TANK TROOP TACTICAL TRAININGSIMULATOR (T4S) & MECHANISED INFANTRY COMPANY LEVEL TACTICAL TRAININGSIMULATOR (MICLTTS)

T4S is a PC based tactical trainer which aims at practicing battle drills of tank commanders at a troop &squadron level. Each PC depicts avirtual tank with provision for driver, commander, gunner sights controlled through keyboard & joystick. These tanks are exercised against enemy elements & field defense over various tactical situations which can be created by the instructor in different types of terrains. MICLTTS is for Infantry Combat Vehicle (ICV) & operates on similar lines of T4S except that each PC represents one Driver/ Gunner/ Commander/Section commander. Focus is on ICV battle drills at Platoon/Company level like floatation, missile firing, dismounted section, etc. The project has 14 tanks or 15 ICVs operating on a networked & integrated High Level Architecture (HLA) platform. Special effects of visibility, weather, firing sound, inter-communication, virtual soldiers & evaluation are available. User is required to cater for high end system while software is free of cost.

PC BASED LOW LEVEL LIGHT WEIGHT RADAR (LLLR) SIMULATOR

LLLR Simulator has been developed with an aim to impart training on functioning on functioning of the Radar and Air Defence Control & Reporting to assist in passage of Early Warning to Weapon end. The entire simulator is software based and COTS hardware to include laptop based instructor station connected to three other consoles acting as operator stations. The entire system is scalable, how ever presently configured for four stations as per the user requirement. All the stations communicate with each other using headset and any workstation can be interchanged from trainee to instructor station and vice versa. All sub system and modules are simulated in a soft panel and dynamics changes can be introduced in the exercise generated by the instructor. The software is developed to comprehend touch based inputs from the users for providing near realistic training in actual Commander Display unit (CDU) and Target Data Terminal (TDT) of LLLR. The simulator has run time monitoring facility by instructor for various drills of Electronic Counter Counter Measures (ECCM). The database of trainee exercises is recorded and can be played back as per the requirement. After Action Review is generated at the end of each exercise to carry out performance assessment of the trainee.

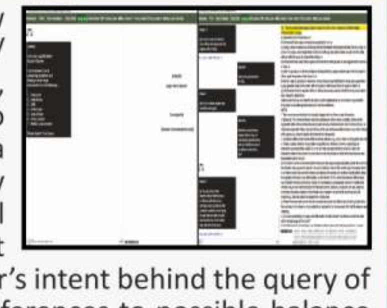
AI BASED SYSTEM FOR VIDEO SURVEILLANCE WITH AUTO ALERTS

To improve the efficiency of the continuous surveillance grid at Battalion surveillance centers, the system provides an AI based surveillance system by integrating videos from hybrid surveillance devices like CCTV & PTZ Cameras, Hand Held Thermal Imager & LORROS into a single screen and processes upto 8 such videos simultaneously to detect objects belonging to any one of 11 object classes viz Armoured, Heavy & Light Vehicles, Drones, Helicopters, Mortars, Artillery Guns, Troop Concentration, etc. The offline system on detecting the objects of interest in any one of the screens or more, raises an audio visual alarm and also logs the event to facilitate the strength surveillance grid operation. The system is integratable within existing surveillance system and easy to use for the soldiers.

CARRIER MORTAR TRACKED (CMT) SIMULATOR

CMT is a state of the art simulator with the terminal objective of imparting holistic training to the complete Mortar detachment. It comprises of automatic bomb ejection system to train the complete Mortar Detachment including Mortar Position Controller (MPC) & Mortar Fire Controller (MFC) in successful engagement of targets. The simulator has the facility of realistic communication between MPC & MFC. It also has a digitized Automatic Mortar Fire Direction Controller (AMFDC) & plotter. The Simulator is much advanced than any other similar simulator in the environment.

AI BASED LEGAL ADVICES SYSTEM



To augment & speed up the present laborious & slow manual referencing system for all legal matters in units/ establishments, MIML Vol 1, 2 & 3; DSR Vol 1 & 2; AOs, Policy Letters & Military Law Journals are integrated into a singles system as an AI based chatbot. On entering a query for seeking the legal reference like applicable Army Act/Army Rule, the system prompts the relevant legal reference sections immediately. The Speech to Text& Text to Speech facility is coupled with understanding the user's intent behind the query of the users. The offline system also gives interlinking references to possible balance AA/ARwhich may be applicable for the particular offence. Also, draft charge sheet can be downloaded and edited to complete the legal proceedings, thus enabling Commanders to be decision makers with all relevant data available within the existing IT infrastructure with every unit.

LORROS TRAINING SIMULATOR

LORRO STraining Simulator comprises of dummy mock up and realistic engaging graphics for Control Unit Display system software & operator exercises including terrains & 3D models for training on operation & functioning of LORROS. The simulator achieves training of the operator and crew of LORROS for surveillance and DOOAF tasks. Five near realistic terrains include HAA /Plains, Mountains and Deserts. Training on operation of crew for both DOOAF & Surveillance tasks is inherent to the system. Thermal imaging module has also been incorporated. Training on operation of LRF is also incorporated. Instruct or features include exercise edit & scenario creation. Performance module for trainee evaluation has also been incorporated.

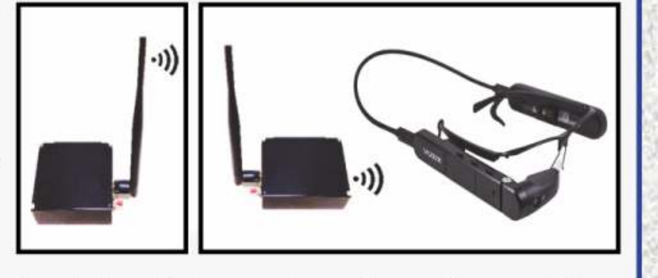
VR AERIAL DELIVERY SML FOR C-17, C-130 & CHINOOK

The sml provides realistic, cost-effective and scalable training for aerial delivery operations involving cargo parachutes and platforms for new gen aircrafts such as C-17, C-130J, and Chinook. The simulator assists in training of officers, JCOs, and ORs in procedures including equipment identification, parachute packing, load lashing, aircraft loading, and aerial drop execution under diverse terrain and weather conditions. The system features immersive 3D environments, realistic audio-visual effects, haptic gloves for tactile feedback, and voice/gesture-based controls to maximize interactivity and realism. It supports multi-user training (up to 20 trainees), scenario-based exercises, and evaluation under both normal and stress conditions. A dedicated Instructor Module enables creation of exercises, performance monitoring, diagnostics, and automated evaluation and report generation.

ROBOMULE

Robomule has been developed with a terminal objective of carrying a payload of upto 100Kg and move a matching mobility of an Infantry Soldier. It has two modes of operation namely Leader Follower mode and Remote mode. In leader Follower mode, the leader carries a small module and the Robomule follows the path taken bythe leader intelligently. In remote mode, the Robomule can be controlled with help of joystick provided on the Ground Control Station. It is capable of negotiating a slope of 20 degrees and vertical obstacle up to one feet height. It has an indepdent wheel drive and suspension system and can mobilize at a speed of 04 Kmph.

HEAD MOUNTED SMART APPRECIATION SYSTEM (SAS) FOR TEAM LEADERS.



Voids in real-time information may develop due to poor visibility during conduct of tactical operations which may lead to either friendly fire incidents or loss of valuable initiative & time. The accurate position of team members is being captured and transmitted by a small ruggedized hardware developed in house to a similar receiver held with the team leader. A Head Mounted based Smart Appreciation System for Team Leader provides an intuitive display with overlay of relevant real-time & accurate information for effective orientation in the operational scenarios.

MULTI UTILITY-UNMANNED GROUND VEHICLE (MU-UGV)

The robotic platform named Unmanned Ground Vehicle has been designed by SDD to undertake multiple tasks like immediate replenishment of combat loads/stores and causality evacuation which is presently carried out by wheeled unprotected vehicles manned by crew of four. Even the process of clearing the firing range of unexploded projectile shells entails human effort wherein, there is always a risk of the blind shell exploding thereby leading to loss of limb or life to the personnel carrying out this drill. Hence, to facilitate the immediate replenishment of stores, withdrawal of casualties from the battlefield&disposing the unexploded blind projectile shell without risking the lives of soldiers can be executed using remote controlled robot with detachable robotic arm. With capability to carry 100Kg, the platform can be controlled remotely from about 300m line of sight using a Gnd ControlStn (GCS). The robotic arm has been designed in amodular manner and can lift upto 15Kg load.

Robotic Arm

Stretcher for Cas Evac

Robo Mule with Load

TETHERED DRONE

Veh mounted tethered drone and standalone tethereddrone sys have been devp in collaboration with Hyderabad based JDP. Tethereddrones may be utilised with Mech Forces for Early Warning and Recce. It canalso be utilised for perimeter svl of static instlns in conjunction with vehand foot ptls. The sys needs to be trial eval for feasibility of its op dply invarious fmns of IA. Any drone with battery weight of upto 05kg can be convertedinto a tethered drone.

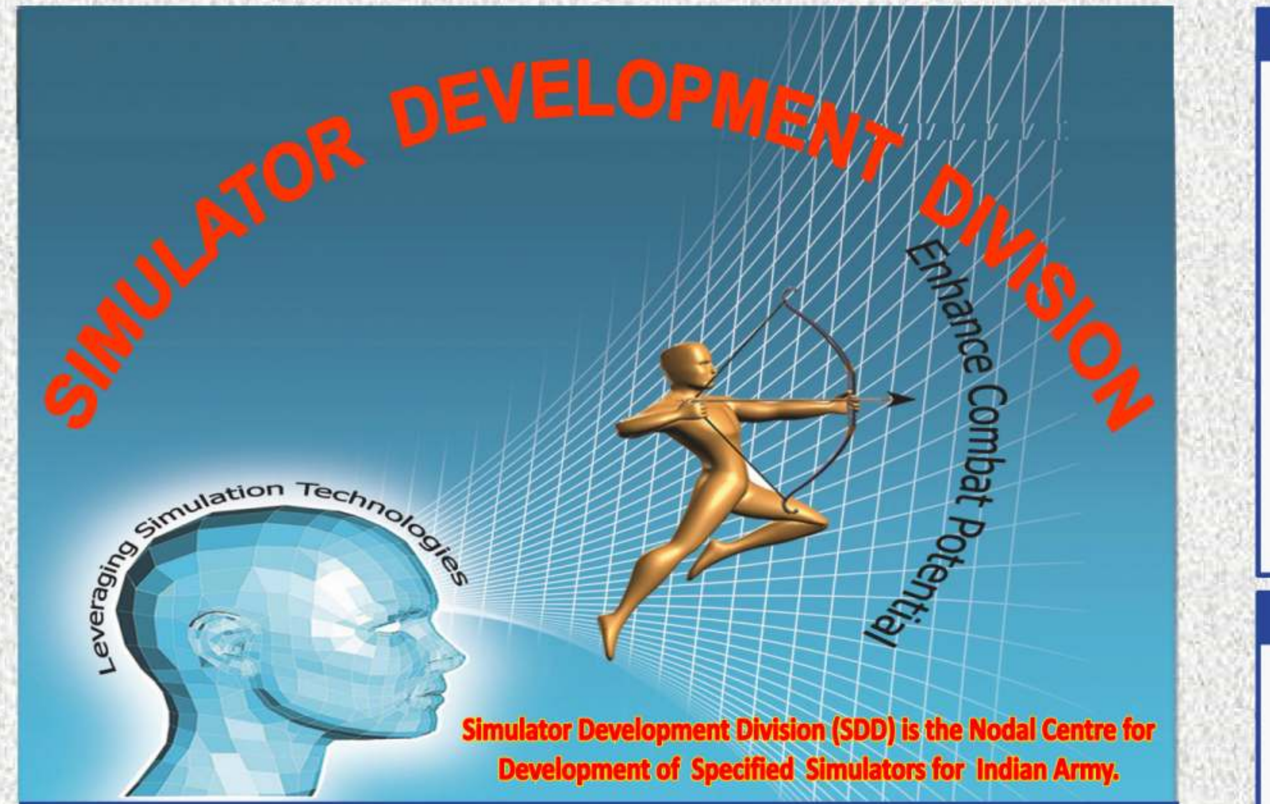
HMV 8X8 DRIVING SIMULATOR

The terminal objective of the sml is to train drivers on various nuances of driving a HMV 8x8 vehicle. It comprises an original cabin of HMV having various driving controls and dashboard instrumentation, mounted on 6DoF hydraulic motion platform which enhances the level of realism. The sml displays 3D Computer Generated Imaginary (CGI) scenarios to be created from the instructor PC for different types of terrains and situations which are projected in front of the wind screen. Special effects of visibility (day/night), weather (fog/rain), obstacles/traffic, road signs, etc along with real time obstacles are visually simulated to enhance trg aggregate. The sml also offers driving with or without trailer with varied weight and loading conditions in five different terrains for trg of tps of Fd Army.

SDD Website: https://sdd.army.mil **IP Address: https://132.128.6.18**

New Simulators. In case of requirements of new simulators/ niche technology products, HQ ARTRAC (AI & Simulation) may be approached alongwith Statement of Case covering detailed requirement. The requirement of simulators/ products may also be proposed during Simulator & Wargame Apex Committee Meeting as and when held.

SIMULATOR DEVELOPMENT DIVISION



Simulator Development Division (SDD) is the Nodal Centre for Development of Specified Simulators for Indian Army.

Simulators may not be able to replace live training today but definitely complement as smart training aids, leveraging technology to enhance training capability & overcome some major constraints of live training. Expensive/complex weapon systems, scarce/restricted ammunition, need to conserve their operational life, fluid situations, limited/shrinking training areas, budgetary constraints, etc are all leading towards increasing acceptance and employment of simulators in military training across all modern armies in the world. Simulators offer significant pay-offs like training in critical/ life threatening conditions in a safe environment, frequent practice of difficult maneouvers on fully interactive systems, optimising training costs and opportunities, reduced risk of accidents, scientific coaching & objective performance evaluation, etc. Recent advances and convergence of technologies in the field of electronics/computers and gaming software, have increased the realism and narrowing of gap between operation of real equipment and their simulators.

It is well acknowledged that military training is a very subjective & intricate process, best understood by the user. Accordingly, SDD got conceived with 'User as the Developer' concept for in-house design & development of simulators for Indian Army. SDD was raised in 1991 at Secunderabad and is co-located with country's IT hub at Hyderabad, thus, ideally suited for the high-tech work using the niche technologies and indigenous expertise. The strength of SDD lies in its lean, project-centric organisation and multi-disciplinary team of combatant engineers and technicians along with user representatives. This brings in tremendous cohesiveness, collaboration & speed in development of the product, driven as per user aspirations.

Procurement. Procurement of the simulators under revenue route can be done through appropriate grants like IR&D/ ACSFP/ ATG/ TTIEG/ etc by Units/ Formations/ Establishments. Statement of case with production cost ascertained from 515 Army Base Workshop (ABW) is processed by the users for approval of relevant CFA. On allotment of funds for procurement, the payment work order can be placed on 515 ABW through HQ Base Workshop Group (EME), Meerut Cantt. The funds have to be transferred from unit CDA to CDA , Bengaluru of 515 ABW. The required simulator is then manufactured by 515 ABW and subsequently installed at unit premises alongwith training to unit. The simulators can also be procured through MOLTI/ MOTIMS as per policy in vogue.

CONTACTS

Developing Agency

Simulator Development Division
Trimulgherry Post,
Secunderabad - 500015. Telangana
Tele/Fax: 040-27794273/
Army: 430054-6793

Manufacturing Agency

Works Manager
515 Army Base Workshop,
Bangalore- 560008. Karnataka
Tele/Fax: 080-25591567
Army: 460108-6842

Army Intranet Website: *http://sdd.army.mil/*
(also in'Misc' at Indian Army's home page)

Simulators of the Army, by the Army, for the Army

VIRTUAL REALITY BASED MULTI-MODE DRIVING SIMULATOR (VRMMDS)

The terminal objective is to train young drivers in an immersive VR environment on 08 different models of vehicle using a single mock-up platform. The simulator consists of two main stations, namely Mock up station and Instructor station. The Mock up station consists of steering, accelerator/ brake/clutch pedals, VR headset, TV screen for parallel view and two sets of gear boxes (one each for Light and Heavy Vehicle categories). The Instructor Panel consists of a PC and display with additional features for monitoring performance of the trainee and also to insert faults, change weather /terrain conditions. The simulator can impart trg on 08 different vehicle variants i.e, Maruti Gypsy, Maruti Ciaz, Maruti Dzire, Tata Safari Storme, Tata 2.5 Ton, ALS 8X8 super stallion, HMV 6X6 and HMV 8X8 and using any the seven common terrains i.e, High Altitude Area, Mountainous, Desert, Village, City, Geo Specific and Test Track.

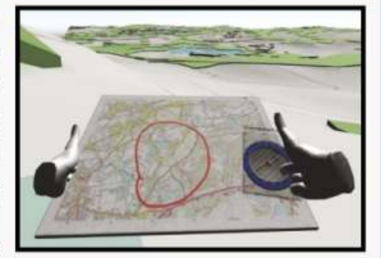
VR MILITARY DRONE FLYING SIMULATOR

(VRMDFS)is a sophisticated VR trgsml designed to mimic the experience of operatingunmanned aerial vehicles (UAVs) viz. Quadcopter, Hexacopter and Fixed Wing platforms for tps of IA to gain first hand near-real experience without damaging the actual eqpt. The sml provides realistic simulations of drone operations, including takeoff/landng, flight dynamics, obstacle negotiation, hovering as well as various other msnspecific scenarios in various types of terrains, time of the day and weather. The sml offers both 1:5 multi-trg-configuration for trg five trainees concurrently and also trg an individual in solo mode. The sml has been designed in a modular fashion so that future drone versions can also be incorporated into the software with relative ease The sml prototype has been tested successfully is being proliferated to various field units of IA.

TOUCH SCREEN BASED TRG SML FOR OSA-AK MSL SYS

is trg tool used to replicate the wpn sys's functionalities and operations for trg of troops. This sml provide realistic scenarios for trg on how to detect, track and engage tgts, including aircraft, heptrs, and drones, concurrently also saving on cost of ammunition. The operators get to train themselves on the functioning and op of Assistant Crew Commander (ACC), Search Operator (SO) and Range Operator (RO) panels on three modes, namely Automated Target Tracking Mode, Target Designation Mode and Aided Tracking Mode of OSA-AK wpn sys. The smlprovides various deg of difficulties by dynamically introducing single or multipletgt scenarios at varying incoming/ flying speeds. It also caters for trgonvarious ECCM drills carried out by en aircrafts, thus providing near-realistic trg experience.

VIRTUAL REALITY BASED MAP READING SIMULATOR (VR-MARS)



The terminal objective of VR-MaRS isto train soldiers on various topics and aspects of Map Reading in an ImmersiveVR envt. The sml enables correct appreciation of trn, ground navigation duringday and night conditions and also enhances map reading skills of troops. Thesml incorporates syllabus of MR III, MR II, MR I and MCI. The simulatorcomprises VR headsets (HMD) and a dedicated PC. Further, the simulator offersthree main modules namely Tutorial, Navigation and Test modules which covercomplete theory aspects, animated demonstrations, features to varyenvironmental / weather conditions, day/night way-point navigation trg onvarious terrains, option to switch between map view and terrain view and Testmodule to analyse the trainee's performance even over a given duration of time.

VIRTUAL REALITY BASED OBSERVATION POST END TRAINING SIMULATOR WITH THERMAL IMAGER INTEGRATED OBSERVATION EQUIPMENT (VR-OP)

VR-OP facilitates training of Arty OP Officer, OPAssistant and Operator in a state of the art immersive VR environment. The smlemploys TIIOE Mockup and Enhanced Tactical Computer (ETC) of Project Shakti.The realistic visuals in the system replicates firing experience in six majorfrg ranges of the IA with features to adjust weather conditions and day/nighttimings for enhanced trg aggregate. The TIIOE Mockup simulates all subsystems/modules including instrumentation controls along with the goniometry display asper laid down drills and procedures. The operators can also be trained onrecording shoots, on conduct of Shoot Pad and also passing parameters using OPmenu of ETC. The simulator enhances the confidence of trainee in handling theequipment and his op preparedness before being actual on-field deployment.

AR BASED ADVANCED MANNEQUIN SYSTEM (AR-AMS)

To train Medical Officers (MO), Paramedics, BFNA and buddy pairs on 20 Paramedics and 15 Combat Trauma Life Support (CTLS) procedures using AR imagery overlaid on an advanced instrumented mannequin. The mannequin system consists of sensors and actuators because of which it behaves like ahuman body having functions like eye blinking, breathing, heart beating, pulse,etc. In addition, these sensors and actuators allows trainee to check BP, take ECG, give defibrillation in case of heart attack, carry out minor surgery like needle thoracentesis is in case of pneumothorax, etc.

UNIVERSAL DRIVING SIMULATOR (UDS)

Terminal objective is to provide simulator based training aid to acquire & improve driving skills. Aportable and low cost driving simulator that is ideal for training driver at unit level. Consists of common display systems of 3 monitors in place of windscreen, various road terrains and special effects. Comes with 3 x detachable open mockups for Maruti Gypsy, ALS and 2.5 Ton with eat & essential driving controls. which can be replaced (Roll-in/Roll-off).

INFANTRY WEAPON TRAINING SIMULATOR (IWTS) TETHERLESS VERSION

IWTS is a multi - weapon, multiple-firer, computer Generated Imaginary (CGI) based Small Arms(SA) firing simulator totrain, evaluate and enhance SA firing skills of upto twelve trainees individually or collectively. Trainees fire invisible lased from modified INSASRifle/ LMG having recoil and firing sound, from about 5 m distance in adarkened room, in virtual targets projected on three contiguous screens with a total size of 30' x 8'. It has provision for basic training of sightalignment/picture exercise, static/pop up virtual targets and advanced training on dynamic reactive human targets which can move/run and react as terrorist/civilian in different terrains & tactical situation including user generated assets for a given terrain. The weather/ light/ visibility conditions can be varied as desired. Actual video based scenarios are also available for buddy pair operations like hostage rescue/ room entry. IWTS shows location ofhits and score including performance analysis using graphical tracking of weapon movement before & after firing. Provision is also there for integrating Rocket Launcher, Automatic Grenade Launcher and AK-47, MMG, AGL & AGS has also been integrated to provide consolidated training on battalion support weapons.

TACTICAL COMBAT ROBOT(TCR)

The Tactical Combat Robot (TCR) is an AI-enabled robotic platform capable of performing surveillance, reconnaissance and limited engagement in high-risk combat zones, thereby minimizing soldier exposure. The system integrates advanced technologies such as Artificial Intelligence, Robotics and Computer Vision to enhance operational efficiency in Counter-Insurgency/ Counter-Terrorism operations, border surveillance and conventional warfare. The TCR features a rugged tracked platform with a 60 kg payload, 8 km/h speed, and 3-hour endurance. It carries a 5.56 mm INSAS LMG, day/night camera with 30X optical zoom, thermal vision, laser range finder, GPS, and IMU for real-time situational awareness. Communication between the robot and Ground Control Station (GCS) is through RF modules offering up to 3 km range and 100 Mbps throughput. A customized GUI-based control software displays live video feed, GPS location, target tracking, platform health and weapon status, enabling precise control and coordination.

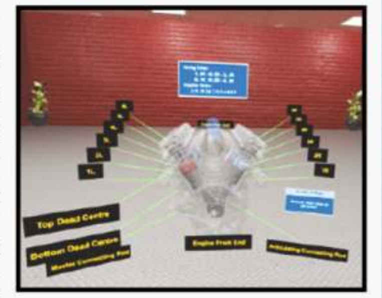
VR BASEDTACTICALTRAINER(VIRTAC)

VIRTAC has been developed to impart collaborative training to soldiers in Counter Insurgency operations and improve reflex shooting as well as field and battle craft drills. The simulator can beutilized for simultaneous training of three soldiers which can be subsequently increased as per requirements and technological constrains. The simulator facilitates in improving the reflex shooting skills, comprehension of 1actical requirement and improving the response in realistic operational environment. The sys has been integrated with Holosuits haptic device to give necessary force feedbacks and has intelligent opponents to provide a realistic immersive training. The simulator can be effectively utilized for training of the soldiers prior to the actual operational scenarios with high skill sets.

VR BASED IGLA FIRING SIMULATOR

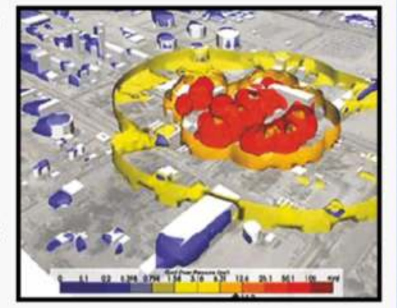
The simulator aims at improving laying, locking and firing skills of IGLA firer in a virtual environment. IGLA 1M missile firingtube is suitably modified to be usedas mockup to train Operator Fire Control(OFC) in laying locking & engagement of low lying aircrafts using IGLA missiles. 3D models of the aircrafts are rendered in virtua environment within Head Mounted Device providing realistic simulation of missile firing with second effect.

VIRTUAL REALITY (VR) BASED FAMILIARIZATION SYSTEM FOR ENGINE OF T-90



The VR based simulator aims to train the technician on valve, Fuel Injection Pump (FIP) and air distributor timing setting procedures, parts familiarization, engine working and cooling & lubrication system. It guides the trainee through various steps in a sequential manner through voice commands and animated cues on the Head Mounted Display itself, there by facilitating guided self-study of the trainees and hence, addresses the training needs of the tank crew and technicians as well. A module for training of store keeper technical (SKT) of familiarization of engine parts with catparts number has also been incorporated.

VR BASED DEMOLITION SIMULATOR

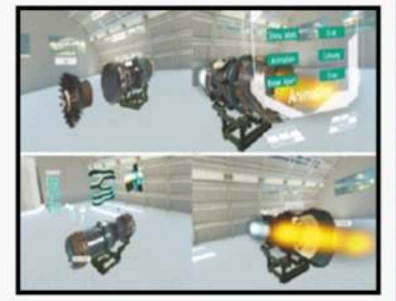


Demolition Simulator software has been developed to conduct realistic training through multiple scenarios, reduce cost of training, and reduce the risk to life and material and to overcome the limitation of real world training in a single location to simulate multiple terrains. The simulator overcomes constraints of time, resources, safety and cost of training on demolition of different targets. It trains the trainees holistically on demolition with varied types of charges on various typesmil targets. The simulator is runs on commercial off the shelf computers. The simulator has library of various explosive charges being used in a IA as well as library of targets for armd forces and simulated environment such as weather, terrain, and time of day effect, the virtual reality effect adds to the engagement and immersive experience of the trainee and the instructor by using any VR hardware.

VR BASED COMBAT MEDICAL CARE SIMULATOR (VR-CMC)

Terminal objective is training of Medical Officers (MO) and Paramedics on familiarization to human anatomy & physiology and also to train MO, Paramedics, Battle Field Nursing Assistants (BFNAs) and buddy pairs on the Combat Medical Care (CMC) and to administer basic first aid in case of injuries in 21scenarios built in three different terrains. In the evaluation module, the trainee is expected to administer the first aid in correct sequence, without help of any audio visual cues and is evaluated accordingly

VRVISUALISATION SML FOR INTERMEDIATE GEAR BOX (IGB) OF T-72&T-90



The terminal aim is to train users & EME technicians in understanding and handling the IGB of TankT-72 and T-90. The simulator is equally relevant far the user to understand the working of IGB. A single Head Mounted Display(HMD) can cater for all the modules pertaining tothe equipment. Cost of maintenance simulator is much less than real equipment when compared in terms of number of trainee trained and non-availability of actual equipment if used. Maintenance simulator engages the trainee in new interactive learning methods by mixing by mixing a game-like atmosphere and more number of trainees can be trained simultaneously.

VIRTUAL REALITY BASED AIRCRAFT RECOGNITION TRG SML(VR-ACR)

VR-ACR facilitates simultaneous training of upto 20 Air Defence Observers and firers to effectively handle the important task of the Army Air Defence to provide Air Defence protection to important installations in rear areas, critical assets and vulnerable areas and vulnerable points incombat zone against aerial attack in a state of the art immersive environment. The realistic visuals in the system enables the training on the aircraft comparison and recognition for better understanding and assimilation to impart effective training on positive identification and recognition of enemy aircraft before shooting them down, otherwise, it may lead to shooting down of own aircraft. The training can be imparted in six different geospecific terrains wherein degree of difficulty can be varied by changing the path, speed & altitude of the aircraft in addition to changing the environment variables to include time of day & visibility conditions. The evaluation module can beused for monitoring and performance evaluation of trainees.

VR BASED 3D TERRAIN VISUALIZATION SYSTEM (VR-TRN)

VR Based Terrain Visualization System has been developed with a terminal objective to assist user in area familiarization using 3-Dimensional Geo-Specific terrain in VR environment thereby reducing the requirement of physically going on the ground besides facilitating with higher sense of terrain understanding. The offline system without requirement of internet provides realistic terrain of pan India and allows user to teleport to the area of interest furthermore, facilitates in populating the terrain with tactical objects from pre-defined library, overlaying maps, marking points of interest, placing surveillance devices and analyzing view shed and displaying the geographical parameters to include Latitude & Longitude, Easting & Northing and Altitude above mean sea level. The system works in an offline mode without requirement of Internet hereby facilitating the user to mark operational details for planning of tactical operation.

VR BASED 84MM ROCKET LAUNCHER (VR-RL)

The Virtual Reality Based 84mm Rocket Launcher Firing Simulator (VR-RL) is a 'Strap On' type simulator which can be used for effective training of Rocket Launcher(RL) firer in a realistic immersive environment wherein adequate training on firing of 84mm RL has been a limitation due to paucity of ammunitions, specific requirement at field firing range. Moreover, in spite of being a potent weapon against armored vehicle, firing practice on mobile tactical target to include armored vehicle cannot be conducted. The simulator provides realistic scenarios to engage targets as per Special Army Order in addition to tactical scenarios based moving and static targets in various terrains to include Deserts, Mountainous, Plains. While the simulator utilizes a common Computer Graphics Imaginary module for presenting the realistic training scenarios in VR environment to the trainee, the strap on tracker on the 'in service RL' provides a higher sense of realism. The number of rounds utilized by the trainee is recorded and the performance of a trainee can be generated as part of the evaluation module.

PC BASED VIRTUAL TRAINING ON CHEMICAL, RADIOLOGICAL AND NUCLEAR (CRN) ENVIRONMENT

This simulator imparts training in CRN warning and reporting system. Provides features to train in preparation of CRN reports and accordingly plan movement through contaminated area. Consists of mockups of Gas lonisation Detector - 3 (GID-3), Portable Dose Rate Meter (PDRM) and Pocket Dosimeter (PDM) to provide real time experience in handling of CRN equipment. Works in classroom as well as field mode for which RF and GPRS communication has been inbuilt for communication

MULTI MOTION TARGET SYSTEM (MMTS)

Multi Motion Target System (MMTS) aims at imparting situational reaction training (like reflex shooting, jungle lane shooting etc)to the troops in order to improve their battle worthiness while operating in counter Insurgency / Counter Terrorist as well as Conventional Operations. It is compact, rugged, battery operated, man packed target system which can be installed on the firing range in very short time. The targets have hits detection capability and each target is capable of pop-up, pop-down, swivel, swing, slicing or combinations of movements achieved using different attachments. They can be controlled with a simple and easy to use and roid based application.

ROOM INTERVENTION SYSTEM (RIS)

RIS is to impart training to troops in troops in room clearance operations. It consists of Multi Motion Target System (MMTS) (one or more as per requirement) which are placed in a room, along with a fire back device consisting of pneumatic gun and a tracking mechanism which tracks the trainee as he enters the room using a camera and in case he is unable to neutralize the target(MMTS) a stipulated time, as determined by the instructor, it fire back balls at the trainee, there by bringing an element of realism in the training for room clearance operations. The system is controlled with a simple and easy to use android based application.

ARMOURED REC VEHICLE (ARV) WZT-3 REC TRG SIMULATOR

ARV WZT-3 recovery training simulator is developed with an aim to effectively train recovery crew on various drills and procedures to operate ARV WZT-3. It is based on a Mockup of the ARV WZT-3 Driver's cabin called as the trainee station where all the driver's controls and instruments have been used similar to the original equipment. The instructor station is based on two laptops running on Windows 10 Operating System with an easy loadable software. Realistic sound cues for operating of the equipment is incorporated in the simulator for additional training value. The exercises can be performed on multiple terrain scenarios with varied environmental effect using 3D models of humanoid, recovery and casualty vehicle for enhanced realistic training. The proficiency of recovery operators is evaluated by exposing the trainee on various stating drills, recovery, tackle layouts, earthmoving operations of crane and dozer, winching operations including under water recovery and troubleshooting of runtime faults. In the end a Quantified evaluation report is generated on culmination of each training session to gauge the training imperative gained by the trainee.

HEAVY RECOVERY VEHICLE (HRV) AV-15 SIMULATOR

Simulator developed with an aim to train the Driver & Operator in recovery drills for various vehicle & equipment's, employing HRV AV-15. Two separate mockup trainee stations enable the trainee to be trained under various exercise for driving and recovery operation. The simulator includes recovery for all vehicle & equipment's held in the inventory of the Army. The details of recovery resources and various combinations of tackle layout have been included in the simulator exercise setup. The exercise setup gives ample exposure to the nuances of recovery operating entrusted to be carried by the recovery crew. Simulator has been recommended to be inducted into service.

'B' VEHICLE SIMULATORS FOR ALS, TATA 2.5 TON, MARUTI GYPSY

These are versatile simulators for training recruits/young drivers and come with original/near-original driver cabin having various driving controls like accelerator, brake, clutch, gear, steering, dashboard, etc. A scene editor allows 3D computer Generated Imaginary (CGI)scenarios to be created from the instructor PC for different types of terrains and situations which are projected in front of the wind screen. Special effects of visibility (day/night), weather (fog/rain), obstacles/traffic, road signs, etc are visually simulated. ALS simulator is mounted on a 6 DoF hydraulic motion platform while other on 3 DoF motion platforms offering high-fidelitydriving experiences. Variant of single instructor monitoring/evaluatingmultiple trainees and without platform are also available. Virtual terrain of real areas with actual visual (geo-typical/specific terrains) can also be integrated for limited areas.

NON MOTION COCKPIT SIMULATOR FOR CHEETAH & CHETAK

To train Pilot & Co-Pilot on drills like pre-flightcheck-up, engine starting & stopping procedure, rotor engagement and disengagement and vent start drill and emergency procedures on near realistic models of Cheetah and Chetak helicopters. In addition, Run Time faults specific to particular drill associated with the preflight checks can also be induced by the instructor. In addition, trainee's performance report based on weighted average model is also presented to the instructor to facilitate evaluation.

SARVATRA BRIDGING SIMULATOR

The simulator is aimed at training the crew on various operations of this vehicle based assault bridge as per employment. Four mockup trainee stations developed for the simulator provide ample training on driving of the prime mover and launch/ de-launch of assault bridge on different terrains with varied bridging spans and water obstacles. Incorporation of 3Dhuman models give better assimilation of the crew drills to the trainees. Options exist in the simulator to choose amongst 36 different terrains with 10profiles for water obstacles including canals - lined & unlined, rivers, ditches - dry & wet. At culmination of each exercise a detailed evaluation report is generated for the training session conducted. The simulator has been evaluated and approved by user unit for induction into service.

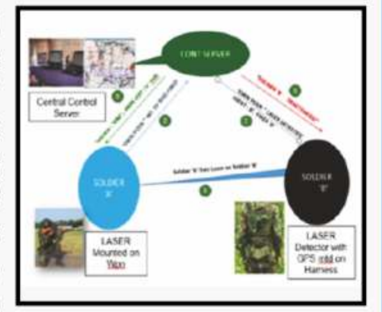
BRIDGE LAYER TANK T-72 TRAINING SIMULATOR

Bridge Layer Tank T-72 Training Simulator has been developed with a terminal objective to train the novice/ trained operator in familiarizing with controls of the BLT T-72 and launching / delaunching operations under various conditions (terrain, visibility, weather, etc). The simulator provides launching/ delaunching facility through Driver Panel, Commander Panel and Electric Joystick from Main and Aux Engine. The simulator is provided with terrains like desert, semidesert and obstacle ridden terrain modelling to give realistic feel. Various signs/prompts have been incorporated in the simulation software to enhance the capability of trainee driver/crew.Performance evaluation report of trainee can be generated. Trainee can be trained on 12 different bridging operations with multiple crossing sites.

MICROCOPTER FOR INDOOR SURVEILLANCE

Microcopter is a hand-held state of the art indoor aerial reconnaissance quadcopter with intelligent flight modes and high stability. It is aimed to augment situational awareness in a Counter Insurgency/Counter Terrorism environment through real time HD camera feed with obstacle avoidance & capability to operate in a GPS denied environment. The terminal objective of the drone is to provide tactical indoor surveillance to the man onground for an anti-terror operation. The key features of the drone are its endurance of up to 15 mins, small form factor of 250mm, obstacle avoidance using sensors, flying in GPS denied environment, range of 100m non-Line of sight and 300m Line of sight and live HD camera feed on the operator console. Ten microcopters have been proliferated in the Indian Army for field utilization and feedback.

LASER BASED MARKSMANSHIP TACTICAL TRAINING SIMULATOR (LMTTS)



LMTTS has been developed to train 20 soldiers (Red land & Blue Land-10 soldiers per team) on battle craft while being part of a real exercise using live simulation (in 'real' conditions). Soldiers have LASER instrumented weapons & sensor mounted harnesses. Real time soldier tracking is done using data communication between soldiers and control server using wireless RF link to capture location, ammunition expenditure & health status (alive, M-Kill & K-Kill). On being K-kill, soldier gets an audio alarm & his weapon is disabled. Control server is capable of altering health / ammunition status of soldiers. The system enables realistic tactical training on filed craft & battle craft at section level without the ammunition expenditure or threat of accidental friendly fire casualty.

TANK T-90 DRIVING SIMULATOR

SDD has developed 'A' vehicle driving simulators, to include tank T-90 for imparting driving training to the drivers of these equipment. The mockup is exact replica of the driver cabin with driving control, panels, instruments, gauges and dashboard, all interfaced using advanced sensors and instruments mounted on 6 Degrees of Freedom (DoF) motion platform in order to provide a fully immersive driving experience. Customized synthetic terrains with obstacles depicting various scenarios have been created in order to impart driving training for near realistic experience. An instructor station is available for monitoring the performance of the trainee. The instructor caned it the exercise in real time and introduce faults in the scenario. The performance of the trainee can be objectively assessed and an After ActionReport is accordingly generated.

81MM MORTAR TRAINING SIMULATOR

The 81mmMor Sml devp by SDD will provide near realistic training in varying virtual battle field scenarios without restrictions on availability of ammunition. In addn, the VR based smltrg will be effective in trg ofInf Mor Platoonincl dply drills at MPC end, tgt acquisition and fire cont at MFC end for effective engagement in real battle-field envt. The hardware components of sml consist of PC connected to the mock-ups of Mor tubes and amnalong with associated accessories incl actual sight (SU 102 A/B). The sml also involves PC systems, IMU sensors, mock-up of 81mm mortar tubes, projector and wireless router. The software is used for scenario generation on Unity 3D application and facilitates customisation of trn, time of day and weather conditions as per user reqmts.

ATGM GROUND LAUNCHER SKILL DEVELOPMENT SIMULATOR (AGLSDS)

The terminal objective is to impart skill training to ATGM gunners on laying, tracking and firing of Konkurs ATGM in ground role. It is a Mock up based simulator with thermal imager and missile tube. Various exercises have been created in four different types of terrain of 15x15 sq kms. Consists of realistic terrains including dynamic control of time and weather effects as well as provision of injecting run-time faults to assess the reaction of the trainee. All types of A vehicles of the adversary have been modelled and made reactive in nature with their characteristic main weapon fire.