

## Annex 3.11 : SIMULATION

3.11.1 Defence is increasingly using simulation. The impetus for the growth of simulation in training has come as much from the step-change in computing power, (enabling increasingly realistic representation of a wide range of operating scenarios) as from ever increasing pressures on resources (ammunition, track mileage, manpower and access to training land) and the drive to reduce environmental impact. Other drivers include the need to measure performance consistently and provide feedback (After Action Review – AAR) to exercising troops, develop and refine tactics, techniques and procedures (TTP) without the need for deployed troops whilst maintaining safety in training.

3.11.2 Advances in networking technology are now enabling interaction between distributed simulations and the combination of simulations into wider synthetic environments. The ability to inject synthetic forces into live exercises also confers the ability, for the first time, to carry out experimentation with new equipment capabilities, so that maximum operational benefit can be delivered. Early examples of such war-fighting experiments in the Army include the Joint UAV Experimentation Programme and developing concepts for both NEC and the Medium Weight Forces. In future, the ability to reach-back to the UK home base from an overseas theatre will also enable deployed forces, for the first time, to conduct specific pre-deployment training and mission rehearsal.

3.11.3 Military simulations are typically grouped into three discrete categories:

- i) Constructive simulations (simulated people operating within a simulated environment, with simulated equipment and simulated effects). Examples of constructive simulations in the Army include the Command and Staff Trainer (CAST), Battle Group Command and Control Trainer (BC2T) and the Generic Training Facility (GTF).
- ii) Virtual simulations (real people operating within a simulated environment using simulated equipment with simulated effects). The Combined Arms Tactical Trainer (CATT) and Dismounted Close Combat Trainer (DCCT) are examples of in-service virtual simulations, though DCCT differs slightly in its use of weapons within the simulated environment.
- iii) Live simulations (real people operating in a real environment with real equipment, but with simulated effects). The most significant live simulation in

service is the Tactical Engagement Simulator (TES), which comprises a family of direct fire (DFWES) and area (AWES) weapons effect simulators and instrumentation. AWES not only simulates indirect fire but also danger areas such as minefields and NBC. It also provides a data network for Exercise Control and AAR purposes. Other examples of live simulations include the Low Level Urban Skills Trainer (LLUST), the planned Air Manoeuvre Collective Training System (AMCTS) and a range of targetry systems to support live firing throughout the ATE.

3.11.4 Many of the simulation systems cited above will not have any impact on use of training land. Yet TESEX still requires training estate to facilitate use of the simulation. Some simulation systems such as CATT and the AMCTS may reduce the amount of live training undertaken, but others will merely complement the training process. However there is no substitute for live training and consequently it is not foreseen that simulation will have a significant impact on the requirement for training estate in the short term.