

### Challenge No:1

<b>Problem Statement/Challenge title</b>	Portable Under Water Diver Delivery System (PUDDS)
<b>Challenge brief/definition</b>	Presently, no such operational covert insertion craft exist with the Indian Navy. These are specialised craft capable of carrying out clandestine induction into designated coast to undertake beach surveillance for enemy presence, underwater obstacle clearance, ascertaining the beach gradient, providing hydrographical data comprising swell, wave height and current direction and guiding the amphibious ships to the selected beach during the conduct of amphibious operations. Indian Navy does not have suitable craft for discreet launch/ recovery of Marine Commandos for combat operation, The only other means is the launch of Marine Commandos in inflatable craft from surface ships and submarine. However, these are not discreet platforms and thus not suitable for covert operations and have a high likelihood of detection by enemy thus likely to compromise the mission.

### Challenge No:2

<b>Problem Statement/Challenge title</b>	Submersible Boat
<b>Challenge brief/definition</b>	Presently, no such operational covert insertion craft exist with the Indian Navy. These are specialized craft capable of carrying out clandestine induction into designated coast to undertake beach Surveillance for enemy presence, direct attack mission, hostage rescue situation at Sea or on land and other missions requiring covert insertion of the special operatives with full combat load.

### Challenge No:3

<b>Problem Statement/Challenge title</b>	Multi utility long endurance drone (NSUAS CLASS) for use in maritime domain for C4ISR duties.
<b>Challenge brief/definition</b>	The RPA will be launched from a ship and used for Surveillance including SIGINT, COMINT (desirable). Target Acquisition Reconnaissance and building MDA (Maritime Domain Awareness) around a Task Group. The secondary roles of RPA would include anti-piracy, anti-terrorist activities and assist in Search and Rescue (SAR).

### Challenge No:4

<b>Problem Statement/Challenge title</b>	Next Generation Helo Harnessing and Traversing System (NGHTTS) for Indian Naval Ships.
<b>Challenge brief/definition</b>	Presently, Helo traversing system in use are crew intensive and restrict the landing area of the pilot to a limited envelope. NGHTTS is envisioned to carry out the dual function of securing helicopter following landing until release (prior take off) as well as traverse. The helicopter in and out of hangar without any manual intervention.

### Challenge No:5

<b>Problem Statement/Challenge title</b>	Environmentally Benign Fixed Fire Fighting (Suppression) system for machinery spaces
<b>Challenge brief/definition</b>	<p>The machinery spaces inside a warship consists of various engineering equipment (that employs fuel oil (diesel), lube oil etc.) and burning materials such as lagging, cleaning material (mutton cloth), electrical cablings that could become the source of a fire. Therefore, fixed firefighting systems such as. Halon, CO2, Water Mist, FM 200, NOVEC 1230 etc. are installed in the machinery spaces to supress fire caused due to the aforesaid source. However, the extinguishing agents/ systems that are currently being used in IN are lethal, high Ozone Depletion Potential (ODP) Global Warming Potential (GWP) being imported. Hence, there is a requirement to develop a fixed fire suppression system for machinery spaces that employs clean agents which are environmentally benign and easily available in Indian market.</p>

### Challenge No:6

<b>Problem Statement/Challenge title</b>	Autonomous HULL maintenance crawler for cleaning, hydro-jetting, hydro-blasting and vacuum blasting.
<b>Challenge brief/definition</b>	<p>(a)<b>Proposed Product Concept</b> Hull cleaning, hydro-jetting, hydroblasting, hull survey, and painting are repetitive activities undertaken during the dry dock phase of ship/submarine maintenance. These activities are repetitive in nature, labour-intensive and are traditionally undertaken manually using scaffoldings and other COTs equipment through rate contracts. There is also scope of human error while manually undertaking these labour-intensive activities. This creates a conducive environment for the induction of the latest technologies and the introduction of automation into the maintenance methodology. The product should be a remotely operable magnetic hull surface and ship-side crawler with replaceable modules for blasting, hull survey and paint application in dry dock. It will be remotely operated by a human operator and the crawler should be able to move on the surface of the entire underwater external hull when the ship is docked.</p> <p>(b) <b>Key Technologies To Be Applied</b></p> <p>(i)The crawler should be accurate, user-friendly, and cost-effective to all stakeholders and may have AI-assisted technology for data processing.</p> <p>(ii) The use of Robotics engineering and augmented reality may be undertaken so that hull survey can be accurate and accordingly, an effective accurate maintenance can be undertaken.</p> <p>(c)<b>Key Product Features and Functionalities, Key features and functionalities to include the following:</b></p> <p>(i) Crawling on external hull in dry dock i.e movement on external underwater hull surface without support/assistance.</p> <p>(ii) Capable of multiple dry dock activities such as blasting, hull survey and painting.</p> <p>(iii) Multiple arms/ faucets for undertaking each activity along with associated machinery/ system for undertaking respective function.</p> <p>(iv) IP 67 rating to ensure dirt/dust/water proofing</p> <p>(v) Remote operation</p>