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EMERGING TECHNOLOGIES FOR DEPLOYABLE AIRCREW TRAINING

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Flight training devices commonly used for aircrew training offer high-fidelity simulation, wide field-of-view projection, detailed terrain, and realistic instrumentation and controls. Despite the significant investment needed to acquire and operate them, high-fidelity training devices enjoy widespread acceptance among end-users, air carriers, and military organizations.

Advances in computer simulation technology have helped reduce hardware requirements while providing software tools for scenario authoring, entity creation, performance assessment, and briefing/debriefing. A consequence of improved simulation tools is that training devices can be developed for a broader range of computational platforms, from very high-fidelity dedicated systems to desktop flight simulators running on standard PCs.

Choosing the appropriate technologies requires careful consideration of operational factors including training requirements, end-user priorities, logistics, cost, size/composition of the crew being trained, and the role of the instructor (if any). Current training systems research and development is evaluating the training value derived from current simulation technologies while exploring new approaches to extend the reach of simulation-based training.

Several promising research efforts are underway to develop training technologies that include intelligent tutoring, realistic synthetic entities, speech dialogue, performance assessment, and automated after action review. But a critical factor in the success of a training device remains the match between the fidelity of the simulation and the training requirements. For training airmanship and tactical air combat maneuvers, *physical* fidelity is a highly relevant property. Training that focuses on judgment and decision-making requires simulated environments that possess a high degree of *cognitive* fidelity. For training that emphasizes team skills, simulations should provide realistic *social* fidelity. If a focus of the training is radio communications, a simulator ought to provide a measure of *dialogue* fidelity.

This panel explores the range of issues surrounding how best to harness the power of emerging simulation technologies to create sophisticated aircrew training systems while at the same time carefully maintaining the consonance between the simulation and the training need. Each member of the panel possesses extensive experimental and applied backgrounds in modeling and simulation, training, or cognitive science, and has current responsibility for directing aviation training research and development. Each panelist will present a perspective on which approaches are likely to meet with success, and will share recent experiences from specific aircrew training initiatives. Following the presentations, a discussant will compare and critique the panelists' viewpoints and invite comments and questions from the audience.

Planned Panelists (one of these will be a discussant; which one is still TBD)

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