DEFENCE INNOVATION ORGANISATION

(Under Aegis of Department of Defence Production)

Ministry of Defence, Government of India

New Delhi -110002

Summary of iDEX PRIME Problem Statements

Overall No. of challenges proposed: 6 (six)

Services	No. of Challenges Shortlisted	Challenge Number
Indian Army	2	1, 2
Indian Navy	2	3, 4
Indian Airforce	2	5, 6

Titles of challenges shortlisted by Services

Indian Army

1. To develop an AI-based UGV for identifying and marking mines in a minefield.
2. Advance Truss Bridge

Indian Navy

3. Development of an 11m ‘all electric’ work boat.
4. Automated celestial navigation system.

Indian Airforce

5. Expendable active decoys.
6. Signals Intelligence System for Hilly terrain and high-altitude area.

DETAILED PROBLEM STATEMENTS OF

INDIAN ARMY

Challenge 1

To develop an AI-based UGV for identifying and marking mines in a minefield

Minefields are one of the most potent obstacles in the battlefield and delay in minefield breaching has cascading effects on all subsequent operations and overall plan. Replacing the existing explosive, manual and mechanical methods by AI based UGV for mine identification and clearance operation will help reducing the operational timelines and combat manpower.

Challenge 2

Advance Truss Bridge

With induction of mechanised formations into high altitude areas, there is a need for lighter bridge to replace the existing manpower intensive, heavy and time-consuming Bailey Bridges. Advance Truss Bridge being a lighter bridge with Military Load Classification 70 will help in planning & execution of operations and will facilitate movement & deployment of troops.

DETAILED PROBLEM STATEMENTS OF

INDIAN NAVY

Challenge 3

Development of 11m ‘all electric’ boat

Development of 11m ‘all electric’ Work Boat for transfer of men and material is aimed towards improving the environment at harbor, Superior torque/instantaneous speed, improved manoeuvrability and stability will enhance the utility of the work boats in restricted water at harbor/ports. Further, in line with ‘Green Initiative’ towards using sustainable/renewable forms of energy, solar panels will also be explored to supplement the electric propulsion.

Challenge 4

Automated Celestial Navigation system

An equipment needed to compute position based on the observed visual position of heavenly bodies, obtained through one/several wide-angle lenses. It should be capable of automatic and near continuous position fixing by day and night. It should be light weight and easy to install on the ship’s mast/superstructure.

DETAILED PROBLEM STATEMENTS OF

INDIAN AIRFORCE

Challenge 5

Expendable Active Decoys (EAD)

EAD can be used for defeating RF guided missile and Fire control radars. EADs will enhance the self-protection capability of existing airborne platforms of IAF by providing them the capability of being able to counter radar-based threats. These self-contained active RF decoys should be designed to be launched from existing Chaff and Flares Dispenser System. It should have the capability of Pre-emptive or Reactive threat counters.

Challenge 6

Signals Intelligence (SIGINT) System for Hilly Terrain and High-Altitude Area

This SIGINT system is proposed to be based on a compact 4x4 Vehicle that can easily manoeuvre through hilly terrain, with smart sensors for tactical Electronic Intelligence (ELINT) and micro–Electronic Support Measures (ESM) onboard the drones. The vehicle should have a datalink with the drones. The system inside the vehicle should also have compact receivers for Communications Intelligence (COMINT) and Electronic Intelligence (ELINT). There should be a suitable Satcom system to be integrated with the system to transfer real time data to higher echelons.