



Event Name	Expert Talk on "Innovations in Early Warning System in Disaster Management"
Event date	07/11/2024
Event venue	SCT, Trivandrum
Details of the event	<p>1. Overview The expert talk on "Innovations in Early Warning System in Disaster Management" provided a comprehensive overview of the evolving technologies and methodologies used in early warning systems (EWS) within disaster management frameworks. The session aimed to equip students with knowledge about cutting-edge developments in communication technology and their role in enhancing disaster preparedness and response. These innovations are vital to Kerala, a state prone to natural disasters, and serve to minimize damage and loss of life by facilitating swift, accurate, and multi-channel alert systems.</p> <p>2. Introduction to Disaster Management and Technology's Role The session began with an introduction to the fundamental phases of disaster management:</p> <ul style="list-style-type: none"> ● Mitigation – Strategies to reduce the risk of disasters. ● Preparedness – Planning and preparations made to respond effectively. ● Response – Immediate actions taken following a disaster. ● Recovery – Restoring affected areas and populations. <p>The presentation emphasized the transformative role of technology across these phases, particularly through real-time communication and the innovative deployment of EWS to bridge critical gaps in response time and reach. The use of technology in these stages was discussed in the context of KSDMA's projects, highlighting the integration of communication technology in responding to natural hazards.</p> <p>3. Key Innovations in Early Warning Systems The main focus of the session was on the advanced technologies employed in</p>

early warning systems, detailing their integration, functionality, and deployment across Kerala. The presentation covered the following key innovations:

- **Cell Broadcasting (CB)**

Cell Broadcasting is essential in providing time-sensitive alerts to targeted geographical areas. Unlike standard messaging, CB sends alerts to all devices within a specific location, ensuring that the people in potential danger zones receive immediate notifications without overloading networks.

- **Common Alerting Protocol (CAP) and CAP-Sachet System**

CAP is a globally accepted, standardized system for alert dissemination. CAP-Sachet, a project implemented under the National Disaster Management Authority (NDMA), facilitates multilingual alerts in near real-time. It integrates data from organizations like the Indian Meteorological Department (IMD) and Central Water Commission (CWC) to generate location-specific alerts. Phase 1 of CAP-Sachet includes land-based dissemination, with plans for multi-platform delivery in future phases, such as radio, TV, and railway announcements.

- **Emergency Response Support System (ERSS) 112 Extension**

This project under the Ministry of Home Affairs (MHA) expands ERSS's capabilities to include disaster management response. ERSS 112 is a nationwide emergency number, and its disaster management extension allows for seamless communication between State and District Emergency Operations Centers (SEOC and DEOCs) to facilitate faster response actions.

- **Early Warning Dissemination System (EWDS)/KaWaCHaM Project**

As a key component of the National Cyclone Risk Mitigation Project (NCRMP), EWDS or KaWaCHaM (Kerala Warnings Crisis and Hazard Management System) aims to address last-mile communication challenges. It strengthens SEOC-DEOC coordination, enabling unified alert dissemination through multiple channels, including public sirens, mobile messages, and social media alerts, especially vital for isolated or rural communities.

- **Cell on Wings (COW) and Flying COWs**

COWs, or Cell on Wings technology, represents a novel approach to provide wireless LTE coverage in disaster-affected areas. A drone-based solution, Flying COW can hover over disaster zones, offering

resilient communication coverage in difficult terrains or during large events. This ensures continuous communication access, enabling emergency teams to reach affected areas swiftly and enhancing search-and-rescue operations with thermal imaging and satellite-based positioning.

4. Interactive Session Highlights

The presentation fostered an engaging atmosphere, with students displaying active interest and curiosity about the application and effectiveness of these technologies. The interactive session allowed students to raise questions and discuss the practical challenges faced in the field of disaster communication.

Key discussion points included:

- **Scalability and Reliability** of EWS in diverse geographic and social contexts.
- **Challenges in Reaching Remote Populations** and how KaWaCHaM addresses last-mile connectivity.
- **Technical Integration and Security Concerns**, especially regarding multi-channel dissemination and real-time data aggregation.
- **Role of Artificial Intelligence and Big Data** in predicting and managing disaster patterns, and their potential use in Kerala's disaster response framework.

5. Technical Insights from the Presentation Slides

The provided PowerPoint slides enhanced the session by offering detailed technical diagrams and workflows. The key highlights included:

- **EWDS Infrastructure** – Showed system components like secured routers, mass notification systems with siren and strobe lights, surveillance capabilities, and power backups essential for uninterrupted communication.
- **CAP and Sachet Workflows** – Outlined how CAP integrates with other disaster response tools, emphasizing its role in generating and managing location-based alerts.
- **KaWaCHaM Dashboard** – The dashboard was presented as a comprehensive monitoring tool, enabling unified communication with local agencies and the public, ensuring rapid and coordinated disaster responses.
- **Real-time Alert Aggregation and Visualization** – Aided by GIS and crowd-sourced data, these systems provide comprehensive situational awareness, allowing disaster management teams to make

	<p>informed decisions.</p> <p>6. Conclusion</p> <p>The session underscored the indispensable role of technology in enhancing disaster management capabilities, especially through early warning and real-time response systems. KSDMA's initiatives, including CAP-Sachet and KaWaCHaM, were highlighted as benchmarks in disaster preparedness, illustrating Kerala's commitment to leveraging technology to save lives. By engaging with the students and showcasing practical applications of these systems, the session aimed to inspire future engineers to contribute to the field of disaster management.</p>
Number of females	90
Number of males	40
Number of trans genders	0
Number of children	0
Resource person/organizer from the side of SDMA/DDMA	Geethu S S, Communication Engineer, KSDMA
Photos	



GPS Map Camera

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