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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)								DATE February 2002		
BUDGET ACTIVITY 03 - Advanced Technology Development				PE NUMBER AND TITLE 0603227F Personnel Training and Simulation Technology				PROJECT 2743		
COST (\$ in Thousands)		FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
2743	Advanced Training/Force Management	6,171	0	0	0	0	0	0	Continuing	TBD
	Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0

Note: In FY 2002, efforts transfer to PE 0603231F, Project 4924, to align resources with the Air Force Research Laboratory organization.

(U) **A. Mission Description**
 This program develops and demonstrates technologies that will result in improved warfighter readiness. Develops, demonstrates, and evaluates technologies for Distributed Mission Training (DMT) including realistic, effective, and affordable synthetic combat environments, technologies for long distance networking to enhance joint-Service training, visual displays for real-time and post-mission debrief, and instructional strategies to support warfighter training in a joint synthetic battlespace. Provides a technology testbed for examining warfighter skills, cognitive functions, and behaviors contributing to combat readiness. Develops models to support aircrew, space, and information operations, performance measurement systems for air, space, and information warfare, and tools for mission planning, rehearsal, execution, and force protection in a distributed mission environment. Develops and demonstrates technologies necessary to provide realistic training for night time warfighting. Develops and demonstrates computer-based intelligent tutoring technology for representative tasks in high technology jobs, and software to enable Air Force training developers to rapidly and affordably build intelligent computer-assisted training systems which continually interact with students for effective individualized training. Develops and demonstrates information management technology for the warfighter at the unit level. Work concentrates on aircrew, space, and information dominance domains.

(U) **FY 2001 (\$ in Thousands)**

(U) \$713 Developed and demonstrated integrated techniques for DMT for aerospace operations, force protection, and command and control personnel to reduce the learning time for new operators, sustain critical mission competencies, and ensure that deployed personnel have the knowledge and skills to support the mission. Completed first training transfer studies of the impact of DMT on Air Force air-to-air combat flying performance, and demonstrated impact of DMT on washback rates and quality of performance during Flight Lead Upgrade training. Completed identification and representation of mission essential competencies for aerospace and information operators and force protectors. Developed and field tested a common satellite architecture for control training in aerospace operations center, and integrated team performance measurement methods to assess the readiness and mission impact of DMT for combat support teams.

(U) \$1,294 Developed advanced distributed learning information systems technologies that increase mission rehearsal capability for the warfighter by

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(U) <u>A. Mission Description Continued</u>		
(U) <u>FY 2001 (\$ in Thousands) Continued</u>		
	creating the ability to import real-time intelligence data into the Distributed Mission Training (DMT) environment. Technologies provide the warfighter with enhanced training tools to make accurate and timely decisions in a real-time environment. Infused real-time intelligence data under the mandated High Level Architecture (HLA) structure and continued evaluation of a multi-level security system for geographically disbursed man-in-the-loop simulators operating under different security classification levels. Demonstrated and evaluated pilot training results using real-time intelligence information.	
(U) \$1,761	Demonstrated advances in simulator visual system technologies through the development of high fidelity image generation, display, and database systems. Advanced visual systems provide operators greater visual definition to identify other aircraft, ground vehicles, roads, and bridges at realistic tactical ranges or to properly assess their aspect angle, increasing mission rehearsal capability for the warfighter. Continued development of PC-based high resolution real-time image generator and development tools. Advanced development of an ultra-high resolution laser projector for DMT simulators. Continued development and integration of a less expensive, optical infinity display material for the simulator.	
(U) \$998	Advanced DMT capabilities by increasing functional fidelity and realism of the training system through demonstrating and evaluating computer representation technologies. These advances in computer models of enemy threats, terrain, weather, and human behavior increase mission rehearsal capability for the warfighter as they acquire more accurate responses to battlefield stimuli. Developed threat models and environment representations that can be updated with real-time intelligence data. Developed physics-based radar threat, and other sensor models and their interaction with the environment. Developed an HLA compliant simulation architecture optimized for real-time, distributed, scalable training activities. Developed and tested imagery manipulation tools for automatic database generation including automatic materials encoding of source imagery versus current hand coding.	
(U) \$1,405	Developed and demonstrated technologies for high fidelity Night Vision Goggle (NVG) simulation to support and increase mission training, preview, and rehearsal capabilities. This reduces the cost of initial NVG qualification, allows for effective advanced night operation mission pretraining prior to aircraft, and increases combat training realism by adding simulated weather, seasonal, and environmental changes. Evaluated measures of training effectiveness, mission performance, and transfer of training from simulator to the aircraft. Conducted field evaluation of NVG training techniques to include distance estimation for aircraft, formation and aerial refueling, and combat maneuvering.	
(U) \$6,171	Total	
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<p>(U) <u>A. Mission Description Continued</u></p> <p>(U) <u>FY 2002 (\$ in Thousands)</u></p> <p>(U) \$0 Effort moved to PE 0603231F, Project 4924.</p> <p>(U) \$0 Total</p> <p>(U) <u>FY 2003 (\$ in Thousands)</u></p> <p>(U) \$0 No Activity</p> <p>(U) \$0 Total</p> <p>(U) <u>B. Budget Activity Justification</u></p> <p>This program is in Budget Activity 3, Advanced Technology Development, since it develops and demonstrates technologies for new system developments that have military utility and address warfighter needs.</p> <p>(U) <u>C. Program Change Summary (\$ in Thousands)</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 55%;"></th> <th style="width: 10%; text-align: center;"><u>FY 2001</u></th> <th style="width: 10%; text-align: center;"><u>FY 2002</u></th> <th style="width: 10%; text-align: center;"><u>FY 2003</u></th> <th style="width: 15%; text-align: center;"><u>Total Cost</u></th> </tr> </thead> <tbody> <tr> <td>(U) Previous President's Budget</td> <td style="text-align: center;">6,432</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">TBD</td> </tr> <tr> <td>(U) Appropriated Value</td> <td style="text-align: center;">6,491</td> <td style="text-align: center;">0</td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> a. Congressional/General Reductions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> b. Small Business Innovative Research</td> <td style="text-align: center;">-152</td> <td></td> <td></td> <td></td> </tr> <tr> <td> c. Omnibus or Other Above Threshold Reprogram</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> d. Below Threshold Reprogram</td> <td style="text-align: center;">-109</td> <td></td> <td></td> <td></td> </tr> <tr> <td> e. Rescissions</td> <td style="text-align: center;">-59</td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Adjustments to Budget Years Since FY 2002 PBR</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>(U) Current Budget Submit/FY 2003 PBR</td> <td style="text-align: center;">6,171</td> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td style="text-align: center;">TBD</td> </tr> </tbody> </table> <p>(U) <u>Significant Program Changes:</u> In FY 2002, efforts transfer to PE 0603231F, Project 4924, to align resources with the Air Force Research Laboratory organization.</p>				<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Total Cost</u>	(U) Previous President's Budget	6,432	0	0	TBD	(U) Appropriated Value	6,491	0			(U) Adjustments to Appropriated Value					a. Congressional/General Reductions					b. Small Business Innovative Research	-152				c. Omnibus or Other Above Threshold Reprogram					d. Below Threshold Reprogram	-109				e. Rescissions	-59				(U) Adjustments to Budget Years Since FY 2002 PBR					(U) Current Budget Submit/FY 2003 PBR	6,171	0	0	TBD
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<p>(U) <u>D. Other Program Funding Summary (\$ in Thousands)</u></p> <p>(U) Related Activities:</p> <p>(U) PE 0602202F, Human Effectiveness Applied Research.</p> <p>(U) PE 0604227F, Distributed Mission Training (DMT).</p> <p>(U) This project has been coordinated through the Reliance process to harmonize efforts and eliminate duplication.</p> <p>(U) <u>E. Acquisition Strategy</u> Not Applicable.</p> <p>(U) <u>F. Schedule Profile</u> Not Applicable.</p>		
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