Realistic Training

MULTIPLIER EFFECT *The C-17's state-of-the-art Full Flight Simulators deliver realistic training and substantial cost savings. Each hour of training in the simulator saves approximately 11,000 litres of fuel*

The large military simulator requirement could see India emerge as a key centre for development of cost-effective simulator training solutions

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INDIA'S MILITARY SIMULATOR training requirements range from expensive and sophisticated high-end flight simulators, to far simpler and cheaper, part task training devices. The sheer scale of these requirements alone, across Indian armed and paramilitary forces, offers the ideal opportunity for Indian firms to emerge as cost-effective providers of credible simulator training. At the same time, this is an unmatched opportunity for foreign Simulator Training Original Equipment Manufacturers (OEM), who are looking to the Indian market to sell top-of-the-line Full Flight Simulators (FFS) and network enabled training systems with high quality visual systems.

The Indian armed and paramilitary forces are in the midst of inducting a large number of air, land and sea-based weapon systems and almost every type will require new simulator training facilities to be established. The setting up of modern training facilities coupled with the need to upgrade legacy simulator training systems to modern standards, provides an immediate and attractive opportunity to firms targeting the market for simulator training. The upgrade of simulator training assets across the three services, needs to be undertaken, if the standard of training and realism provided to the trainee is to remain consistent across modern and older legacy platforms. No doubt, this is a hugely expensive challenge and it remains to be seen as to what funding is made available to cater for these upgrades. A number of Indian companies have emerged as credible providers of simulator training devices, chief

amongst them are Hyderabad based Zen Technologies and Bengaluru based Alpha Design Technologies Limited (ADTL). CAE India Private Limited and HALBIT, a joint venture (JV) company established with Hindustan Aeronautics Limited (HAL) and Israel's Elbit, have also been successful in the Indian simulator training market.

At Aero India this year, Zen Technologies displayed a number of indigenously designed and developed training simulator solutions, including its Rotary Wing Simulator, UAV Mission Simulator, Anti-Aircraft Air Defence Simulator, Tactical Engagement Simulator, War Gaming Simulation and Smart Target System. The Rotary Wing Simulator has a state-of-the-art spectra projected visual display system covering 180 degree H x 65 degree V, one of the only such systems of this type to be made in India. Having successfully created a niche market for itself with regards to land-based simulation, it now plans to enter the flight simulation and constructive simulation market. Indigenously developed Full Mission Simulators by the firm for Heron & Searcher MK II Unmanned Aerial Vehicles (UAVs) are already in service with all three Indian armed forces. The company invests heavily in R&D, a must when it comes to the development of cutting-edge military simulators. In 2013-2014, the R&D spend was almost Rs 200 million, out of an annual turnover of approximately Rs 460 million.

Bengaluru based ADTL is also looking for a slice of the military simulator market and according to Chairman and Managing Director Col H.S. Shankar (retd), the company received an excellent response at Aero India this year, "with respect to our simulators, such as, BMP simulator, HAL Cheetah, Mi-17 simulator and EW simulator projects." He added that the 'Make in India' drive had, "generated new enthusiasm as focused importance is being given to Indian industries for making more in India".

When asked to comment on development of simulators in India, Shankar said, "Users should be more forthcoming in providing technical data and actively associate with industry and the process of user trials and decision making at Army Head Quarters and Ministry of Defence (MoD) need to be hastened". At present, the company is focussing its efforts on development of simulators for MiG-27, An-32 and Mi-17 along with Integrated Air Force Network (AFNET) simulator and BMP Simulator. To assist the growth of indigenous efforts for the development of simulator training in India, "the Army should establish – with help from Consortium of Indian Private Sector industries – a simulator complex which should house all types of simulators for major equipment/systems army is holding. This can be, firstly, used/commissioned by the army and later showcased to various countries for exports. Similar simulator centres can also be planned and executed for navy and IAF," stressed Shankar.

Zen Technologies recently signed a Memorandum of Understanding (MoU) with Rockwell Collins Training and Simulation LLC, USA for design and development of Full Mission Level D simulators for fixed and rotary wing helicopters. Zen Technologies will provide the structure and design of the screen while Rockwell Collins will deliver the display and computer graphics. According to Ashok Atluri, managing director, Zen Technologies, "Our alliance with Rockwell Collins marks the first time that a global simulator OEM has teamed with an Indian simulator manufacturing company to cater to the Indian defence market". H.J. Kamath, senior vice president (Aviation), Zen Technologies added, "The core software used in the simulator is easy to maintain and upgrade."

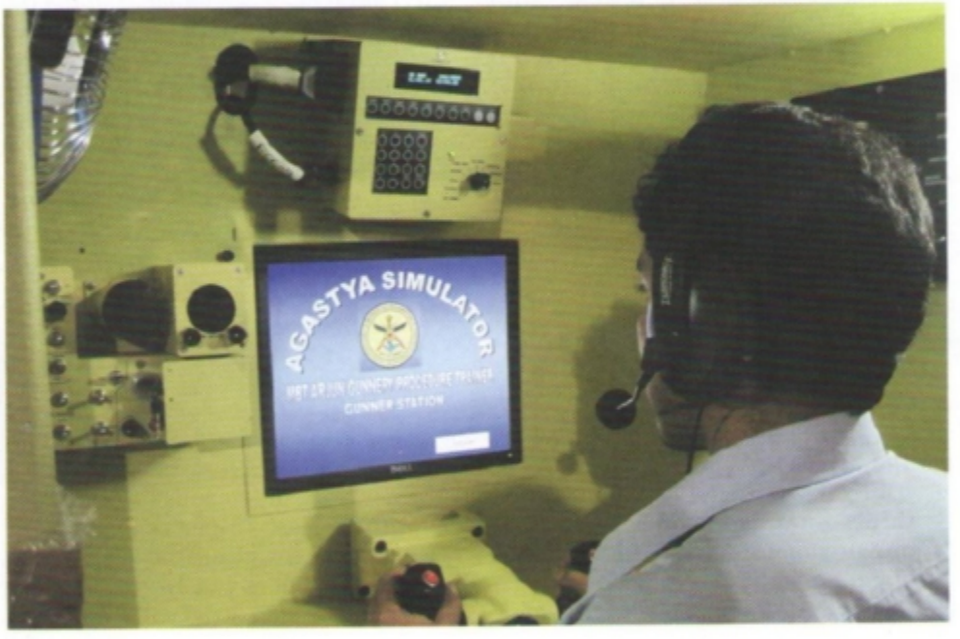
CAE India Private Limited acquired Macmet Technologies Private Limited in 2007, and has been very successful in the Indian market. CAE India has provided the Indian armed forces with a range of training support and maintenance services, including support for the BAE Systems Hawk Mk 132 Advanced Jet Trainer (AJT) synthetic training equipment at Air Force Base (AFB) Bidar. CAE developed the IAF's C-130J 'Super Hercules' simulator under subcontract to Lockheed Martin and the full-mission simulator is now in operation at Hindon Air Force Base near Delhi.

Other programmes that have been completed and are in progress currently, include upgrading existing IAF Jaguar simulators to Display Attack Ranging Inertial Navigation II (DARIN-II) standard, upgrade of Sea Harrier simulator for Indian Navy, Cheetah helicopter Full Mission Simulator for the Indian Army, Mig-27 Part Task Trainer for the IAF, Dornier DO-228 Flight Training Device for the IAF, amongst others. Apart from this the company has also been involved in visual database development services for various simulation projects, war gaming of constructive simulation applications, Agastya Gunnery Procedure Trainers, Burya ship handling simulator for the Indian Navy and Computer Based Training (CBT) for UAV op-

Indigenous Technology Development in the Defence Sector

The Defence Procurement Policy (DPP) needs to reflect the political thrust towards enhancing domestic procurement and boosting purchase of equipment from indigenously designed and developed sources. Some suggestions are given below:

- 'Buy Indian with Indigenous Design' Category: Like five categories given in DPP (Buy Indian, Buy & Make Indian, Make, Buy & Make with TOT, Buy Global), ministry of defence (MoD) may consider having a sixth one as 'Buy Indian with Indigenous Design' wherein a Request For Proposal (RFP) is issued to Indian vendors only with indigenous design and the indigenous contents pegged at a minimum of 75 per cent.
- Preference to higher indigenous content in a 'Buy Indian' or 'Buy Global' Procurement' category: In a 'Buy Indian' or a 'Buy Global' Procurement if an Indian company, with indigenous design and with at least 75 per cent indigenous content, clears the trials successfully but is not L1, the order should be split 50:50 with L1, provided the Indian company matches the price of L1.
- Procurement under No Cost Full Commitment Basis: Presently, most procurements by the MoD are on 'No Cost No Commitment' (NCNC) basis. We recommend that some of MoD procurement from Indian industry to be carried out on NCFC basis. The MoD can publish a list of products that it needs to procure in the next few years, along with internationally benchmarked prices, quality and timeline for procurements. It can then shortlist companies that are willing to develop the equipment at their own cost. ||



***TOP AND LEFT** Zen Technologies recently signed a Memorandum of Understanding (MoU) with Rockwell Collins Training and Simulation LLC, USA for design and development of Full Mission Level D simulators for fixed and rotary wing helicopters; CAE has developed the simulator training systems for the indigenous Arjun MBT*

erations for the Indian Army.

CAE has provided the Action Speed Tactical Trainer (ASTT) to the Indian Navy, a lead product for the Indian Navy to train its crews in tactical missions, following which navy procured CAE's Poseidon, which provides Commanders with the necessary simulation tools to conduct war games between different adversaries and allow them to develop the correct strategy to be used in an actual combat situation. The ASTT has become a key tool for the Indian Navy to train its ship operators in tactical warfare. The primary purpose of the ASTT system is for the command teams of ships, submarines, and aircraft to communicate effectively in a realistic training scenario and rehearse the application of tactical doctrine.

CAE also developed and delivered the initial suite of Arjun tank training systems to train the driver, gunner and commander in the Arjun tank. The Indian Army established the first Arjun MBT armoured regiment in 2009. CAE's comprehensive suite of Arjun tank training systems offers: standalone training for the driver and gunner; turret level training for the gunner and commander; integrated tank level training for the gunner, commander and driver and troop level training by networking Arjun tank simulators to rehearse troop tactics, movement and joint operations. The company had delivered three Arjun driver and three Arjun gunner simulators, by the end of 2013.

HALBIT delivered the Seaking Flight and Tactical Simulator (FATS) and Water Survival Training Facility (WSTF) to the navy in August 2013 at Kochi - the home of navy's training command. The custom-made simulator is a PC-based system with glass cockpit, collimated visuals, and an electro pneumatic system with six degrees of freedom and motion. The FATS system is being used for initial and periodic training for Seaking pilots and observers, as well as evaluation of new procedures and tactics. The roll on/roll off system can also have other aircraft cockpits used and the simulator can be used for training tasks such as deck landings on different warships, various emergencies, and night flying. At Aero India 2015 Elbit Systems showcased its networked multi-cockpit, Mission Training Center (MTC) called 'SkyBreaker'. A SkyBreaker facility "houses a complex networked system designed to provide an entire squadron with the tools to practice modern air combat using SkyScen, a sophisticated computer generated forces (CGF) solution, in a fully integrated military setting", said Elbit.

The Indian Air Force (IAF) is current-