli, Bhavnagar, Morbi, Dwarka, Gir Somnath, Botad, Kutch and in Diu.

DIFFERENTIATION: WHY US?

OFFICER
FIRST UX



INDIA NATIVE
PLUMBING



OPS LEG



BLUE
CARBON
LENS

The background features a dark blue gradient with three distinct heatmaps. One heatmap in the top left corner is green and yellow, another in the top right is red and orange, and a third in the bottom right is blue and green. Overlaid on the bottom right is a faint silhouette of a world map. A faint gear icon is also visible near the center-right.

THANK YOU!