Operation: RM Radio Modem App

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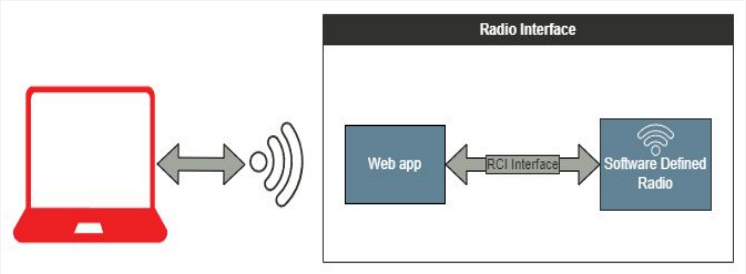
Problem Statement

- GDMS has over 12,000 employees worldwide
- GDMS develops technology to assist the defense, public safety, and intelligence communities
- Efficient, tactical communication is crucial for maintaining safety
- Existing web application is difficult to use on mobile devices



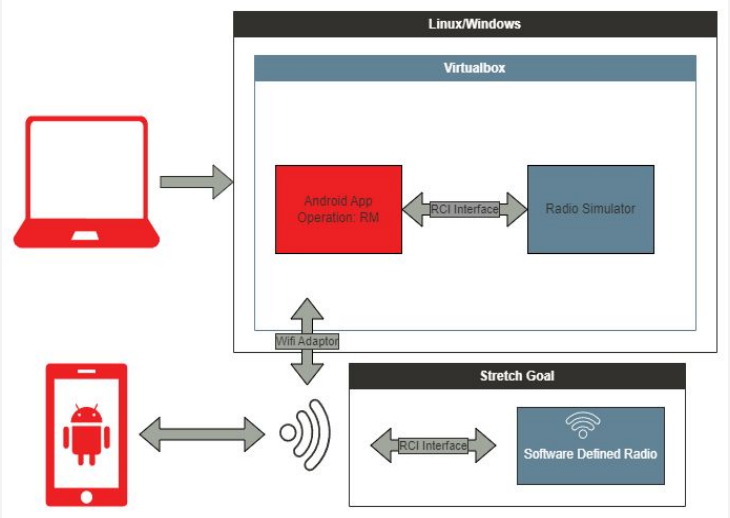
Solution Overview

Android application providing an email system that controls the radio modem

- Application mimics current web application to minimize system training

Key Application Features

- Android OS integration
- File / Camera transmission
- Radio Connection presets



Key Requirements: Acquisition

GDMS assisted the team through the developmental process to ensure a robust understanding of the requirements needed for this project

- Conduct weekly team meetings to identify and solve any issues or questions that arise
- Visited their campus on October 19th
- Live demonstrations of how the technology functions
- Helped set up our machines to enable the capability of interfacing with the radio simulator

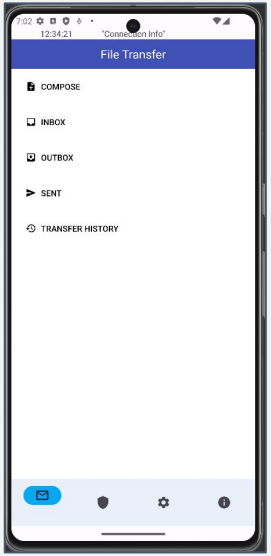
Key Requirements: Functional

User can navigate to the following features

- Inbox and Outbox
- Composition
- Radio modem's transfer and sent history

Login and Initialization

- The user will be able to log into the radio modem via username and password
- Following a successful login the user will be taken to the home screen of the application



Key Requirements: Functional

File Transfer

- The ability to compose emails and send via auto-send or through email queue
- File attachment button which will prompt user to use the phones camera or file system
- Inbox and Outbox page to view sent and received messages
- Be able to send over different waveform presets
- Auto-send toggleable feature

Key Requirements: Performance

Reliability

- Status bar need to show correct status

Security

- Login with User, Admin, Test user profiles from radio modem
- Secure transfer of files

Usability

- Similar layout to current web application for easy training for new users

Color Blind Accessible

- Application will use color schemes conscientious of Red, Green, and Blue visual weakness

Key Requirements: Environmental

Android Compatibility

- The application must be compatible with Android 12, 13, and 14

Programming Language

- Java and C are utilized for communication with the simulator

Screen Compatibility

- Application functional on a robust variety of screen sizes

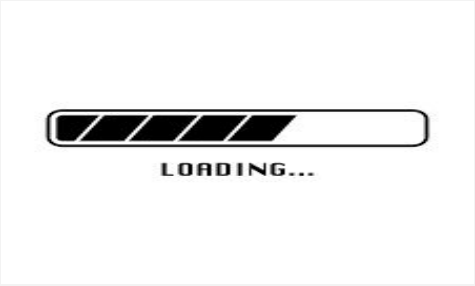
Key Requirements: Environmental

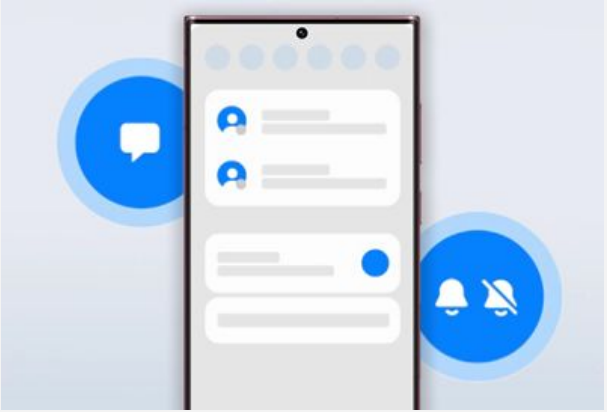
Notification System

- The user will be notified of successful and unsuccessful transmission that have been sent
- Notify the user of the result when attempting to connect to the radio simulator

Responsiveness

- Icon bar updates every 0.5 seconds to 2 seconds





Risks and Feasibility

Risks

- Interfacing with Radio Simulator (Severity: High)
- Application Appearance (Severity: Mild)
- Technological Familiarity (Severity: Mild)

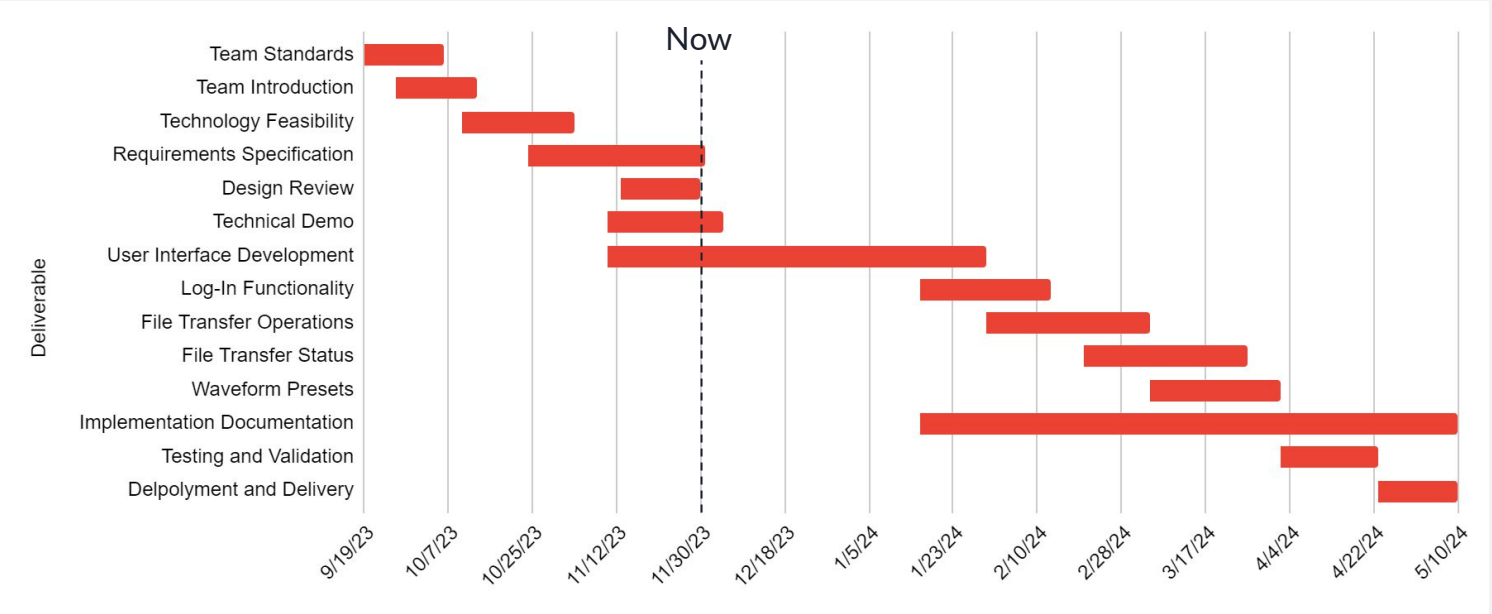
Mitigation

- Leverage the knowledge of GDMS to troubleshoot connectivity problems that may occur
- Keep GDMS updated on the appearance of the application and that it meets their standards
- Ensure that all technologies are in the scope of the teams knowledge with feasibility report

Feasibility

- Technologies have been proven feasible to enable the project success
- This proven feasibility will mitigate the risk of using new technologies

Schedule


Now
Deliverable
Team Standards
Team Introduction
Technology Feasibility
Requirements Specification
Design Review
Technical Demo
User Interface Development
Log-In Functionality
File Transfer Operations
File Transfer Status
Waveform Presets
Implementation Documentation
Testing and Validation
Delpolyment and Delivery
9/19/23
10/7/23
10/25/23
11/12/23
11/30/23
12/18/23
1/5/24
1/23/24
2/10/24
2/28/24
3/17/24
4/4/24
4/22/24
5/10/24

Conclusion

- Developing a mobile android application to replace the existing web interface of a software defined radio (SDR)
- Our solution will create a more efficient and tactical manner for mobile communication with the radio modem
- Our solution needs to switch between waveforms and enable receiving and transmitting messages
- Our solution needs to be able to send emails up to 20 MB and support a queue system for outgoing messages
- Our primary risk is being able to communicate with the radio modem