DRDO Hackfest Problem – ISM 2021

Problem: Develop a GIS based navigation application capable of working in offline mode (local maps) for a handheld device based on Raspberry Pi with Linux as OS. The app will have following features:

1. Use Offline maps (In all common formats like .GeoTiff, .shp etc). Also provide a feature to use OSM Map layer and connect to OSM server and update as per requirement
2. The GIS application should work fully in offline mode without internet connection or connection to a server.
3. Support standard GIS functionality such as seamless PAN, ZoomIn, ZoomOut, North, Attribution & etc.
4. Show current (Live) location of user on map
5. Send self-location as text message over GSM (Text message would contain Device ID, Date, Location, SOS Check – Format can be designed by team; Actual demonstration of communication over GSM modem is not required, can be done virtually)
6. Read location from text messages (if SOS comes) & Display this location on the map (Actual demonstration of communication over GSM is not required, it can be demonstrated using a stored file, or virtually)
7. Navigational facility from point A to point B which comprises of finding the shortest path from point A to point B
8. The GIS application shall be able to run on the hardware platform having 1GB RAM & 1GHZ ARM processor (Use Raspberry pi 4 board with 2/4GB RAM)
9. The Free & Open Source (FOSS) GIS libraries might be used in developing GIS application but these libraries should not impose licensing constraints.
10. The solution should be free of any third party licensing agreement for any part of the solution.