

CLASSIFICATION: UNCLASSIFIED

EXHIBIT R-2, RDT&E BUDGET ITEM JUSTIFICATION **DATE**
February 2008

APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 4	R-1 ITEM NOMENCLATURE 0603382N/ADVANCED COMBAT SYSTEMS TECHNOLOGY						
COST (In Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	20.251	11.515	4.367	10.086	12.058	12.082	10.113
0324 / ADV COMBAT SYSTEM TECHNOLOGY	18.988	9.130	4.367	10.086	12.058	12.082	10.113
9999 / CONGRESSIONAL ADDS	1.263	2.385	0.000	0.000	0.000	0.000	0.000

A. MISSION DESCRIPTION:

The Advanced Combat System Technology line provides engineering studies, real time instrumentation, risk reduction experiments conducted in a distributed computer architecture and Tactical Information Management (TIM) concepts in a computing testbed. The program matures both technical and business model integration for warfare systems programs of record in an open architecture environment. A priority is the design of the flow and display of tactical information through the "detect-control-engage" process to provide decision quality information.

Project Unit 0324: Funding is included to ensure all Naval systems, family of systems, and programs move to modular Open Architectures (OA) in accordance with DoDD 5000.1 dated 12 May 2003 which mandates all DoD programs to utilize open systems architecture in order to rapidly field affordable, interoperable systems. By direction of the Navy SAE, PEO IWS is assigned overall responsibility and authority to direct the Navy's OA effort which this project supports. This effort establishes acquisition strategies, develops guidance, and develops analysis of alternatives to determine OA software reuse practices within and across all Navy Communities of Interest (COI - surface, subsurface, air, space, and C4I). This project also works closely with the Test and Evaluation (T&E) and certification communities in defining regression testing and certification requirements for all OA Commercial Off-the-Shelf upgrades and software reuse applications. Ultimately, this project seeks to create a strategic shift in the acquisition process to facilitate cooperative cross-domain/COI business relationships. This will improve economies of scale throughout the Navy. This development effort will identify the business case and return on investment for moving the Navy towards an open systems approach, support the development of open systems technologies, and integrate best practices for open systems development within Naval acquisition. This Naval OA project will ensure Navy-wide system architectures are extensible and scaleable in function, capacity, and workload to meet Joint warfighting requirements. This also includes the identification and development of common software components, functions, and reuse methodologies. In summary, this funding supports systems engineering required across all Naval systems as they are migrated to function in a joint net centric warfare environment.

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EXHIBIT R-2, RDT&E BUDGET ITEM JUSTIFICATION (CONTINUATION) **DATE**
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APPROPRIATION/BUDGET ACTIVITY **R-1 ITEM NOMENCLATURE**
RD TEN/BA 4 **0603382N/ADVANCED COMBAT SYSTEMS TECHNOLOGY**

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2007	FY 2008	FY 2009
Previous Presidents Budget: (FY 08 Pres Controls)	12.319	9.331	9.586
Current PB Budget: (FY09 PB Controls)	20.251	11.515	4.367
Total Adjustments	7.932	2.184	-5.219
Summary of Adjustments:			
Program Adjustment	-0.316	-0.201	-5.219
Misc. Changes	0.000	0.000	0.000
Undistributed General Reductions	- 0.015	0.000	0.000
Congressional Action	1.263	2.385	0.000
Reprogramming	7.000	0.000	0.000
Subtotal	7.932	2.184	-5.219

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. and Name	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
								To	Total
PE 0604307N/ 1447 (AEGIS Surf Combatant Combat Sys Imp)	140.812	139.686	188.500	166.393	147.457	118.727	96.186	CONT.	997.761
PE 0604755N/ 2178 (Ship Self Defense System)	12.626	26.200	30.554	24.718	30.243	33.207	33.945	0.000	191.493
PE 0603582N/ 0164 (Common Network Integration)	20.200	14.500	13.500	0.000	0.000	0.000	0.000	CONT.	47.127
PE 0603658N/2039 (Cooperative Engagement Capability)	41.816	32.538	38.316	49.248	46.302	45.726	46.080	CONT.	300.026

D. ACQUISITION STRATEGY:

This risk reduction effort evolved and shifted from a PEO IWS 1.0 task to NSWC/Dahlgren to an ASN-RDA directed task to fund the Navy's OA Enterprise effort from this core OA Budget line (policy statement dated 5 August 2004). The strategy was further refined in the DCNO requirement of 23 December 2005 (N6/7) with guidance for this effort to assist the MDA, program managers, and resource sponsors in assessing enterprise program assets where appropriate. OPNAV has directed this program to provide objective, measurable, performance based assessments as baselines for future system changes and spiral developments. It is also directed to serve as the coordinator for end-to-end force level system engineering experiments (e.g., OAFn Experiment). Furthermore, it directs an OA asset repository capability that incorporates and enterprise configuration management process be built and maintained.

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APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 4	R-1 ITEM NOMENCLATURE 0603382N/ADVANCED COMBAT SYSTEMS TECHNOLOGY	
<p>E. MAJOR PERFORMERS: NSWC/ Dahlgren - Dahlgren, Virginia - Technical Authority for OA Program for PEO IWS</p> <p>NSWC/Crane, Carderock, & ALION- Program Management Support</p> <p>NUWC/Newport-OA Domain Support</p> <p>NAVAIR - OA Domain Support</p> <p>Industry: IBM, ANGLE</p> <p>SPAWAR-OA Domain Support</p> <p>MITRE & SEI-FFRDC</p>		

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EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION					DATE February 2008		
APPROPRIATION/BUDGET ACTIVITY RDTEN/BA 4		PROGRAM ELEMENT NUMBER AND NAME 0603382N/ADVANCED COMBAT SYSTEMS TECHNOLOGY			PROJECT NUMBER AND NAME 0324/ADV COMBAT SYSTEM TECHNOLOGY		
COST (In Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	18.988	9.130	4.367	10.086	12.058	12.082	10.113
RDT&E Articles Qty	0	0	0	0	0	0	0
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:							
<p>Project Unit 0324: Funding is included to ensure all Naval systems, family of systems, and programs move to modular Open Architectures (OA) in accordance with DoDD 5000.1 dated 12 May 2003 which mandates all DoD programs to utilize open systems architecture in order to rapidly field affordable, interoperable systems. By direction of the Navy SAE, PEO IWS is assigned overall responsibility and authority to direct the Navy's OA effort which this project supports. This effort establishes acquisition strategies, develops guidance, and develops analysis of alternatives to determine OA software reuse practices within and across all Navy Communities of Interest (COI - surface, subsurface, air, space, and C4I). This project also works closely with the Test and Evaluation (T&E) and certification communities in defining regression testing and certification requirements for all OA Commercial Off-the-Shelf upgrades and software reuse applications. Ultimately, this project seeks to create a strategic shift in the acquisition process to facilitate cooperative cross-domain/COI business relationships. This will improve economies of scale throughout the Navy. This development effort will identify the business case and return on investment for moving the Navy towards an open systems approach, support the development of open systems technologies, and integrate best practices for open systems development within Naval acquisition. This Naval OA project will ensure Navy-wide system architectures are extensible and scaleable in function, capacity, and workload to meet Joint warfighting requirements. This also includes the identification and development of common software components, functions, and reuse methodologies. In summary, this funding supports systems engineering required across all Naval systems as they are migrated to function in a joint net centric warfare environment.</p>							

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B. ACCOMPLISHMENTS/PLANNED PROGRAM:			
	FY 2007	FY 2008	FY 2009
Multi-Mission Signal Processor (MMSP)	7.000	0.000	0.000
RDT&E Articles Quantity	0	0	0
Multi-Mission Signal Processor (MMSP) is an effort to support the development of a signal processor for DDG Modernization war fighting upgrades and to complete Aegis C&D software partitioning and migration to Open Architecture. This effort allows collaboration during development of Aegis Ballistic Missile Signal Processor.			
	FY 2007	FY 2008	FY 2009
OA Enterprise Strategy and Governance	1.373	1.318	0.767
RDT&E Articles Quantity	0	0	0
OA Enterprise Strategy and Governance - This funding supports the quarterly/semiannual OA EXCOMM executive committee and continued activities of the OA Executive Team (OAET). The OAET is the key governance body that ensures the open systems approach is developed and applied across the Navy in a cohesive and implementable manner. The OAET is the single interface between PEO IWS and the rest of the OA community of interest. Also funds, OAET working groups such as the Business, Communications, Standards, and Architecture working groups. These groups work across Naval domains to ensure architectures will be extensible and scaleable in function, capacity, and workload to meet Joint warfighting requirements across Platforms in the Joint Net-Centric Environment.			
	FY 2007	FY 2008	FY 2009
OA Enterprise Communications and Training	1.154	0.945	0.500
RDT&E Articles Quantity	0	0	0
OA Enterprise Communications and Training - This funding supports the activities to enable the cultural adoption of OA principles and practices through stakeholder management, communications, training, and OA Knowledge Management. Key activities include the development on an enterprise workforce training and education program and establishment of professional curricula (OA modular acquisition and OA systems engineering) with academia and Naval Institutes. This program plan includes participation, liaison, and coordination with multiple stakeholders including the OSD Open Systems Joint Task Force (OSJTF), Naval Post Graduate School, Defense Acquisition University (DAU), FORCEnet, Industry Days, and other communication vehicles, to ensure the optimal OA standards and technologies are identified and incorporated into Naval system acquisition.			
	FY 2007	FY 2008	FY 2009
OA Program Maturity Development	4.530	2.721	0.600
RDT&E Articles Quantity	0	0	0
OA Program Maturity Development - This funding supports the assessment of systems, family of systems, and programs (ACAT I - IV) to determine the baseline OA maturity and compliance with Modular Open Systems Architecture (MOSA). This includes the identification of cross-domain and enterprise components and analysis of business and technical alternatives to determine return on investment for re-use. The OA Program Maturity Development includes the establishment of mission focused Communities of Interest to provide end-to-end mission based OA compliant capabilities. This includes the OA-Fn Experimentation which is an effort to develop an Enterprise level OA-Fn demonstration, test and certification testing capability to enable the Naval community to evaluate candidate components for interoperability reuse potential and NII Net-Ready KPP achievement in a timely and more affordable manner. In addition, this effort will assist in aligning the OA and Fn activities in a concrete and demonstrable manner oriented			

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APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603382N/ADVANCED COMBAT SYSTEMS TECHNOLOGY	PROJECT NUMBER AND NAME 0324/ADV COMBAT SYSTEM TECHNOLOGY	
to a Build-Assess-Build experimentation process to collect cross-domain reuse feasibility opportunities and potential interoperability metrics for early feedback into the acquisition and engineering process. Participation and contribution of key technical expertise that enables the development of an implementable OA design that incorporates reusable hardware and software and fulfills Net-Centric Warfare, GIG, FORCEnet, and other technical requirements, while ensuring the operator's capability needs are always met. Includes the collaborative development of OA design processes, architectures, and other engineering documents between System Commands and PEO's across Naval domains. Key areas of technical expertise included but are not limited to process development, Naval acquisition, information transfer, information management, resource management, information assurance, time synchronization, programming languages, development tools, and displays.			
	FY 2007	FY 2008	FY 2009
OA Implementation and Integration across Naval Domains	4.096	3.396	1.800
RDT&E Articles Quantity	0	0	0
<p>OA Implementation and Integration across Naval Domains- Continue supporting the integration of OA policy, design guidance, and technologies into specific Naval domains, system commands, and PEOs. Provide for the direct support of program to implement OA-related processes and technologies within legacy and developmental Naval systems.</p> <p>Software/Hardware Asset Reuse Enterprise (SHARE) - Establish a functional process and asset repository to publish government owned assets central to the Open Architecture strategy. This repository is key to the health and maturity of the Navy OA effort and serves as a pilot project that will ultimately spiral to an enterprise wide asset repository.</p> <p>OA Business Strategy - Development of an acquisition strategy addressing incentives, intellectual property issues, contracting (integrators vs. primes), and funding alternatives.</p> <p>OA Test Facility - Study and recommendation of Test & Evaluation facilities and process changes required to support the fielding of OA-based products and systems. Continued participation of key technical expertise that enables OA application portability validation, Program of Record OA migration risk mitigation, OACE technology evaluations, verification of OA with legacy systems (connection with DEP), proof-of-concept for RCIP. Also includes evaluation of Jointly produced software, such as the IABM. Includes development, maintenance, and use of the OA Asset Repository, and configuration management of software within the repository.</p> <p>OA Standards- Evaluation of domain standards and current commercial standards to identify enterprise OA standards and align domains accordingly (e.g. NESI, OACE). Activities include the development, maintenance, and issuance of enterprise standards and guidance.</p> <p>OA Technology Bridging - Provides the new front-work required to prepare for tomorrow's OA technologies in support of OA COTS Technology Refresh. Work with Science & Technology (S&T) communities (e.g. DARPA and Office of Naval Research (ONR)) to provide domain specific problems on which to focus S&T investment and validation of candidate technologies against these challenge domain specific performance requirements. Provide engineering quality lessons learned and benchmarking information back to S&T sponsors and technology developers for enhancements. Ensure that emerging technology advances can be inserted at the proper time and pace to enable the management of COTS obsolescence.</p>			

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APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 4	PROGRAM ELEMENT NUMBER AND NAME 0603382N/ADVANCED COMBAT SYSTEMS TECHNOLOGY	PROJECT NUMBER AND NAME 0324/ADV COMBAT SYSTEM TECHNOLOGY	
throughout the OA lifecycle via the Technology Refresh Process that meets the Fleet's Technology Insertion cycles.			
	FY 2007	FY 2008	FY 2009
OA Financial, Technical, and Administrative Support Services	0.835	0.750	0.700
RDT&E Articles Quantity	0	0	0
<p>OA Financial, Technical, and Administrative Support Services - Provides support services for OA development in the following areas: Contract financial management, war room operations, Integrated Development Environment (IDE), technical support, OA policy and instruction development, program-related Risk Management and Cost Analysis, and dedicated executive assistant support to government principles. Provides senior engineering architecture expertise. Includes coordination, planning, facility rental, VTC use, and other aspects of meeting support for the OAET, OAET subgroups, and the OA Executive Committee.</p>			

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EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS										DATE February 2008		
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 4		PROGRAM ELEMENT NUMBER AND NAME 0603382N/ADVANCED COMBAT SYSTEMS TECHNOLOGY					PROJECT NUMBER AND NAME 0324/ADV COMBAT SYSTEM TECHNOLOGY					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost (\$000)	FY 2007 Cost (\$000)	FY 2007 Award Date	FY 2008 Cost (\$000)	FY 2008 Award Date	FY 2009 Cost (\$000)	FY 2009 Award Date	Cost to Complete (\$000)	Total Cost (\$000)	Target Value of Contract
SE/OA Domain Support	SS/CPFF	APL / Baltimore, MD	0.550	0.175	NOV-06	0.075	DEC-07	0.100	OCT-08	0.000	0.900	0.000
Systems Engineering	WR	NSWC / Dahlgren, VA	5.891	1.700	NOV-06	1.700	DEC-07	1.900	NOV-08	CONT	CONT	0.000
Systems Engineering	WR	NSWC Indian Head	0.000	0.000	DEC-06	0.000		0.000		0.000	0.000	0.000
Systems Engineering	WR	NSWC/CRANE & Carderock	0.803	0.720	NOV-06	0.000	NOV-07	0.250	NOV-08	0.000	1.773	0.000
Systems Engineering	CPAF	Miscellaneous	2.695	0.878	NOV-06	3.846	JAN-08	0.000		0.000	7.419	0.000
OA DOMAIN SUPPORT	WR	NUWC/Newport, Spawar, Navair	8.121	3.790	NOV-06	0.175	JAN-08	0.000		0.000	12.086	0.000
SE/Signal Processor	CPAF	Lockheed Martin	0.000	6.000	JUL-07	0.000		0.000		0.000	6.000	0.000
SE/Signal Processor	CPAF	BAE	0.000	0.300	JUL-07	0.000		0.000		0.000	0.300	0.000
SE/Signal Processor	CPAF	Raytheon	0.000	0.100	JUL-07	0.000		0.000		0.000	0.100	0.000
SE/Signal Processor	WR	NSWC/DD, NRL, PHD	0.000	0.600	JUL-07	0.000		0.000		0.000	0.600	0.000
Subtotal Product Development			18.060	14.263		5.796		2.250		CONT	CONT	0.000
Remarks:												
Software Development	CPFF	MITRE, SEI	0.309	0.000	DEC-06	0.000		0.000		0.000	0.309	0.000
Industry Development	CPFF	IBM, ANGLE	2.799	2.300	NOV-06	2.184	NOV-07	1.300	OCT-08	0.000	8.583	0.000
Technical Data-Academia	WR	NPS-Monterey/DAU	0.500	0.548	NOV-06	0.300	NOV-07	0.100	NOV-08	0.000	1.448	0.000
Subtotal Support Costs			3.608	2.848		2.484		1.400		0.000	10.340	0.000
Remarks:												
Operational Test & Evaluation	WR	NSWC/DD	1.174	1.042	NOV-06	0.100	NOV-07	0.000		0.000	2.316	0.000
OA Asset Repository(SBIR Account)	WR	Miscellaneous	0.150	0.000	MAR-07	0.000		0.000		0.000	0.150	0.000
Subtotal Test and Evaluation			1.324	1.042		0.100		0.000		0.000	2.466	0.000
Remarks:												
Program Management Support	CPAF	Miscellaneous	1.192	0.835	NOV-06	0.750	JAN-08	0.717	NOV-08	CONT	CONT	0.000
SBIR Assessment(Cong Add)	CPAF	NSWC/CD	2.435	0.000	MAR-07	0.000		0.000		0.000	2.435	0.000
Subtotal Management Services			3.627	0.835		0.750		0.717		CONT	CONT	0.000
Remarks:												

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EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS										DATE February 2008		
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 4		PROGRAM ELEMENT NUMBER AND NAME 0603382N/ADVANCED COMBAT SYSTEMS TECHNOLOGY					PROJECT NUMBER AND NAME 0324/ADV COMBAT SYSTEM TECHNOLOGY					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost (\$000)	FY 2007 Cost (\$000)	FY 2007 Award Date	FY 2008 Cost (\$000)	FY 2008 Award Date	FY 2009 Cost (\$000)	FY 2009 Award Date	Cost to Complete (\$000)	Total Cost (\$000)	Target Value of Contract
Total Cost			26.619	18.988		9.130		4.367		CONT	CONT	0.000

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EXHIBIT R4, Schedule Profile					DATE: February 2008																									
APPROPRIATION/BUDGET ACTIVITY/PROGRAM ELEMENT					PROJECT NUMBER AND NAME																									
RDT&E, N /BA-4					0324/Advanced Combat System Technology																									
Fiscal Year	2007				2008				2009				2010				2011				2012				2013					
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3			
Acquisition Milestones																														
Naval OA/FN Technical Stds		07-1 DSIR Update			07-2 DSIR Update		08-1 DSIR Update																							
Contract Guide Book Documentation Update		△			△	08 Design Guidance			△	09 Design Guidance			△	10 Design Guidance			△	11 Design Guidance			△	12 Design Guidance					13 Design Guidance(DG)			14 DG
Contracting Symposium		△					△				△				△				△				△							
Report to Congress Documentation Update	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△						
Consolidated Business Strategy Documentation Update				△			△				△				△				△				△							
OA Enterprise Asset Repository	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△	△			13 Repository Updates (RU)			14 RU
Test & Evaluation Milestones																														
OA/FN Risk Reduction Experiment Assess and Test OA Components Implementation						07-1 Exp												10-1 Exp					11-1 Exp				12-1 Exp			13-1 E
Production Milestones																														
Deliveries																														

* Not required for Budget Activities 1, 2, 3, and 6

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EXHIBIT R-4a, SCHEDULE DETAIL						DATE February 2008		
APPROPRIATION/BUDGET ACTIVITY RD TEN/BA 4		PROGRAM ELEMENT NUMBER AND NAME 0603382N/ADVANCED COMBAT SYSTEMS TECHNOLOGY			PROJECT NUMBER AND NAME 0324/ADV COMBAT SYSTEM TECHNOLOGY			
Schedule Profile		FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Contracting Symposium		2Q	2Q	2Q	2Q	2Q	2Q	2Q
Report to Congress Documentation Update		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Consolidated Business Strategy Update		4Q	4Q	4Q	4Q	4Q	4Q	4Q
Naval OA/Fn Technical Stds Profiles		2,4Q	2Q					
Contract Guide Book Documentation Update		4Q	4Q	4Q	4Q	4Q	4Q	4Q
OA Enterprise Asset Repository Updates		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
OA/Fn Risk Reduction Experiments		4Q			4Q	4Q	4Q	4Q

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B. ACCOMPLISHMENTS/PLANNED PROGRAM:			
	FY 2007	FY 2008	FY 2009
9999N Open Arch/Maint Free Operating Period (OA/MFOP)	1.263	2.385	0.000
RDT&E Articles Quantity	0	0	0
<p>Open Architecture/Maintenance Free Operating Period (MFOP) -This funding supports the pilot program for AN/BSY-10, co-sponsored with ASN (RD&A), it incorporates software tools and hardware redundancy into Commercial Off-The-Shelf (COTS) based open architected systems such that the system self-checking and self-healing capabilities virtually eliminate at-sea open cabinet maintenance. This funding extends the application of OA/MFOP to investigate the adoption of MFOP tools in other Navy National Security Systems as an OA reusable component.</p>			