SKYTRAC

HACKATHON 2026

MISSION: RELIABLE COMMUNICATIONS FOR REMOTE TEAMS

💪 The Challenge:

Imagine aircrew teams operating in remote regions. Where communication is essential, they lack reliable, low-latency, group-based communication. Satellite networks provide coverage but come with high latency, low bandwidth, and expensive data usage making traditional Push-To-Talk systems ineffective.

🚀 Your Mission:

Build a mobile application that delivers walkie-talkie–style, Push-To-Talk (PTT) communication over a satellite network, enabling field teams to stay connected in remote areas. The solution must support group-based communication, where all participants register and join talkgroups before exchanging voice or text messages.

💡 What You'll Build:

Participants are challenged to design a system that:

- → Should feel like talking on a Walkie Talkie radio
- → Provides low-latency PTT communication over high-latency satellite networks
- → Minimizes data usage using high compression and lightweight protocols
- → Chooses the best architecture and framework for the application
- → Supports centralized server distribution *or* multicast-style decentralized message fan-out
- → Includes a web portal to activate devices, and manage authentication/permissions

🔎 Technical Requirements:

📱 Mobile App Features

- → Push-to-talk button with real-time transmit/receive indicators
- → Group registration & membership control
- → Performance oriented voice messages
- → Ability to function under constrained satellite connections
- → Optional peer-to-peer or multicast-like communication to reduce delay

💻 Backend Server or Distributed Architecture

- → Central server for message relay or peer-to-peer distribution
- → Must preserve message integrity and ensure only authorized users participate

- → Support for user/device authentication
- → Distributed key management to generate, rotate, and share group keys securely

🛜 Web Portal

- → Create & configure talkgroups
- → Activate, authorize, and assign devices/users
- → Override or disable rogue units
- → View system status and logs

📋 Documentation

- → Present your preliminary design, including use cases, architecture and draft user interface

⭐ Bonus Challenge

- → Seamless group switching via intuitive UI
- → Avoid walk-ons when multiple people talk at once
- → Background monitoring of multiple channels
- → Efficient handling of keys and encryption without excess data usage
- → Talk to an ICOM gateway to talk to other radio systems
- → Implement a moving map that shows the location of all the talk group participants

✅ Deliverables on the Final Day:

- → Working prototype (mobile app + backend or distributed logic + web portal)
- → Requirements, Designs, Use Cases, Architecture diagram(s) and explanation of design tradeoffs, including why the messaging framework was chosen
- → Short demo showing talkgroup communication over simulated or real satellite conditions

🏆 Why Compete?

- → Work on real mobile application and backend software development (Full Stack) using satellite & cellular communication technology through the phone's Wi-Fi
- → Opportunity to build a powerful portfolio project
- → Compete against top talent and get noticed by industry leaders!
- → Network with professionals and explore potential career opportunities
- → **The winning team gets a grand prize of $15,000!!**

JOIN THE HACKATHON AND BUILD THE FUTURE OF REMOTE COMMUNICATIONS! 🎙️

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