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- **Problem Statement ID –** 25039
- **Problem Statement Title-** Integrated Platform Crowdsourced Ocean Hazard Reporting and Social Media Analytics
- **Theme-** Disaster Management
- **PS Category-** Software
- **Team ID- 66734**
- **Team Name- The Pioneers**

The Pioneers

Crowdsourced Ocean Hazard Monitoring System

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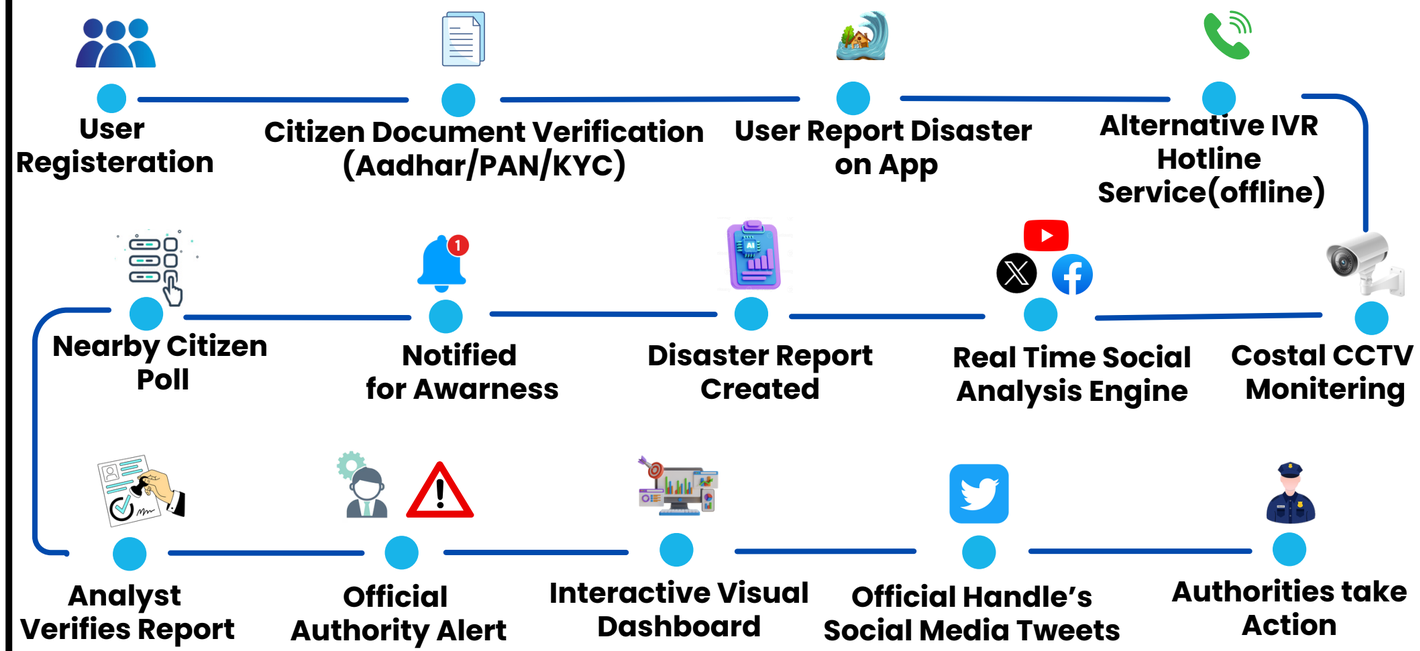

Innovation / USP

- Leverage coastal CCTV network for continuous monitoring
- Offline IVR hotline support (24×7 reporting)
- Multilingual NLP + app (20+ languages)
- 24-hour coastal CCTV coverage & automated alerts

PROPOSED SOLUTION

Citizen App

- Geo-tagged report (image · video · voice)
- Caching & offline report (store & auto-sync)
- IVR / SMS fallback for offline upload
- One-tap image / video / voice upload
- Trust score (credibility & verification)

Authority / Analyst App

- Interactive dashboard (live map, filters, role access)
- Live CCTV surveillance & camera feed tiles
- Real-time social-media surveillance (X, YT, Insta)
- Verify → Accept → Forward reports to officials

Automation Engine / Pipeline

- Real-time CCTV monitoring & ML anomaly detection
- Real-time social-media monitoring & topic detection
- Updates on official social accounts

Quick Verification & Alerts

- Instant validation using trust-score + geo & timestamp metadata
- Multi-channel alerts (push, SMS, IVR, email) to officials & nearby citizens
- One-tap analyst verify/reject with suggested evidence & duplicate suppression

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TECHNICAL APPROACH

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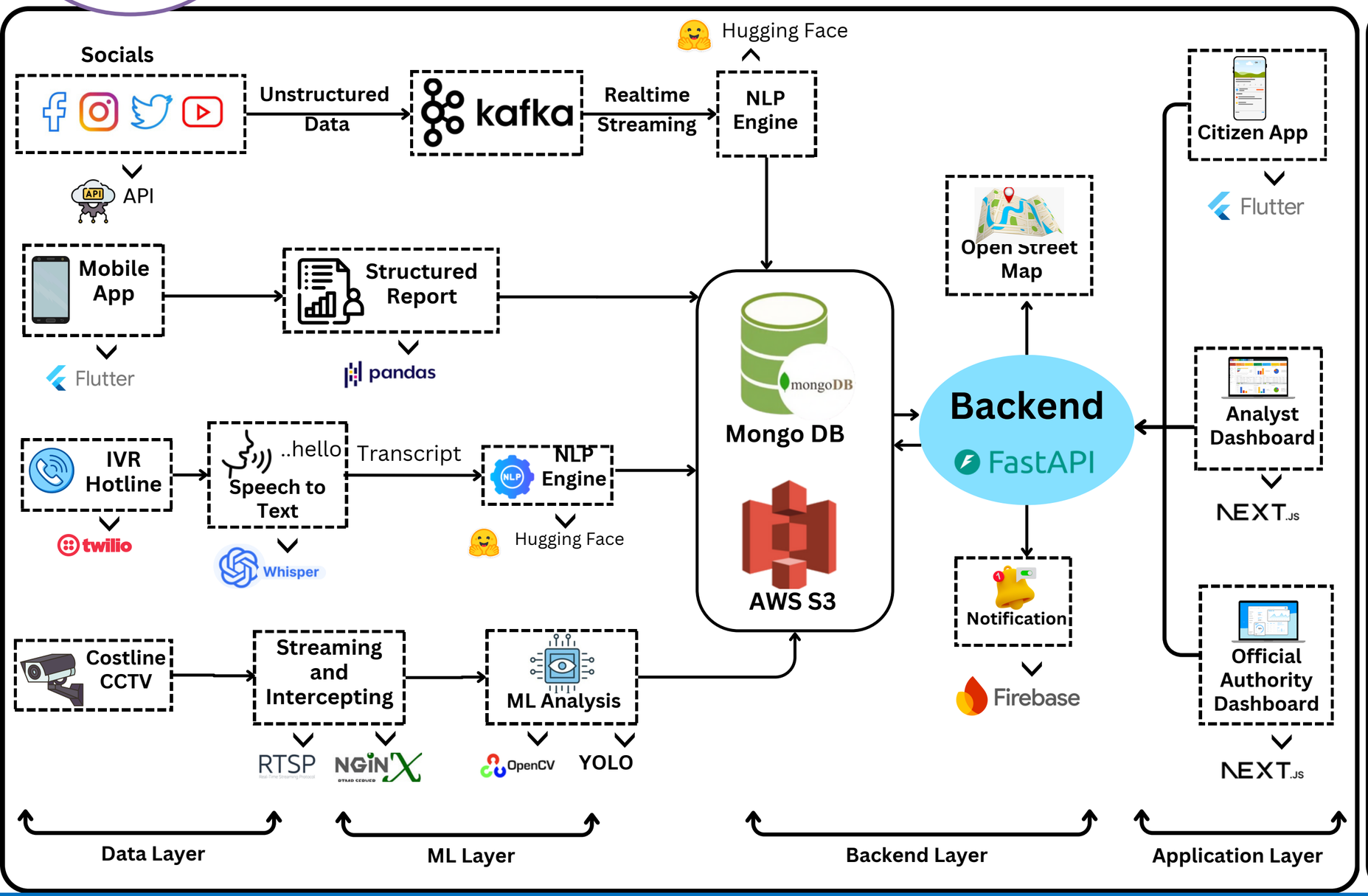

TECHNOLOGIES

Frontend

NEXT.JS · React · Flutter

Backend

FastAPI · node.js

Database

mongoDB · Firebase

ML Models and Tools

Hugging Face · OpenCV · YOLOv5

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FEASIBILITY AND VIABILITY

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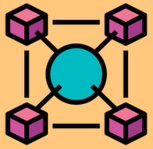

Standards-based & Interoperable

Built using open geodata formats (PostGIS, GeoJSON, CAP), ensuring smooth integration with INCOIS, NOAA, and UN disaster systems for seamless data exchange.

Cost-efficient & Sustainable

Leverages open-source frameworks, cloud-native infrastructure, & low-OPEX models (HuggingFace, Kafka), making it affordable for governments, NGOs, and enterprises in the long run.

Cloud-native & Scalable:

Designed as containerized microservices that can scale from small regional pilots to multi-region and even international rollouts, handling surges during emergencies.

Adoption-ready

Directly benefits diverse stakeholders—citizens, fisherfolk, ports, tourism operators, insurers, and disaster agencies—ensuring high adoption and collaboration.

Inclusive & Reliable:

Supports offline-first Progressive Web Apps, SMS/IVR fallback, and multilingual machine learning models, ensuring accessibility for citizens in remote or low-connectivity coastal zones.

Trust & Transparency

Combines crowdsourced citizen reports with official validation and verification mechanisms, building confidence and accountability in alerts and decision-making.

IMPACT AND BENEFITS

Social

Empowers citizens with timely, multilingual, and verified alerts, improving community safety, inclusion, and trust in crisis responses.

Economic

Reduces direct damages and recovery costs by enabling faster, targeted responses and optimizing emergency resource allocation to protect coastal livelihoods.

Technological

Provides scalable, ML-powered fusion of CCTV, social media, and crowdsourced reports, improving detection accuracy and enabling predictive analytics and system integration.

Environmental / Ethical

Minimizes ecological harm through rapid intervention while enforcing privacy, consent, and auditability to ensure transparent and ethical incident handling

1

Citizens / Fisherfolk

Access timely, multilingual alerts and trusted updates, ensuring personal safety, protecting livelihoods, and fostering confidence in disaster response systems.

2

Businesses / Tourism

Receive accurate warnings and reliable “all-clear” signals, minimizing economic disruptions, safeguarding assets, and strengthening visitor trust and regional reputation.

3

Environment / Ecosystem

Support rapid hazard detection and intervention, preventing pollution, protecting marine biodiversity, and promoting long-term sustainable coastal resilience.

4

Government / Authorities

Leverage real-time, trust-scored insights and verified reports, enabling faster, evidence-based decisions while reducing operational costs and response delays.

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RESEARCH AND REFERENCES

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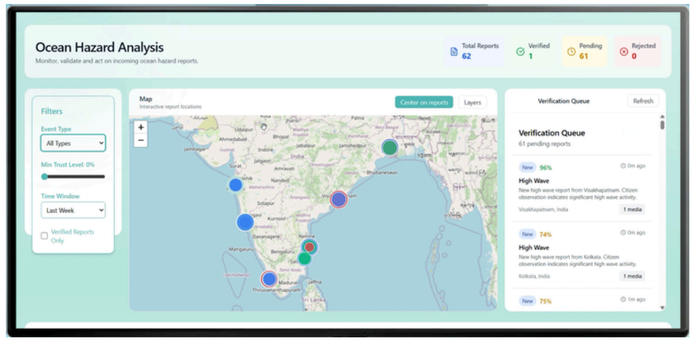
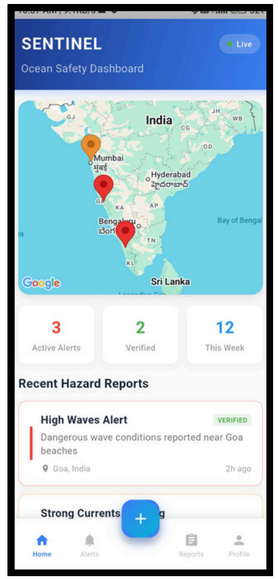
Tsunami Early Warning System in India. Drishti IAS, "Tsunami Early Warning System in India", 27 October 2020. Available at: https://www.drishtiias.com/daily-news-analysis/tsunami-early-warning-system-in-india

Disaster Risk Reduction and Resilience in Coastal Regions. NIDM/NPDRR, National Workshop, Bhubaneswar, 23-24 February 2023. Available at: https://npdrr.nidm.gov.in/pdf/cn/concept_note_Disaster%20Risk%20Reduction%20and%20Resilience%20in%20Coastal%20Regions.pdf

Strengthening India's Disaster Preparedness with Technology: A Case for Effective Early Warning Systems. Shreya Wadhawan (CEEW), 13 July 2023. Available at: https://npdrr.nidm.gov.in/pdf/cn/concept_note_Disaster%20Risk%20Reduction%20and%20Resilience%20in%20Coastal%20Regions.pdf

Assessing the effectiveness of existing early warning systems and emergency preparedness towards reducing cyclone-induced losses in the Sundarban Biosphere Region, India." International Journal of Disaster Risk Reduction, 2023. Available at: https://npdrr.nidm.gov.in/pdf/cn/concept_note_Disaster%20Risk%20Reduction%20and%20Resilience%20in%20Coastal%20Regions.pdf





Vercel

Prototype Deployed Link : https://ocsih.vercel.app/

YouTube

Prototype Youtube Link : https://youtu.be/QRHDtXjxkZY?si=PPgS04HFGoCh7Cvd

Utilization of Existing CCTV Footage for Coastal Disaster Monitoring can be done: https://drive.google.com/drive/folders/1m-_GyuelGL2QRS_fZ91iBtvTUa5yTUUK