

Exhibit R-2a, RDT&E PROJECT JUSTIFICATION							DATE February 2003	
APPROPRIATION0/BUDGET ACTIVITY RDT&E/Defense-Wide/BA 3					R-1 ITEM NOMENCLATURE Joint Warfighting , PE 0603727D8Z			
COST (In Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total Program Element (PE) Cost	7.536	9.296	9.685	9.948	10.283	10.531	10.963	11.1941
Joint Warfighting/P727	7.536	9.296	9.685	9.948	10.283	10.531	10.963	11.191

A. Mission Description and Budget Item Justification

In May 1998 the Secretary of Defense appointed U.S. Joint Forces Command (formerly the U.S. Atlantic Command), as the Defense Department's Executive Agent for Joint Experimentation. Subsequently, the Department realigned resources to support the Joint Forces Command's new role. In FY 1999 funds from this JWP Program Element (PE: 0603727D8Z) were redirected to support the initial stand-up of Joint Forces Command's Joint Experimentation Directorate. Funding for joint experiments was transferred to Joint Forces Command through the Navy and PE 0603727N in FY 2000 and was established to provide Joint Forces Command with its own funding source. Funding to support the Joint Advanced Warfighting Program (JAWP) concept development, the Information Technology Backplane (ITB), and Technology Feeder Support (TFS) for joint experimentation was retained in the JWP PE. The DoD Adaptive Red Team (DART) was initiated as a pilot project in FY 2002. DART has proven to be very successful by providing an independent team of experts to challenge emerging operational concepts from their origin through the experimentation process. It has been continued as a key element of the Joint Warfighting Program starting in FY 2003.

The Joint Warfighting PE supports four related activities: the JAWP, the ITB, DART and TFS for Joint Experimentation. While these activities strongly support Joint Forces Command's joint experimentation efforts, a separate program element has been retained since the activities support other organizations in addition to Joint Forces Command, and they require a degree of independence from Joint Forces Command to function as envisioned.

The JAWP was established by the Office of the Secretary of Defense (OSD), with the support of the Vice Chairman of the Joint Chiefs, to serve as a catalyst for innovation and change. This program's focus is on assisting in the formulation and assessment of advanced concepts and capabilities, plus identifying enabling technologies and integration options for the Department. These concepts drive changes in the doctrine, organization, training and education, materiel, leadership and facilities (DOTMLF) of the Services.

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The JAWP serves a key role in identifying, exploring and evaluating breakthrough warfighting capabilities. It builds on the lessons learned from earlier Service experiments that have underscored the importance of having a firm conceptual basis upon which to build experiments. The JAWP concentrates on joint, vice Service-unique, revolutionary concepts. In identifying and elaborating innovative joint concepts and capabilities, and associated enabling technologies, the JAWP will not only take into account Service efforts, but those of Combatant Commanders and Defense agencies as well. The JAWP promotes integration, conducts experiments and assists in implementation. The JAWP's work complements and supports the activities of Joint Forces Command, the Joint Staff and the OSD. It provides an independent source for formulating advanced concept candidates for joint experimentation. The JAWP is composed of both civilian analysts and technologists. The JAWP Analytical Project Office (JAWP-APO), a jointly manned activity established by the Deputy Secretary of Defense, consists of military personnel from the four Services. The active duty military members provide a current operational perspective to concepts under investigation and serve as a vital link to ongoing relevant activities in the Services.

The ITB provides an advanced network infrastructure that extends commercial capabilities to meet JV2020 needs. Information Superiority is a key JV2020 building block and the ITB provides the means to experiment with the digital transmission capabilities that are projected to be available five years (from each funding year). The ITB is not a new physical network. It is a virtual network that capitalizes on existing physical networks such as the Defense Information Systems Network (DISN), the DISN Asynchronous Transfer Mode Service Network (DATMS), the Defense Research and Engineering Network (DREN), and the experimental Advanced Technology Demonstration Network (ATDnet). The ITB has many users from sites served by existing networks but the funding included in this PE is the incremental funding needed to support joint experimentation. For example, this PE provides the circuit costs to extend the ITB from the experimentation site to the nearest point on the backplane (where no other network exists), and only the "extra" backplane costs generated by the Joint Warfighting Experiments. Since joint experiments are very dependent on advanced distributed simulation, or on limited, live, command post exercises that are being driven by simulations, a robust high-performance network is needed to interconnect the various sites. These simulations press the state of the art in networking capability, including that of requiring high-bandwidth, low-latency Type-I encryption for protected communications. The ITB also supports new bandwidth-intensive applications such as video teleconferencing, high definition television and large file transfers.

The third effort supported by this PE is TFS for joint experiments. There are many Technology Demonstrations (TDs), Advanced Technology Demonstrations (ATDs), and Advanced Concept Technology Demonstrations (ACTDs) that can provide advanced technologies to support joint experiments. For example, the Joint Staff has prepared 72 desired operational capabilities based on JV2020 concepts and 21st Century Challenges. For each Challenge, the Joint Staff has prepared roadmaps that provide opportunities to assess each Challenge. The roadmap for the battlefield awareness challenge shows 42 ACTDs that have the potential to demonstrate some aspect of a desired operational capability supporting battlefield awareness. This effort provides technology managers the resources to expand the scope of a test or demonstration to collect data for the joint staff or JFCOM, thereby leveraging the OSD and Service ACTD investment. The Technology Feeder Support effort was used to initiate a Red Team Pilot Project (DoD Adaptive Red Team – DART) for Joint Forces Command. The DART participated in Joint Forces Command Concept Development and Experimentation to provide an independent assessment that will ensure that product quality stays high and credible. This source of funding, which is separate from other Joint Forces Experimentation funding, will provide the necessary independence.

The DART has been established as a separate project starting with the FY2003 budget. The DART has assisted USJFCOM in the preparation for MILLENNIUM CHALLENGE 2002 and assisted United States Central Command (USCENTCOM) and United States South Command (USSOCOM) in preparation for real world operations in

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Operation Enduring Freedom. It will continue to provide an independent source of Red Teaming expertise to challenge operational concept development from their origin through experimentation and into execution.

B. Program Accomplishments and Plans:

	FY 2002	FY 2003	FY 2004	FY 2005
Joint Advanced Warfighting Program (JAWP)	4.500	4.500	4.635	4.750

- FY 2002** - Continued its support of joint concept development and experimentation for the Office of the Secretary of Defense, the Joint Staff, Joint Forces Command, and DARPA. Building on its FY 98 through FY 00 experiences, JAWP focused on enhancing joint operational-level command and control, ISR integration, and joint force application. To help evolve Joint Forces Command’s Rapid Decisive Operations concept and support DARPA’s and the Army’s Future Combat Systems (FCS) development effort, JAWP planned, developed partnerships, coordinated, and initiated the Future Joint Force I Experiment, investigating innovative command and control applications, integration of theater and tactical ISR efforts, and employment of robust air and ground robotic sensor suites using wargames, constructive modeling, and human-in-the-loop simulation. This effort is a partnership that engaged the Army and Air National Guard, the United Kingdom, Canada, the Marine Corps Warfighting Laboratory, the Army’s Mounted Maneuver Battle Laboratory (MMBL), Institute for Defense Analyses (IDA), RAND, and Defense Advanced Research Projects Agency (DARPA). This extensive partnering effort recognizes that transformation requires a common perspective on challenges and solutions, including the perspectives of allies. In support of the Joint Staff, JAWP developed a definition and operational framework for effects-based operations and a draft joint operational concept for dominant maneuver. Included in all of JAWP’s work are vulnerability assessments using “Red Teaming” techniques that identify weaknesses and help avoid surprises. In support of OSD and the Joint Staff, JAWP completed development of a DoD Roadmap for Urban Operations and assisted JFCOM in preparing for its assumption of responsibility as the DoD executive agent for urban operations. JAWP’s outreach efforts have engaged: Israel and the United Kingdom in effects-based planning and operations; all NATO partners in urban warfare concept development; the United Kingdom, Australia, and Canada in joint concept development and experimentation; and Germany and Singapore in possible future participation in joint experimentation. In support of Joint Forces Command, JAWP planned, coordinated, and initiated cooperation with the Warrior Prep Center at Einsiedlerhof, Germany to support concept development efforts with the Multinational Interoperability Council nations—Britain, France, Germany, Canada, and Australia. Finally, JAWP supported the Secretary of Defense’s Quadrennial Defense Review with briefings and concept papers that resulted in recommendations included in the current Defense Planning Guidance and participated in a DoD assessment of operations in the War on Terrorism.
- FY 2003** - The JAWP will begin the Future Joint Force II Experiment. The effort will incorporate insights from JAWP’s Future Joint Force I experiment and Joint Forces Command’s Millennium Challenge 02 experiment to build the foundations for a beyond 2010 forcible entry operations capability addressing a broad range of potential contingency environments. The experiment will leverage the results of past JAWP and JFCOM experiments to exploit networked ISR capabilities as an integrated tool of warfare; refine joint command and control organization; integrate manned and unmanned capabilities for reconnaissance and combat applications; and explore innovative ways to overcome opponents’ protective measures. Opportunities will be identified to leverage and integrate Service, allied, and other agency programs. Through workshops and limited objective experiments, JAWP will also help integrate the independent joint command and control initiatives of United States Pacific Command (USPACOM),

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USCENTCOM, JFCOM, and Service command and control capabilities to help attain the Secretary’s objective of establishing a more standardized and responsive joint command and control structure worldwide. Data collection and independent analysis will be conducted and used to produce reports and papers intended to inform the OSD, Joint Staff and the Joint Forces Command leadership of experimentation results and to inform transformation choices. Vulnerability assessments and “Red Teaming” will be conducted to improve the validity and robustness of experimentation. The JAWP will help identify and exploit opportunities facilitating the early transition of new concepts and technologies to operational capabilities. JAWP will also assist JFCOM in its assumption of duties as DoD’s Executive Agent for Joint Urban Operations.

- **FY 2004** - Will continue support of the Department’s transformation objectives through joint experimentation and joint concept development. Specifically, the JAWP will complete its Future Joint Force II experiment and initiate a continuing experiment extending through FY2006 to exploit insights gained from earlier experimentation. It will concurrently help identify an implementation path for a worldwide joint command and control structure emphasizing the creation of standing Joint Force Headquarters as the command and control foundation on which future joint operations will be based.
- **FY 2005** - Will continue experimentation focused on joint command and control and ISR begun in FY2004 and extending throughout FY2005 and FY2006. The experiment will support the spiral development of future joint command and control capabilities and will explore space support of terrestrial operations and the application of hypersonic weapons from air, land, and sea delivery systems.

	FY 2002	FY 2003	FY 2004	FY 2005
Information Technology Backplane (ITB)	1.400	1.400	1.442	1.480

- **FY 2002** - The ITB support for wide-area network connectivity for joint warfighting experimentation continued, as did the ongoing task of transitioning emerging technology from advanced research network testbeds. Specifically, Unified Vision 01 was supported and executed, while assistance was given to design Millennium Challenge 02. The Future Combat System (FCS) series of experiments linking JFCOM with the MMBL at Ft. Knox was supported using the DREN. Initial implementation of secure (Kerberized) network management protocols (SNMPv3) across selected ITB sites was demonstrated. Development and evaluation of advanced security/information assurance devices and tools, such as ATM and host-based layered firewall technologies, was begun in the lab. Distributed applications, such as collaborative tools, continued. Commercialization of IP Class-of-Service (CoS) to ATM Quality-of-Service was furthered with initial testing of Class-Based, Weighted Fair Queuing (CBWFQ). Efforts in support of JFCOM continued. Connectivity to key sites (JFCOM, SPAWARs WISSARD, etc.) continued, with selected circuits upgraded as required. Significant hardware upgrades to end-sites occurred.
- **FY 2003** - The ITB support for wide-area network connectivity for joint warfighting experimentation will continue, as will the ongoing task of transitioning emerging technology from advanced research network testbeds. Information assurance and other security technologies will continue to be developed, tested and deployed. Efforts to use multicast and net-flow monitoring and analysis to determine and map traffic-flow prioritization to WAN QoS will begin. Deployment of high-quality, low-latency video teleconferencing and collaboration will continue. Efforts in support of JFCOM, FBE and ad-hoc experimentation will continue including supporting JFCOM’s goal of bringing supercomputer assets to bear on M&S problems and providing an ongoing set of events through their Continuous Experiment Environment (CEE). Assistance will be given to the planning and execution of Pinnacle Impact ’03 and planning of Pinnacle Vision ’04 (formerly Olympic Challenge ’04) Connectivity to key sites will continue with selected circuits and equipment upgraded as required.

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- **FY 2004** - The ITB support for wide-area network connectivity for joint warfighting experimentation will continue, as will the ongoing task of transitioning emerging technology from advanced research network testbeds. Information assurance and other security technologies will continue to be developed, tested and deployed. Multicast and net-flow monitoring and analysis tools which determine and map traffic-flow prioritization to WAN QoS will be fielded. Efforts in support of JFCOM, FBE and ad-hoc experimentation will continue including JFCOM's Continuous Experiment Environment (CEE). Assistance will be given to the planning and execution of Pinnacle Vision '04 (formerly Olympic Challenge '04). Connectivity to key sites will continue with selected circuits and equipment upgraded as required.
- **FY 2005** - The ITB support for wide-area network connectivity for joint warfighting experimentation will continue, as will the ongoing task of transitioning emerging technology from advanced research network testbeds. Information assurance and other security technologies will continue to be developed, tested and deployed. Efforts in support of JFCOM, FBE and ad-hoc experimentation will continue. Assistance will be given to the planning and execution of Pinnacle Challenge '05 (since this is a major DoD effort, this will require significant resources). Connectivity to key sites will continue with selected circuits and equipment upgraded as required.

	FY 2002	FY 2003	FY 2004	FY 2005
Technology Feeder Support (TFS)	1.636	1.696	1.708	1.718

- **FY 2002** - JFCOM's Campaign Plan 01 identified 31 major exercises and experiments in FY 2001. The Deputy Under Secretary of Defense (Advanced Systems and Concepts), in coordination with JFCOM and the Joint Staff, assisted in determining which ACTDs, Advanced Technology Demonstrations (ATDs), and/or Technology Demonstrations best support JFCOM's experimentation events. Funding was provided to the selected technology managers to support a joint experiment. Funding was provided for efforts such as system integration, and logistics and test support. Planning and preparations continued for incorporation of as many technology demonstrations as possible into the primary FY 2002 joint experiment, MILLENNIUM CHALLENGE 2002. Initial funding was provided to the DoD Adaptive Red Team (DART) which evaluated the major joint experiment of 2001 (Unified Vision 01) and prepared to observe and critique MILLENNIUM CHALLENGE 2002.
- **FY 2003** - Further determination of potential major exercises and experiments which can support technology demonstrations will be completed. Plans for Pinnacle Vision 04 will be further defined and work will continue to align the technologies supporting this major integrating exercise. ICTs will continue to complete detailed experimentation and assessment plans. ACTD and other technologies will be injected into FY2003 JFCOM experimentation. Technologies to support selected experiments will be further identified. Support of combatant commander (other than JFCOM) experimentation will continue.
- **FY 2004** - The major effort planned for support by the TFS project will be to ensure that technology applications (ACTDs /ATDs) are injected into Pinnacle Vision 2004. It is anticipated that the major focus of the 2004 joint experiment will be on Standing Joint Force Headquarters so significant effort will be applied to ensure that appropriate technologies to support this operational concept will be available to enhance this experiment. The support of combatant commander (other than JFCOM) experimentation will continue.
- **FY 2005** - The major effort planned for support by the TFS project will be to ensure that technology applications (ACTDs /ATDs) are injected into FY05 experiments conducted by JFCOM and other combatant commanders. It is anticipated that implementation of the Standing Joint Forces Headquarters and other Transformation efforts will continue to be the focus of experimentation efforts. Technology resources will be focused to support this effort. The support of combatant commander (other than JFCOM) experimentation will continue.

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	FY 2003	FY 2004	FY 2005
DoD Adaptive Red Team (DART)	1.700	1.900	2.000

- **FY 2003** - DART is established as a separate project because of its significant success as a pilot project. DART will assist JFCOM in concept development of the Standing Joint Force Headquarters in preparation for future joint experiments. DART will also assist in the red teaming of counter terrorism experimentation and JAWP's Future Joint Force II Experiment. DART will also assist other combatant commanders in the development, execution and red teaming of joint experimentation to be conducted by those commands. DART will also assist senior departmental leadership in red teaming any operational concepts for potential real world operations to be conducted in 2003. DART will also devise a Code of Best Practices for red teaming to assist the entire Department in improving the red teaming process.
- **FY 2004** - DART will continue to support and challenge the operational concepts being developed through joint experimentation and assist JFCOM in concept development of the Standing Joint Force Headquarters in preparation for FY04 joint experiments. DART will also continue to assist in the red teaming of counter terrorism experimentation and JAWP's Future Joint Force II Experiment. DART will continue to assist other combatant commanders in the development, execution and red teaming of joint experimentation to be conducted by those commands. DART will also assist senior departmental leadership in red teaming any operational concepts for potential real world operations to be conducted in 2004.
- **FY 2005** - DART will continue to support and challenge the operational concepts being developed through joint experimentation and to assist JFCOM in concept development and implementation of the Standing Joint Force Headquarters that resulted from FY04 joint experiments. DART will continue to assist in the red teaming of emergent joint experiments. DART will continue to assist other combatant commanders in the development, execution and red teaming of joint experimentation to be conducted by those commands. DART will also assist senior departmental leadership in red teaming any operational concepts for potential real world operations to be conducted in 2005.

C. Other Program Funding Summary: N/A

D. Acquisition Strategy: N/A

E. Major Performers: N/A.

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