

<b>SBIR 06.2 PHASE I - AWARD DETAILS</b>	
<b>ORGANIZATION</b>	PEO AVIATION
<b>TOPIC NUMBER</b>	A06-188
<b>CONTRACT NUMBER</b>	
<b>YEAR OF AWARD</b>	
<b>AWARD START DATE</b>	
<b>AWARD COMPLETION DATE</b>	
<b>PROPOSAL NUMBER</b>	A062-188-0663
<b>TITLE</b>	Cognitive Agents for Simulation of Battlefield Airspace (CASBA)
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<b>KEYWORDS</b>	Computer-generated forces, synthetic teammates, modeling and simulation, communications, speech recognition, cognitive models
<b>ABSTRACT</b>	Distributed simulation has the potential to promote more useful experiments and more effective joint exercises, with platforms from all branches of the services operating within the same virtual battlespace. The advantages of a virtual battlefield airspace could be significantly extended through the use of automated forces, or computer-generated forces (CGFs). The Army has already employed this technique to reduce manpower needed to staff an exercise and thus reduce costs. However, broader gains are achievable if the entities standing in for human role-players were more capable of human-like decision making and spoken interaction than is currently the case. Synthetic entities must be capable of understanding spoken and datalinked ATC (and other air traffic agency) directives and of responding appropriately, both behaviorally and verbally. These entities must exhibit appropriate interactions with air traffic agencies regardless of whether the controllers are human or synthetic. To accomplish this goal, we propose Cognitive Agents for Simulation of Battlefield Airspace (CASBA), which will (1) realistically model the decision-making, judgment, situational awareness, workload management, and communications of airborne entities in a battlefield airspace; (2) provide robust, speaker-independent speech recognition and understandable and tactically-realistic speech synthesis; and (3) function reliably and interoperably in distributed simulation experiments.
<b>BENEFITS</b>	The proposed effort will result in an iGEN® based performance model of airborne synthetic entities performing appropriate functions in a tactical airspace environment. The agent will demonstrate speech recognition and speech synthesis within a defined scenario and will be scalable to new

	<p>behaviors and dialogue capabilities. Technology arising from this program will have substantial commercialization potential in the public and private sectors. CASBA will provide experimenters and exercise planners with an indispensable tool for enriching their experiments with realistic, autonomous (but controllable) cognitive agents performing in a battlefield ATC environment. The technology will extend the reach of simulation-based experiments and exercises while providing a cost benefit through reduced staffing. Transition and commercialization targets for CASBA arise from the capability to embed synthetic agents within existing and future Army and Joint virtual battlespaces. The technology also has applicability in, for instance, FAA simulations of new airspace management techniques, or multi-agency initiatives establishing UAV requirements for operations in the National Air Space. CASBA will be useful for training as well, supporting on-demand training for controllers deploying to new areas of operation; the need to effectively train in controlled airspace environments is especially relevant for cross-agency collaborations such as homeland security, counter-narcotics, disaster relief, and emergency services.</p>
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