

# Technologies for Soldier Support

**Host Organization:** DRDO (Research projects for Universities)

## **Problem Statement:**

Please refer to this [link](#) for more details.

The teams are expected to create tech which will upgrade the gear of the soldiers. This gear will be part of the soldier's suit or baggage. There will be 4 main aspects/modules of the PS -

1. **Soldier command and control software** - The soldier should be able to extend his hand gesture communications in beyond range of his sight or in darkness. He should be equipped with gear which can process these gestures and communicate with his team. Here is a sample [list](#) of gestures.
2. **Soldier Ad-hoc wireless network** - This network should help localize the soldiers in a map (not terrain, rather a localized coordinate system) that is dynamically generated based on their location. The system should be **ad-hoc**.
3. **Image and video streaming over V/UHF Radio** - Transmission has to be secure, and has to be done over relatively medium or long distances. However, to display it a minimum distance will be fixed depending on the allowed dBm values.
4. **MEMS sensors for physiological signal detection and conditioning** - To constantly monitor the physiological conditions for faster First Aid and continuous monitoring of soldiers. The system should be part of the soldier's gear and should be active all the time.

## **Tentative Judging criteria for each of the modules in the PS:**

1. The first module's weightage - 15%
  - a. Each gesture (without redundancies) recognized must be shown on your display consoles- 5 pts per gesture
  - b. Cost brackets for the system will have different points, cheapest being awarded the highest marks
  - c. The module must be wearable and not too heavy - these factors will be subjectively awarded
2. The second module's weightage - 25%
  - a. Accuracy of location brackets
  - b. Will also have different points as number of people mapped increases simultaneously - 5 pts per person mapped
  - c. The module should be able to detect a minimum distance of 10 metres

- d. Localization algorithm will be awarded subjectively
- 3. The third module's weightage - 40%
  - a. Lower the frequency brackets and lesser bandwidth brackets quality transmitted - an image must be captured and transmitted securely (minimum encryption) in this bandwidth
  - b. FPS of videos (not mandatory- only for bonus points)
- 4. The fourth module's weightage - 20%
  - a. Key physiological parameters which will aid in quick first aid - 5 pts per parameter - should be measured and transmitted to the display console continuously
  - b. Cost, weight and non-hindering to movements - these factors will be subjectively awarded
  - c. The module must be wearable

Teams should show at least basic level prototype in all the 4 sections (submission is must, even if they might score zero)

The points awarded subjectively will have importance only while settling tied scores and if the judges feel there is some true innovation in your solutions.