Challenge No:- 01

Directorate & organization	DNA
Problem Statement/ Challenge title	Moisture Wicking Hydrophobic Weapon Cover
Challenge brief/ definition	Manufacture weapon/ gun covers which are flame proof, hydrophobic from the external side, and also possess moisture wicking properties such that nil resultant water accumulation is noticed underneath the covers.
Future Expectations	Utility of the product is to avoid accumulation of resultant water/ moisture underneath the gun/ weapon covers.
Project Officer	Will be intimated
MoQ	Will be intimated

Challenge No:- 02

Directorate & organization	DSOD
Problem Statement/ Challenge title	Underwater Photography Noise Cancellation using Artificial Intelligence and Deep Learning
Challenge brief/ definition	Underwater photography in turbid waters gives sub optimal results. Cancellation of noise to provide clearer pictures is necessary for many applications.
Future Expectations	(a) Better quality pictures. (b) Obviate dependency on foreign OEMs for niche technology/ spares/ services. (c) Reduction in Cost. (d) Building expertise in niche technology.
MoQ	10
Project Officer	Cdr Anjani Kumar

Challenge No:- 03

Directorate & organization	DSOD
Problem Statement/ Challenge title	Axial flux motor based lightweight portable OBM with optional fuel cells
Challenge brief/ definition	Presently, conventional OBMs are being used with rubber dinghies / inflatable craft. These OBMs are relatively large in size, have a prominent aural signature and produce a wake which can lead to visual and audible detection of the rubber dinghy by the adversary.
Future Expectations	(a) An axial flux motor for an electric OBM would make it lighter and silent thereby enhancing the success probability of a mission. (b) It would obviate dependency on foreign OEMs for niche technology/ spares/ services. (c) There will be a reduction in cost as the product enters production. (d) We would also obtain building expertise in niche technology.
MoQ	66
Project Officer	Cdr Anjani Kumar

Challenge No:- 06

Directorate & organization	DSOD
Problem Statement/ Challenge title	To design and develop a Disposable Light Weight Drone (DLD) (preferably < 250 gm)capable of providing the ground soldier with immediate situational awareness. The system is envisaged to be capable of providing firsthand information directly to the user in the form of live video and / or HD still imagery
Challenge brief/ definition	Presently, no such equipment exists that can provide immediate situational awareness to the troops on ground. Troops are majorly depended on command stations/ UAVs for relaying data. This information from UAVs and other sources is usually processed by using various filters and then provided which may be unrelated to actual requirement or delayed.
Future Expectations	For special operations
MoQ	150
Project Officer	Cdr Anjani Kumar

Challenge No:- 07

Directorate & organization	DSOD
Problem Statement/ Challenge title	Tethered underwater ROV for underwater inspection and repairs
Challenge brief/ definition	Manufacture of UWROV to obviate dependency on foreign OEMs for niche technology/ spares/ service. Additionally, it will be redundancy to existing UWROVs. The ROV should also be able to undertake minor tasks through arms (controlled from the surface through the tether). Fully dexterous arms replicating the movement of the operator on surface wearing gloves would be preferred.
Future Expectations	(a) Redundancy to existing UWROVs and improvement on the capability. (b) Obviate dependency on foreign OEMs for niche technology/ spares/ services. (c) Reduction in Cost. (d) Building expertise in niche technology.
MoQ	10
Project Officer	Cdr Anjani Kumar

Challenge No:- 08

Directorate & organization	DIT
Problem Statement/ Challenge title	Hardware enforced solution against advanced, persistent and coordinated attacks which acts by executing a privilege greater than that of OS Kernel to prevent kernel mode malware
Challenge brief/ definition	The security of applications hinges on the trustworthiness of the operating system, as applications rely on the OS to protect code and data. As a result, multiple protections for safeguarding the integrity of kernel code and data are being continuously proposed and deployed. These existing protections, however, are far from ideal as they either provide partial protection, or require complex and high overhead hardware and software stacks. The aim is to create a low-overhead, hardware assisted, memory protection scheme that safeguards the operating system from rootkits and kernel-mode malware.
Future Expectations	(a) Prevents runtime modification of the kernel's critical code/data by locking them at the hardware level once the boot process is complete. (b) Takes away the ability to execute malicious kernel-mode code or the ability to modify static kernel data significantly limiting the attacker's facilities. (c) Maintaining a separate physical address permission table has advantage that it cannot be disabled if the kernel is compromised. Furthermore, since the physical address permission tables do not rely on virtual page permissions, attacks that manipulate the page table entries are prevented. (d) Obviates the need to continuously run an integrity monitoring software.
MoQ	Will be intimated
Project Officer	Cdr Sakar Mishra

Challenge No:- 09

Directorate & organization	DSMAQ
Problem Statement/ Challenge title	Development of submarine Voyage Data Recorder
Challenge brief/ definition	Voyage Data Recorder is an integral part of safety of life at sea. The aim is to maintain and store - in as secure and retrievable form - information concerning the position, movement, physical status, command and control of a vessel. It aims to aid in re-establishment of the voyage details during an incident investigation.
Future Expectations	In case of an unfortunate mishap on a submarine, the only way to recover information regarding the sequence of events leading to a submarine incident, is to design and develop a ruggedized Submarine Voyage Data Recorder on the lines of 'Black-Box' of an aircraft.
MoQ	Will be intimated
Project Officer	Capt Gaurav K Saini

Challenge No:- 10

Directorate & organization	DSMAQ
Problem Statement/ Challenge title	Development of Submerged Submarine Launched Expendable Bathythermograph (SSLXBT)
Challenge brief/ definition	Submarines rely heavily on knowledge and exploitation of the bathymetric profile in the area of operations. Presently the submarine has to physically dive to its maximum depth frequently to measure bathymetric profile. This puts additional load / strain on the hull, machinery and crew. The SSLXBT will enable a submarine to deploy an expendable probe through the existing Submerged Signal Ejector tube to measure water temperature from the surface level down to depths far exceeding the submarine's maximum diving depth without physically changing depth.
Future Expectations	Developing of expendable probe capable of measuring bathymetric data in area of operation and enable its recording and display without the submarine having to physically change its depth. The operational role of SSLXBT system is to obtain accurate sea water temperature to accurately obtain bathymetric profile for submarine operations.
MoQ	Will be intimated
Project Officer	Capt Gaurav K Saini

Challenge No:- 11

Directorate & organization	DAWFS
Problem Statement/ Challenge title	Development of AI (Artificial Intelligence) based FOD (Foreign Object Debris) detection and classification system for FOD management at Air Stations. The system should be based on computer vision algorithm using image sensors to monitor airport runway images in real time and perform FOD detection and classification
Challenge brief/ definition	FOD prevention and clearance is an important aspect of safe flying operations. FOD has been root cause of quite a few failures of aero engines as well as damage to costly air assets. There are various FOD measures in place at Naval Air Stations and Ships, however there is scope for improvement. Owing to relevant threats associated with aircraft operations, enhancing FOD management solution is considered key priority for ground operations. Towards enhancing IN capability for FOD detection and classification capability, IN is looking for an AI based, self-learning FOD detection system having full control and visibility of runway and manoeuvering areas, during day and night and also during inclement weather, capable of detecting and classifying FODs ranging from small aircraft parts such as rivets, washers, screws etc. to large objects including birds and other wild life.
Future Expectations	The system should be capable of detecting and classifying FOD on the runway and manoeuvering areas in real time. The monitoring, detection and classification of FOD should be based on computer vision algorithm (using optical image and radar sensors) and advanced image and radar data processing technology. The AI based FOD detection system is required to augment IN FOD mitigation measures at air stations for detection and classification of FODs towards enhancing overall flight safety.
MoQ	10
Project Officer	Cdr Ashish Ganu S

Challenge No:- 12

Directorate & organization	DSR
Problem Statement/ Challenge title	Beam forming ASIC based radar with massive MIMO technology
Challenge brief/ definition	To develop a lightweight radar based on beam forming at the chip level / array covering I band to serve as the navigational radar on ships.
Future Expectations	(a) Redundancy to existing navigational system. (b) Reduced power requirements. (c) Better signal to noise ratio. (d) Reduction in cost. (e) Obviate dependency on foreign OEMs for niche technology/ spares/ service. (f) Building expertise in niche technology.
MoQ	Will be intimated
Project Officer	Cdr Abhishek Kumar

Challenge No:- 13

Directorate & organization	DSR
Problem Statement/ Challenge title	AI Based collision avoidance system
Challenge brief/ definition	To develop an AI based fully autonomous collision avoidance system for unmanned vessels.
Future Expectations	(a) Elimination of human error/ intervention for safe navigation. (b) Reduction of manpower. (c) Reduction in cost. (d) Obviate dependency on foreign OEMs for niche technology/ spares/ service. (e) Building expertise in niche technology.
MoQ	Will be intimated
Project Officer	Cdr Abhishek Kumar

Challenge No:- 14

Directorate & organization	DSR
Problem Statement/ Challenge title	Automatic floatation device dispersal drone.
Challenge brief/ definition	Man Over Board (MOB) is a real danger at sea, especially when the sea is rough. The aim is to devise a method by which a man who has fallen overboard may be quickly found and provided with a floatation device.
Future Expectations	(a) Fast and effective method of rescue of man overboard during day and night. (b) Can provide assistance in recovery of person, in case the exact position is not known. This would entail reconstruction of the ship's past track and searching for the survivor using image recognition. (c) Building expertise in new technology.
MoQ	Will be intimated
Project Officer	Cdr Ranjit Singh

Challenge No:- 15

Directorate & organization	DSR
Problem Statement/ Challenge title	Development of Hydro acoustic ASW vector sensors
Challenge brief/ definition	There is a need to develop a light weight hydro acoustic ASW vector sensor which could be mounted on light weight platforms.
Future Expectations	(a) Obviate dependency on foreign OEMs for niche technology/ spares/ service and building expertise in niche technology. (b) Development of low cost system which can be operated from small platforms.
MoQ	Will be intimated
Project Officer	Cdr Nitin Kumar

Challenge No:- 16

Directorate & organization	DSR
Problem Statement/ Challenge title	Converting oxygen torpedoes to UW targets for ASW training and practice torpedo firings
Challenge brief/ definition	There exists a need to develop an UW target that can be embarked on a ship to facilitate sonar tracking exercises and torpedo firing exercises. To facilitate this, existing Oxygen torpedoes available within IN inventory may be converted to Self-propelled Underwater Recoverable Targets.
Future Expectations	(a) Obviate dependency on foreign OEMs for niche technology/ spares/ service. (b) Development of low cost UW Target system which can be operated from ships fitted with heavy weight torpedo tubes. (c) Enhance confidence level of ASW crew in tracking of underwater targets. (d) Building expertise in niche technology. (e) Will provide organic capability to ships for undertaking underwater tracking exercises whilst being deployed independently.
MoQ	Will be intimated
Project Officer	Cdr SK Singh

Challenge No:- 17

Directorate & organization	DSR
Problem Statement/ Challenge title	Blue green lasers for underwater applications
Challenge brief/ definition	Presently acoustic based systems are the primary means of detecting underwater objects. However, acoustic detection is limited by various physical parameters of water column like temperature, depth, salinity, ambient noise etc. Consequently, secondary means for detection of underwater objects need to be developed. Inter alia, these secondary means include Blue-Green laser based systems which are showing promise in detection of underwater objects.
Future Expectations	(a) Redundancy in current underwater detection capability. (b) Indigenous development of a niche technology.
MOQ	Will be intimated
Project Officer	Cdr Nitin Kumar

Challenge No:- 18

Directorate & organization	DSR
Problem Statement/ Challenge title	Reusable off board missile decoy
Challenge brief/ definition	Anti-ship missiles fly at 3-5 m altitude in terminal phase of 10-12 km at speeds up to 3 Mach. The reaction time for Anti-Missile Defense (AMD) is therefore about 10-25 sec. AMD measures include 'Hard kill' measures (Physical destruction of the incoming threat through the use of Surface to Air Missiles or Close in Weapon Systems) and 'Soft kill' measures (anti-missile decoys, jamming or chaff). Modern missiles are designed with ECCM against conventional chaff & jamming. Seekers may also have home-on features for radiation. Active missile decoys can impersonate target ship RCS (Radar Cross Section) and be effective as soft kill AMD measure in the terminal phase of the incoming missile. Drones can be used for quick deployment of the decoys.
Future Expectations	(a) Provide ships with enhanced soft kill measures against incoming missiles. (b) The drones can be quickly launched and positioned astern of a ship. (c) The system can be recovered after the missile threat is over and should be reusable. (d) Cost effective AMD measure. (e) Build expertise in niche technology. (f) Use of active decoys permits the RCS (Radar Cross Section) to be controlled.
MoQ	Will be intimated
Project Officer	Cdr Nishant Chandrayan

Challenge No:- 19

Directorate & organization	DSR
Problem Statement/ Challenge title	Microwave Obscurant Clouds (MOC) which are programmable based on the threat
Challenge brief/ definition	Modern Anti-Ship cruise missiles employ a variety of complex guidance and navigation measures to defeat ship defences. These include infrared imaging (IIR) and Electro-Optical seekers, high speed supersonic terminal approach and ECCM techniques against conventional chaff and jamming. To counter this, navies across the world use a combination of both hard kill and soft kill measures. Accordingly, passive measures such as Microwave Obscurant Clouds are increasingly relevant as a soft kill option to divert/ counter the incoming missile threat away from the ship.
Future Expectations	(a) Provide ships with enhanced soft kill measures against incoming missiles. (b) Obviate dependency on foreign OEMs for niche technology/ spares/ service. (c) Cost effective Anti-Missile defence measure. (d) Building expertise in niche technology.
MoQ	Will be intimated
Project Officer	Cdr Rajat Kundu

Challenge No:- 20

Directorate & organization	DSR
Problem Statement/ Challenge title	Portable RCS Measuring Device that is capable of independent operation and deployable from multiple platforms (Ship, boat, UAV, etc)
Challenge brief/ definition	Radar cross section measurement of ships is an important aspect in formulating various measures and doctrines. In deployment of chaff, knowledge about the RCS of a ship leads to the requisite number of chaff rockets to be fired. Portable RCS Measuring Device will give the capability to measure RCS of ships and enable in better utilization of soft kill measures against anti-missile defence.
Future Expectations	(a) Redundancy to existing RCS measurement system. (b) Obviate dependency on foreign OEMs for niche technology/ spares/ service. (c) Reduction in cost. (d) Building expertise in niche technology. (e) Flexibility to carry out RCS measurement.
MoQ	Will be intimated
Project Officer	Cdr Ranjit Singh

Challenge No:- 21

Directorate & organization	DSR
Problem Statement/ Challenge title	Autonomous weaponised boat swarms
Challenge brief/ definition	There is a need to develop an unmanned vessel with integrated system capable of performing a variety of naval and security missions which would include littoral/ ODA Patrol, High Speed Interdiction, Coastal Surveillance, Local Naval Defence, constabulary operations, C4ISR and Low Intensity Maritime Operations (LIMO).
Future Expectations	(a) Perform dull, dangerous and dirty missions without risking human life. (b) Obviate dependency on foreign OEMs for niche technology/ spares/ service. (c) Building expertise in niche technology.
MoQ	Will be intimated
Project Officer	Cdr Nishant Chandrayan

Challenge No:- 22

Directorate & organization	DSR
Problem Statement/ Challenge title	AI based Multi-Radar signal conversion, distribution and multi-target tracking for IN ships based on particle filtering
Challenge brief/ definition	To develop an AI based multi-radar signal conversion and distribution to one single window.
Future Expectations	(a) Autonomously choose which tracker to use. (b) Single window for detection and tracking. (c) Reduction of manpower. (d) Obviate dependency on foreign OEMs for niche technology/spares/ service. (e) Building expertise in niche technology.
MoQ	Will be intimated
Project Officer	Cdr Abhishek Kumar

Challenge No:- 23

Directorate & organization	DSMO
Problem Statement/ Challenge title	Depth based positioning system
Challenge brief/ definition	Design a software for statistical correlation of observed depth so as to Navigationally Fix the position of a submarine. The software should be able to statistically co-relate the depths observed by a high definition echo sounder on the submarine with the existing depths in an Electronic Chart stored and displayed in the Electronic Chart Display System (ECDIS) and accurately fix the position of the submarine.
Future Expectations	(a) Reduce dependence on terrestrial / space based navigation systems. (b) Ability to operate in a GNSS denied environment. (c) Obviate need for submarines to expose masts for obtaining position updates. (d) Building expertise in niche technology.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 24

Directorate & organization	DSMO
Problem Statement/ Challenge title	AI Based Ship Recognition software
Challenge brief/ definition	An AI based software is required for image processing and identifying a ship visible through the periscope using an inbuilt library. A software is required to use the already available library of ships and quickly identify the same based on the ship visible on the periscope there by saving time and improving efficiency of the periscope watch-keeper.
Future Expectations	(a) Higher accuracy. (b) Limit the human error. (c) Save time compared to identifying the ship manually. (d) Integrating the available library for real-time outcome.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 25

Directorate & organization	DSMO
Problem Statement/ Challenge title	Tethered/ Expendable Submarine Communication Buoy
Challenge brief/ definition	Design a Tethered/ Expendable submarine communication buoy. The tethered submarine communication buoy should be capable of being released/ retracted from a depth of 300 m with the submarine propelling at speeds up to 6 knots. The communication buoy should house antennae capable of receiving VLF, HF and transmitting SATCOM and HF signals.
Future Expectations	(a) Obviate need for submarines to expose masts for communication. (b) If the buoy is tethered, updating the position using GNSS (though not exact due to the difference in position between the submarine and the buoy) will be an added advantage. (c) Building expertise in niche technology.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 26

Directorate & organization	DSMO
Problem Statement/ Challenge title	Fire suppressant
Challenge brief/ definition	A material which can be installed in the confined spaces of a submarine there by suppressing a fire in the initial stages only. The material should be available in multiple options such as pads for flooring, wire or cable's covering, covers and tapes which can be applied on small places which are deemed hazardous from the fire-safety perspective. The fire suppressant should release the extinguishing agent stored in the form of micro-capsules at a specific temperature.
Future Expectations	(a) Covering of all inaccessible places on-board. (b) Covering of the Main Line Cables (MLC) in the inaccessible areas. (c) Covering of vital machinery. (d) Fire suppressant pads to be installed in distribution panels, battery breakers & switchboards.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 27

Directorate & organization	DSMO
Problem Statement/ Challenge title	Multi-sensor monitoring of machinery
Challenge brief/ definition	To monitor real time parameters of running machinery which is otherwise being monitored manually. Due to constrained space on-board, multi-point monitoring sensors on critical machinery for real-time health monitoring be developed. This will be a check on the rudimentary method of physical inspection for each and every machinery visually and by using Shock Pulse Measurement (SPM) meters. This is considered essential for submarines (though there would be utility for ships as well) because of the confined space where physical access from all sides of the machinery may not feasible without degutting of the equipment due to limited access window. These sensors are proposed to be installed on vital equipment such as Supply-Exhaust blowers, hydraulic motors, ACs and alternators for their continuous monitoring and together with software and AI predictive failures could be more effective.
Future Expectations	(a) Efficient fault monitoring. (b) Reduced downtime of machinery. (c) Real-time analysis available for any mission and for further improvement.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 28

Directorate & organization	DSMO
Problem Statement/ Challenge title	Noise augmentation unit
Challenge brief/ definition	The stealth of a submarine is paramount for submarine operations. One of the signatures vital for identifying a dived submarine is its acoustic signature. To develop noise augmentation units to be used for masking submarine's own signature when operating within the vicinity of other nation warships during peacetime. Stealth is the most important strength of submarines. During peace time exercises a submarine shares its acoustic signature with other units in the vicinity. It is important to mask our own acoustic signature when the tactical situation so demands.
Future Expectations	(a) Obviate dependency on foreign OEMs for niche technology/ spares/ service. (b) Building expertise in niche technology.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 29

Directorate & organization	DSMO
Problem Statement/ Challenge title	Smart shore supply and charging cable gangway
Challenge brief/ definition	To develop smart, light-weight, retractable and easily deployable cable gangways with cable housing for submarine shore supply and shore charging cables. The same are required when the submarine is alongside. Presently, these cables have unnatural wear and tear. To avoid this, it is proposed to design and develop a small and smartly deployable gangway for submarines for housing and routing these cables from the jetty till the shore supply and charging points. This light-weight and portable gangway is essential for the submarines for both shore supply and shore charging cables. In the absence of these gangways the cables get damaged while coiling between the jetty and the submarine and/ or pontoons. This not only involves financial loss due to the need to frequently replace the cables but is also a safety issue as these damaged cables pose risk of electric shock, short circuit and fire.
Future Expectations	(a) Prolong the life of the submarine shore charging and shore supply cables. (b) Reduce the risk of fire and accidents. (c) Will save man power and resources for managing these cables.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 30

Directorate & organization	DSMO
Problem Statement/ Challenge title	Smart shore supply and charging cable mobile units
Challenge brief/ definition	Smart mobile units for efficient wrapping safe storing and easy transporting of bulky shore supply and charging cables being used by submarines. Managing these have been a problem. The cables are required when the submarine is alongside to preserve its battery and to charge them. Any movement of the submarine from one jetty to another becomes a major evolution due to the requirement of removing / reconnecting these cables. Further, there is no provision to store these cables. Thus a smart solution is proposed for storing, transporting and deploying and re-deploying of these cables.
Future Expectations	(a) Prolong the life of the submarine shore charging and shore supply cables. (b) Reduce the risk of fire and accidents. (c) Will save a lot of man power and resources for managing these cables.
MoQ	A total of 5 Shore supply and around 16 shore charging cables
Project Officer	Will be intimated

Challenge No:- 31

Directorate & organization	DSMO
Problem Statement/ Challenge title	Non hull penetration connectivity to submarines
Challenge brief/ definition	A permanent solution for providing ethernet connectivity to submarines at harbor without any hull penetration. Unlike IN Warships, conventional submarines do not have any fixed point for establishing communication with the naval shore network through a jetty point. Mostly they are using the loose cables running down the conning tower as a temporary measure for establishing communication. This is only a temporary solution and possess many challenges such as frequent damage to the cables resulting in non-availability of the LAN, removal of the cable for every evolution which requires closing of the hatch for checking water and air tight integrity of the submarine, wastage of man-hour and frequent damage to the ethernet cable. All this could be easily avoided by providing a watertight box at the fin where in all the telephone, LAN and power connectivity could be given without penetrating the hull.
Future Expectations	(a) Continuous connectivity for submarines at harbour. (b) Eliminate waste of LAN Cables.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 32

Directorate & organization	DSMO
Problem Statement/ Challenge title	Submarine communication using blue green laser
Challenge brief/ definition	Using on Light Detection and Ranging (LiDAR) based on Blue-Green Lasers to establish communication from a ship or an aircraft to a submerged submarine. This technology will provide a communication between a dived submarine and a surface ship or an aircraft thus maintaining the stealth of the submarine.
Future Expectations	A submarine is at maximum risk of detection at its Periscope Depth (PD). The stealth of a submarine is paramount for submarine operations. Every time the submarine has to establish communication with a surface ship or an aircraft in the vicinity, it has to come up to PD, thus endangering the mission and the boat by compromising its stealth.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 33

Directorate & organization	DAPI
Problem Statement/ Challenge title	Development of super hydrophobic paint / coating for torpedoes which can increase the torpedo speed by reducing skin friction of water that acts on the torpedo
Challenge brief/ definition	Use of super hydrophobic paint / coating on torpedoes can increase the speed and endurance without any hardware changes and thus solve the problem of low speed.
Future Expectations	Increase in speed of the torpedoes without any hardware changes.
MoQ	02
Project Officer	Lt Cdr Abhinav Badhwar

Challenge No:- 34

Directorate & organization	DAPI
Problem Statement/ Challenge title	30 mm proximity fuze for gun mounts
Challenge brief/ definition	The 30mm automatic gun mount is a Close In Weapon System (CIWS) remotely controlled from the radar Fire Control System is intended for arming the ships against enemy aircraft, anti-ship missiles, enemy aircrafts as well as surface boats. The 30mm ammunition used in the gun should be able to engage all kinds of aerial targets/ threat scenarios. The present gun ammunition uses 30mm HE ammunition with Direct Action (DA) & Self Destruction (SD) Fuze. For effective engagement against aerial targets development of proximity/ programmable fuze for the ammunition is proposed. This would present a definite engagement response against all aerial targets including swarm drones. The proximity for effective operation is envisaged to be approximately between 0.5 to 1 m.
Future Expectations	(a) RF technology to sense the target proximity. (b) Battery module with firing circuit ministurised to fit the form factor of a existing 30mm shell. (c) Safe and Arm Device (SAD) to prevent premature initiation.
MoQ	5000
Project Officer	Lt Cdr Abhinav Badhwar

Challenge No:- 35

Directorate & organization	DAPI
Problem Statement/ Challenge title	Long range communication for locating practice torpedoes.
Challenge brief/ definition	The aim is to develop a tracker that can be fitted in practice torpedoes so as to provide location of the torpedo to the recovery ship at the end of run. Presently heavy weight practice torpedoes having horizontal surfacing, are using SBRT (Satellite Based Reporting Terminal) system which transmits location of the torpedo at the end of the run. SBRT transmits the location of the torpedo via satellite to the receiving station ashore. The location is then, through respective shore station, passed to the ships for recovery of the torpedo. However, SBRT cannot be used for heavy weight and light weight torpedoes attaining vertical position post completion the run. Thus, a transmitter is required to be fitted in the nose section which is exposed out of water post end of torpedo run. This transmitter should be able to directly communicate to the ship the location of the torpedo.
Future Expectations	Reduction in efforts of recovery ship in locating the torpedo.
MoQ	02
Project Officer	Lt Cdr Abhinav Badhwar

Challenge No:- 36

Directorate & organization	DAPI
Problem Statement/ Challenge title	AI based gun parts inspection system
Challenge brief/ definition	To develop AI based gun parts inspection system (Software & Hardware) consisting of sensors, deep learning and cognitive computing algorithm for five critical gun components to determine the serviceability and residual life of the 76/62 SRGM Gun. The system should be capable of creating a digital twin and predicting the remaining service life based on condition of the gun parts. The existing inspection involves dismantling & measurement of critical parameters of gun parts during scheduled inspections. This is undertaken by using various gauges.
Future Expectations	Efficient product lifecycle management, damage diagnosis, health monitoring, crack detection, measurement of erosion, historical analysis of component will be important. Though the instant case relates to gun parts, the same can be extended to other equipment as well.
MoQ	Will be intimated
Project Officer	Lt Cdr Abhinav Badhwar

Challenge No:- 37

Directorate & organization	DAPI
Problem Statement/ Challenge title	AI based barrel crawling bot inspection system
Challenge brief/ definition	To develop AI barrel crawling bot inspection system (Software & Hardware) consisting of crawling sensors which can undertake internal inspection of gun barrels of 76 mm caliber as well as rocket / torpedo launcher tubes. Deep learning and cognitive computing algorithm for damage prognosis & health monitoring to determine the serviceability state of Gun barrel, Rocket Launchers (RL) and Torpedo Tubes (TTs) will be used. The existing inspection involves use of cross piece gauges to undertake measurement of concentricity and other critical parameters of barrels as a part of scheduled maintenance. Further, these barrels need to be dismantled to check erosion, damage and other defects as part of Series Inspection/ maintenance. This is a manpower intensive activity and takes considerable time based on availability of maintenance manpower/ spares/ availability of ship. Further, the inspection data is currently analysed manually for undertaking predictive analysis based on trends and the process is proposed to be automated.
Future Expectations	The system shall be capable of undertaking damage prognosis & health monitoring of barrels of guns, rocket launchers and torpedo tubes in-situ.
MoQ	Will be intimated
Project Officer	Lt Cdr Abhinav Badhwar

Challenge No:- 38

Directorate & organization	DNBCD
Problem Statement/ Challenge title	Personal locator device with fall detection
Challenge brief/ definition	Damage control patrols and fire-fighting are high risk duties in which the fire fighter or patrol man can become incapacitated and is unable to safely leave an immediately dangerous to life and health environment. During firefighting operations, a firefighter may also get disoriented and get left behind in the compartments filled with smoke and other dimly lit conditions. Similarly, Damage Controls Patrols operate in silent hours and are the detectors/first responders to a fire or flooding emergency. While operating alone, these personnel are at risk of being incapacitated by injury resulting in inability to raise an alarm or seek help.
Future Expectations	(a) Use of location / alarm devices onboard ships to prevent injury/loss of life. (b) Obviate dependency on foreign OEMs for niche technology/ spares/service. (c) Reduction in cost. (d) Building expertise in niche technology.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 39

Directorate & organization	DNBCD
Problem Statement/ Challenge title	Smart firefighting breathing apparatus
Challenge brief/ definition	It is intend to design add-on smart features to the existing Breathing Apparatus (BA) sets. To increase the efficiency and safety of crew in Fire Fighting Organization, smart fire-fighting BA has been proposed as an add-on to the existing breathing apparatus which can monitor parameters such as pressure, breathing rate and time remaining and convey the same to fire-fighting attendant using wireless means.
Future Expectations	Enhance efficiency and safety of crew.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 40

Directorate & organization	DNBCD
Problem Statement/ Challenge title	NBC Monitoring bot
Challenge brief/ definition	The NBC Monitoring bot should be designed to allow a user to remotely control the device which can be fitted with suitable sensors for Nuclear, Chemical and Biological monitoring. The sensor information must also be transmitted back to the controller.
Future Expectations	Allow user to remotely control the device to remotely undertake NBC monitoring using the bot fitted with suitable sensors.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 41

Directorate & organization	DNBCD
Problem Statement/ Challenge title	Develop low cost, indigenous morpene
Challenge brief/ definition	Presently, Morpene used for fire-fighting purpose as a foaming agent (including on Aircraft Carriers) is being imported. It is proposed to indigenise the same.
Future Expectations	Low cost indigenous morpene compound as a replacement of the product currently being imported.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 42

Directorate & organization	DNBCD
Problem Statement/ Challenge title	Light Weight Portable Submersible Pump
Challenge brief/ definition	To use axial motor based submersible pumps in order to substantially reduce weight as well as the form factor. These pumps need to be easily portable and are intended to be used for pumping water out of flooded compartments whilst being submerged.
Future Expectations	Reduction in weight and size.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 43

Directorate & organization	DNBCD
Problem Statement/ Challenge title	Fire Fighting bot
Challenge brief/ definition	Remote controlled firefighting BOT is to be designed to allow a user to control a fire fighter robot, which is essentially an unmanned ground vehicle equipped with a water jet. To allow the user to control the firefighting effort, the bot equipped with water jet / spray and trainable to the required direction. This can be connected to fire main of the ship and have a Thermal Imaging Camera (TIC) making it capable of detecting and suppressing fires in enclosed spaces. Being lightweight and portable would be required for the bot.
Future Expectations	To increase the efficiency and safety of crew in Fire Fighting Organization, the use of fire-fighting BOT has been proposed.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 44

Directorate & organization	DNBCD
Problem Statement/ Challenge title	Caged drone with a Thermal Imaging Camera (TIC) for fire-fighting in confined spaces
Challenge brief/ definition	To design a caged drone with TIC for fire-fighting in confined spaces. The aim is to the allow user to control fire fighter robot, which is essentially UAV/Drone with TIC making it capable for detecting the seat of fire as well as presence of human in smoke filled compartments. The aim of the cage is to enable use in confined spaces inside the compartments (where position keeping is difficult) such that collision with a fitting or bulkhead will not damage the drone.
Future Expectations	To allow the user to control fire fighter robot, which is essentially UAV/Drone with TIC making it capable for detecting the seat of fire as well as presence of human in smoke filled compartments.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 45

Directorate & organization	DNBCD
Problem Statement/ Challenge title	Aerogel based fire proximity suit for better efficiency in fire-fighting.
Challenge brief/ definition	To increase the efficiency and safety of crew in fire-fighting by using aerogel based fire proximity suits, thereby reducing weight and increasing heat resistance. The suit should have durability for repeated use (including for exercises) and protect the person wearing it from high temperatures due to the need to operate in vicinity of a fire.
Future Expectations	Better efficiency and safety of crew.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 46

Directorate & organization	DNBCD
Problem Statement/ Challenge title	Instant cooling vests for fire fighters
Challenge brief/ definition	To provide relief to fire fighters while fighting the fire, instant cooling vests which have the ability to lower temperatures instantly can be used. The vests are intended as cooling vests for fire fighters providing first-aid and should therefore be amenable to being donned quickly till the time the main fire-fighting team is getting ready. The same can also be used by personnel to escape from a compartment on fire whilst maintaining protection from heat.
Future Expectations	The vests should be light weight and have heat resistance / instant cooling properties. It may also be sued for proving comfort to watch-keepers / maintenance crew in machinery spaces where the ambient temperature is high.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 47

Directorate & organization	DNBCD
Problem Statement/ Challenge title	Portable Hydraulic Metal Cutter
Challenge brief/ definition	It is very challenging to cut/breech the watertight doors/ hatches which may be heavily corroded/rusted. During actual fire-fighting as well as flooding, it may be required to evacuate personnel to a safe place in a time efficient manner. During this and other damage control tasks, it may be required to cut the metal door/hatch/partition bulkhead of a compartment to come out of affected danger zones. It should be workable/capable in marine environment and battery operated.
Future Expectations	The equipment which is proposed is a back – pack based hydraulic system with multiple tools (changeable) for breaching of doors, cutting metal etc.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 48

Directorate & organization	DNBCD
Problem Statement/ Challenge title	Indigenous Aluminised Fire Proximity Suit (AFPS)
Challenge brief/ definition	Presently, AFPS suits in use are being imported. It is intended to develop indigenous AFPS which are durable and meet the specifications of the suits currently in service.
Future Expectations	It is proposed to develop indigenous AFPS so as to cut import dependence.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 49

Directorate & organization	DNBCD
Problem Statement/ Challenge title	Light weight Portable Illumination Device
Challenge brief/ definition	To design a rugged, waterproof and lightweight illumination device for damage control / fire-fighting activities. The light source whilst being lightweight should be powerful (specifications will be provided) and be capable of being used underwater.
Future Expectations	It is proposed to use the same as an underwater illumination device as well as a replacement for the Damage Control torches currently in use.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 50

Directorate & organization	DNBCD
Problem Statement/ Challenge title	Filtration based breathing apparatus
Challenge brief/ definition	To use lightweight Breathing Apparatus (BA) based on the principle of filtration rather than being a self-contained compressed gas cylinder. The use of the lightweight BA is envisaged in compartments where oxygen is available but air is contaminated with pollutants including toxic gases and smoke. Filteration of the same would provide breathable air to the firefighter without donning cumbersome breathing apparatus which in addition to being heavy are also limited in endurance.
Future Expectations	Light weight and better filtration capability so as to remove a variety of toxins including Carbon dioxide and carbon mono oxide.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 51

Directorate & organization	DNAS
Problem Statement/ Challenge title	Development of long range communication for tracking and exchanging short message between *IN* helicopter (Chetak) and a ship
Challenge brief/ definition	Presently, Chetak helicopter operational range is limited afloat due to non-availability of a suitable tracking aid and automatic positional information exchange between the helo/ship. Fitment of a suitable system to aid in providing positional information, aid the aircraft to home on to the ship and for passing messages without breaking RT silence is required for enhancing operational range of the helicopter.
Future Expectations	Compact, lightweight equipment capable of operating in the aviation requirement. Separate devices would be required for fitment on a helicopter and for shipborne use.
MoQ	50
Project Officer	Cdr Amit Kumar

Challenge No:- 52

Directorate & organization	DNAS
Problem Statement/ Challenge title	Light weight integrated ELINT-COMINT system for MULE tactical RPA platform
Challenge brief/ definition	With the rapid development in the field of radar communication and missile technology, there is a requirement for the next generation of lightweight indigenous airborne ELINT/COMINT systems covering the frequency range from 0.1-40 Ghz for usage onboard NSUAS/MULE class tactical RPA (Remotely Piloted Aircraft). Electronic Warfare (EW) has emerged as a decisive factor in modern day warfare and influences the outcomes of Naval operations and engagements very significantly. Pertinently, correct identification of radar intercepts by ESM systems in a dense maritime environment plays a critical role. Similarly, COMINT systems are also required to detect, intercept and demodulate different types of voice/ data transmissions that are emitted at sea. The capability to have an integrated ESM system (including ability to detect and DF 'A' band transmissions) needs to be developed indigenously.
Future Expectations	(a) Compact, lightweight system. (b) Obviate dependency on foreign OEMs for niche technology/ spares/ service. (c) Reduction in cost. (d) Building expertise in niche technology.
MoQ	10
Project Officer	Cdr Akshay Raja

Challenge No:- 54

Directorate & organization	DNAS
Problem Statement/ Challenge title	GNSS based helicopter landing aid
Challenge brief/ definition	Development of Global navigation Satellite System (GNSS) (NAVSTAR, GLONASS, GALILEO, GAGAN SBAS and IRNSS compatible) based 3D helicopter approach and landing aid for IN helicopters for assistance in approach and landing on helo deck onboard in bad weather/ reduced visibility/ night at sea states upto 5, along-with integration and certification of airborne system, shipborne system and trials.
Future Expectations	The system is aimed towards enhancing operational envelope of helicopters and aiding recovery of helicopter on the helo deck in night/reduced visibility and bad weather with centimetric accuracy. The aim is to develop suitable GNSS based 3D approach and landing system for IN helicopters (ALH).
MoQ	16
Project Officer	Cdr Amit Kumar

Challenge No:- 55

Directorate & organization	DNS
Problem Statement/ Challenge title	Development of Shipborne lightweight integrated ESM cum COMINT system
Challenge brief/ definition	Electronic Warfare (EW) has emerged as a decisive factor in modern day warfare and influences the outcomes of Naval operations and engagements very significantly. Pertinently, correct identification of radar intercepts by ESM systems in a dense maritime environment plays a critical role. The aim is to develop indigenously designed and developed lightweight EW system with integrated ESM and COMINT sub-systems incorporating latest technologies, for shipborne applications. The system should be capable of simultaneously monitoring and undertaking DF (Direction Finding) of all available RF Signals (both Radar and Radio) in the given band from 0.1 to 40 GHz.
Future Expectations	(a) Obviate dependency on foreign OEMs for niche technology/ spares/ service. (b) Reduction in cost. (c) Building expertise in niche technology.
MoQ	20
Project Officer	Will be intimated

Challenge No:- 59

Directorate & organization	DNAS
Problem Statement/ Challenge title	Airborne Mine Detection System for helicopters
Challenge brief/ definition	Development of Airborne Mine Detection System for IN helicopters viz MH 60R, SK 42B/C, DB MRH, Future Spl Ops Helicopter. Mines are inexpensive and easily deployable means that could effectively disrupt maritime operations, thereby, preventing naval forces from achieving their defined objectives. They can also inflict heavy damage and may lead to blocking of a harbour if thorough Mine Counter Measures (MCM) are not implemented. Towards enhancing MCM capability the system would be utilised for various maritime operations viz establishment of swept channel, littoral warfare and integral operations of expeditionary and amphibious task force. This capability is envisaged to be organic to the ship.
Future Expectations	Intended for ship based use and would be exposed to salt laden atmospheric conditions.
MoQ	20
Project Officer	Will be intimated

Challenge No:- 60

Directorate & organization	DSR
Problem Statement/ Challenge title	Underwater Communication system for AUV (Autonomous Underwater Vehicles)
Challenge brief/ definition	The aim is to develop underwater communication system for AUVs. Transmitting data reliably through water is extremely difficult. The effectiveness of AUVs in swarm configuration depends largely upon the communication network. There is a requirement of transmitting data wirelessly underwater and establishing two way communication between multiple AUVs for undertaking swarming of AUVs. The system may be developed using laser based underwater data link, acoustic modem for underwater communication and electromagnetic underwater communication.
Future Expectations	The solution is envisaged to be developed onboard AUVs for mission control by master AUV within swarm of AUVs.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 61

Directorate & organization	DSR
Problem Statement/ Challenge title	Underwater Navigation system for AUV (Autonomous Underwater Vehicles)
Challenge brief/ definition	The aim is to develop underwater navigation system for AUVs. There exists a need to develop underwater navigation system to facilitate accurate navigation for AUVs whilst operating underwater.
Future Expectations	(a) Development of low cost underwater navigation system. (b) Obviate dependency on foreign OEMs for niche technologies.
MoQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 62

Directorate & organization	DSR
Problem Statement/ Challenge title	3D Forward looking sonar for surface platforms and Autonomous Underwater Vehicles (AUVs)
Challenge brief/ definition	The aim is development of a 3-dimensional forward looking sonar for installation onboard surface platforms and AUVs for imaging of sea bed and water column for detection of ground mines, moored mines and other underwater obstacles.
Future Expectations	(a) Augmenting underwater detection capability. (b) Providing integral solutions to surface platforms for mine avoidance. (c) Indigenous development of a niche technology.
MOQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 63

Directorate & organization	DSR
Problem Statement/ Challenge title	AI based adaptive nose cancellation for sonars of autonomous underwater vehicles (AUVs) and ship borne sonars
Challenge brief/ definition	Efficacy of passive and active sonars is dependent on their ability to cancel out ambient noise, self-noise and radiated noise of the platform. Further, the various types of noises are constantly changing due to various environmental factors such as water temperature, salinity, weather conditions, sea bottom characteristics depth, traffic density in the area etc. These noises cause an inherent degradation in the sensor capability. Hence any noise cancellation system for a ship's sonar and AUV should be able to cancel out noise in varying conditions in an adaptive manner to detect the signal of interest.
Future Expectations	(a) Better operational efficiency of IN sonar systems. (b) Development of system capable of being used on AUVs. (c) Obviate dependency on foreign OEMs for niche technology/ spares/ service. (d) Development of low cost system which can be operated form multiple platforms viz ships and AUVs. (e) Building expertise in niche technology.
MOQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 64

Directorate & organization	TDAC
Problem Statement/ Challenge title	Autonomous Beach Check-Survey Device
Challenge brief/ definition	To develop an autonomous beach check survey device which is a portable lightweight boat with an echo sounder to undertake check soundings prior beaching/ operations close to inner harbor.
Future Expectations	(a) Autonomously undertake underwater profiling, depth measurement, wave-height calibration etc. while following a pre-fed path and transmitting the information to a ship. (c) Will calculate beach gradient and touch down point dynamically for all tidal heights. (e) Reduction of manpower (f) Reduction in cost. (g) Obviate dependency on foreign OEMs for niche technology/spares/ service. (h) Building expertise in niche technology.
MOQ	Will be intimated
Project Officer	Cdr Rahul Verma

Challenge No:- 65

Directorate & organization	DAA
Problem Statement/ Challenge title	EO/IR POD for naval aircraft
Challenge brief/ definition	Electro Optical / Infrared sensor system contained in an external Pod is required for operation from fighters, helicopters, maritime patrol aircraft and remotely piloted aircraft operating from and over both land and sea to designate specific targets. A software configurable digital wide band Data Link is required to provide real time connection between the aerial and ground segments. A ground exploitation station which enables optimized mission planning, real time mission control, exploitation management, real time image interpretation and data analysis (including change detection), reporting and dissemination is also to form part of the system. Electro Optical Infrared sensor system must be contained in an external pod and be composed of a variety of sensors including a visual (Super HD, color day), Near Infra-Red, Short and Medium Wave Infra-Red (NIR, SWIR and MWIR) operating simultaneously and attached to the same stabilized gimbaled platform.
Future Expectations	Development of EO/IR POD :- (a) Obviate dependency on foreign OEMs for niche technology/ spares/ service. (b) Development of low cost system and reduction in cost. (c) Building expertise in niche technology.
MOQ	12
Project officer	Cdr Gokul Suresh

Challenge No:- 66

Directorate & organization	DAA
Problem Statement/ Challenge title	Airborne high performance multi-mode Active Electronic Scanned Array (AESA) radar
Challenge brief/ definition	Radars fitted on IN aircraft are currently operating on Pulse Doppler technology. There is a requirement to replace these radars with modern AESA radars with simultaneous air and air-to-surface modes. These radars are expected to fit within the already existing radome shapes, use the existing mounting arrangements and remain within the power budget of installed equipment. Integration of the radar on to existing display systems/ Tactical Management system also is to be undertaken by the system provider.
Future Expectations	(a) Obviate dependency on foreign OEMs for niche technology/ spares/ service. (b) Development of low cost system and reduction in cost. (c) Building expertise in niche technology.
MOQ	20
Project officer	Cdr Gokul Suresh

Challenge No:- 67

Directorate & organization	DAA
Problem Statement/ Challenge title	Expendable Mobile ASW Training Target (EMATT), capable of simulating the sound and movement of a submarine
Challenge brief/ definition	The EMATT should be capable of being deployed from P8I aircraft, MH60R helicopters and ships (doing speed upto 10 kts). No modifications should be undertaken on the platform from which the EMATT is required to be launched. It should be dropped through the sonobuoy launch mechanism of the aircraft. After entry into the water, it should be capable of generating different types of a submarine sound. Thus, a single EMATT can simulate different types of target (Submarines and Torpedoes), thereby ensuring maximum training value to the crew without actual employment of various types of submarines/ torpedoes.
Future Expectations	(a) Reduced in size/ form factor. (b) Better signal to noise ratio. (c) Reduction in cost. (d) Capability to overcome challenged of roll & pitch through beam forming.
MOQ	840 for five years
Project Officer	Cdr Vijayapal Singh Rana

Challenge No:- 68

Directorate & organization	DAA
Problem Statement/ Challenge title	Development of Airborne high performance lightweight COMINT system
Challenge brief/ definition	COMINT system architecture should be a combination of signal/ multiple wide and multiple narrow band receivers and /or digital down convertors (DDC) with high sensitivity to ensure maximum probability of interception along with at least 32 channels for audio and data communication monitoring and provision of simultaneous recording on all channels (recording as selected/activated by operator). Facility to infer & reproduce communication signal data intercepted in user friendly/understandable form through audio and graphical user interface should also exist. The system should be modified to fit in the existing aircraft, the details of which would be provided. The frequency range expected to covered is 3 Mhz to 6 Ghz for monitoring and 30 Mhz to 6 Ghz for Direction Finding.
Future Expectations	(a) Reduced in size/ form factor. (b) Better signal to noise ratio. (c) Reduction in cost. (d) Capability to overcome challenged of roll & pitch through beam forming.
MOQ	12
Project Officer	Cdr Gokul Suresh

Challenge No:- 69

Directorate & organization	TDAC
Problem Statement/ Challenge title	ASIC based space communication using software defined antenna
Challenge brief/ definition	To develop a lightweight ASIC based communication system using software defined antenna for LEO, MEO and GEO satellite communication.
Future Expectations	(a) Reduced in size/ form factor. (b) Better signal to noise ratio. (c) Reduction in cost. (d) Capability to overcome challenged of roll & pitch through beam forming.
MOQ	Will be intimated
Project Officer	Cdr Sandeep Dhankar

Challenge No:- 70

Directorate & organization	DEE
Problem Statement/ Challenge title	Digital radio frequency memory (DRFM) based simulator on a drone for AC training and radar calibration
Challenge brief/ definition	To develop a Digital Radio Frequency Memory (DRFM) based radar target simulator on a drone which can simulate targets at ranges varying between 5 km to 500 km and can be used for AD training and radar calibration. The drone should fly near to the radar (LOS) on projected trajectory as defined by the user. The simulator employs digital memory of waveforms to generate delay and Doppler shifts corresponding to the targets. Capable of operating in single and multi target mode.
Future Expectations	(a) Generation of 3D tracks of target. (b) The drone mounted with DRFM simulator is primarily designed for Air Defence training but can be used for radar calibration as well.
MOQ	Will be intimated
Project Officer	Will be intimated

Challenge No:- 71

Directorate & organization	DME
Problem Statement/ Challenge title	Development of AI based remote monitoring system to assess wear down of Outboard Shaft Bearing (A/P bracket and outer stem tube bearing)
Challenge brief/ definition	The main propulsion onboard ship consists of main engine, Reduction gear (RG), Shafting and propeller. To avoid sagging of the shaft, it is supported by plummer blocks (inside the ships) and thordan bearings (external to the ship). The thordan bearing is made of composite/ rubber/ wood and sea water is used for lubrication of this bearing. The aim is to develop AI based remote monitoring system to assess wear down of Outboard Shaft Bearing
Future Expectations	(a) Can enhance the dry dock interval period of the ship. (b) Any abnormal wearing down of the outer shaft bearing can be monitored even when the ship is in afloat condition and necessary corrective measures can be instituted to avoid any major defect in the shafting.
MOQ	Will be intimated
Project Officer	Cdr Deepak K

Challenge No:- 72

Directorate & organization	DND (SDG)
Problem Statement/ Challenge title	Lithium-Ion battery solution for Extra Large Unmanned Undersea Vehicle (XLUUV)
Challenge brief/ definition	It is required to undertake comparative analysis and identify an optimum lithium ion battery solution to meet requirements of a high-capacity high-endurance unmanned underwater vehicle. The scope of work would involve identifying characterizing (by testing) and recommending the most suitable lithium-ion battery solution for usage onboard XLUUV, covering the following aspects:- (a) Identification of alternative solutions in Lithium-ion batteries and Comparison of characteristics, including testing. (b) Identify most appropriate type and configuration and prepare specifications for selected battery type. (e) Recommend integration interfaces with vehicle and indicate through-life requirements.
Future Expectations	(a) The comparative evaluation of Lithium ion battery types would enable benchmarking of various cell chemistries and enable optimal selection for application of the Extra Large Unmanned Underwater Vehicle (XLUUV) being designed by the IN. (b) Obviate dependency on foreign OEMs for niche technology and resolve competing claims made by different cell manufactures/ suppliers. (c) Building expertise in a vertically specialized technology area that would be of application for various future design projects. (d) Capability to overcome challenged of roll & pitch through beam forming.
MOQ	One set of results for application in XLUUV design
Project Officer	Cdr Alok Sahu

Challenge No:- 73

Directorate & organization	DND (SDG)
Problem Statement/ Challenge title	Computational studies for analysis and optimization of vehicle dynamics and systems for an extra-large unmanned underwater vehicle (XLUUV)
Challenge brief/ definition	Undertake vehicle-level studies/ simulations for development of dynamic model and sub-systems configuration for XLUUV, for vehicle design to be provided by IN.
Future Expectations	(a) The computational studies would establish the dynamic characteristics and optimize the design of sub-systems for the Extra Large Unmanned Underwater Vehicle (XLUUV) being designed by the IN. (b) Obviate dependency on foreign OEMs for niche technology. (c) Building expertise in vertically specialized technology areas that would be of wide application for other future design projects.
MOQ	One set of results for XLUUV design
Project officer	Cdr RV Shashank Shankar

Challenge No:- 74

Directorate & organization	DND (SDG)
Problem Statement/ Challenge title	Autonomous operation (starting, running and shutting down) of a Diesel Alternator suitable for charging Lithium-Ion Batteries
Challenge brief/ definition	The task is to undertake literature/ market/ technology survey, identify suitable diesel alternator and demonstrate its autonomous starting, operation and control for charging a Lithium ion battery bank. This combination of Diesel Alternator and Lithium Ion Batteries is intended for application in Extra Large Unmanned Underwater Vehicle (XLUUV).
Future Expectations	(a) Enable autonomous recharging of an unmanned surface / underwater vehicle at sea to extend its submerged endurance. (b) Direct application for XLUUV being designed by IN.
MOQ	One successful demonstration for application in XLUUV
Project officer	Cdr Alok Sahu

Challenge No:- 75

Directorate & organization	DSR
Problem Statement/ Challenge title	Propulsion system for AUVs.
Challenge brief/ definition	Development of suitable propulsion system optimized for hydrodynamic efficiency and low acoustic noise for AUVs.
Future Expectations	(a) Energy management and efficient propulsion. (b) Better indiscretion rate for larger AUVs. (c) Indigenous development of a niche technology. (d) More power intense sensors and computing systems required for autonomy can be addressed without compromising range and endurance.
MOQ	Will be intimated
Project Officer	Will be intimated