

CAPITAL PURCHASES JUSTIFICATION (Dollars in Thousands)										A. FY2005 PRESIDENT'S BUDGET		
B. Department of the Navy/Research & Development						C. COLLATERAL EQUIPMENT FOR MILCON P-453 4WD4EL4444PR						CHINA LAKE
			2003			2004			2005			
Element of Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost
INVESTMENT COST			0			0	1	1,000	1,000	1	650	650
OPERATIONAL DATE	1-Sep-06											
METRICS:	AVOIDANCE	SAVINGS	TOTAL									
PROJECTED ANNUAL SAVINGS	\$412,000	\$0	\$412,000									
AVERAGE ANNUAL SAVINGS (Discounted)	\$253,156	\$0	\$253,156									
PAYBACK PERIOD	4.7	#DIV/0!	4.7									
RATE OF RETURN (ROR)	17%	0%	17%									
PROJECT INFORMATION NARRATIVE: (If more space required, continue on separate sheet.)												
<p>1. DESCRIPTION & PURPOSE OF PROJECT. The acquisition and installation of collateral technical equipment is in support of the MILCON P-453 Combined Research Laboratory. Design of the laboratory is expected to start in FY02 and construction to start after receipt of authority. This technical and non-technical equipment includes such items as hoods, laboratory benches, eyewashes, distiller, tensile tester, surface analyzer, Fourier Transform Infrared (FTIR) analyzer, Differential Thermal Analyzer (DTA), chemical lockers, etc.</p> <p>2. WHAT IS THE CURRENT DEFICIENCY/PROBLEM AND HOW WILL THE PROJECT SOLVE THE DEFICIENCY/PROBLEM? The equipment on hand in the various buildings does not completely support the increased operating efficiency expected from the MILCON. The new equipment will enable the modernization/replacement of 40+ year-old equipment that currently resides in 35 buildings. Removal and reinstallation of old equipment is not cost effective.</p> <p>3. WHAT PROJECT ALTERNATIVES HAVE BEEN CONSIDERED? The only other alternative is to populate the new facility with aged operating and auxiliary equipment that is, or soon will be, obsolete. This purchase will minimize future costs. The building, together with new and upgraded equipment, will make it a state-of-the-art facility.</p> <p>4. IMPACT IF NOT ACQUIRED. Over time, maintenance costs for installation of near-obsolete equipment could increase by a factor of two or more. It would be counterproductive to have obsolete equipment in a new state-of-the-art facility.</p> <p>5. IDENTIFY LOCAL, STATE, FEDERAL REGULATION IF ENVIRONMENTAL PROJECT. Not Applicable.</p>												

CAPITAL PURCHASES JUSTIFICATION (Dollars in Thousands)							A. FY2005 PRESIDENT'S BUDGET		
B. Department of the Navy/Research & Development/Air Warfare Center				C. EQUIPMENT, OTHER THAN ADPE & TELECOM (<\$1M)			D. NAWC NNEU0000		
Element of Cost	2003			2004			2005		
	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost
TOTAL INVESTMENT COST	24	VAR	6,074	34	VAR	9,013	37	VAR	9,330
ITEM	ITEM								
LINE #	DESCRIPTION		FY 2003		FY 2004			FY 2005	
8AA1EM8360GR	Firefighting Equipment		1	816					
4AA3EM4550PN	Airlab #2 Upgrade		2	600					
4AB3EM48LTPR	Site Based Signal Conditioning		3	500					
4AB4EM48L2PR	Catapult Deadload Braking System				1	767			
4AA4EM444JPR	High Power Electrical Generator Test Systems				2	610			
4AA4EM456APN	Hairy Buffalo CDL/Link 16 Ground Station				3	600			
4AB4EM4813PR	CNC Lathe/Mill				4	600			
4AB4EM482FPN	Advanced Photonic Measurement and Analysis System				5	577			
4AA5EM434GPN	Biaxial Test System						1	800	
4AB5EM48LHPR	RALS Upgrade to Air and Fluid Transfer Systems						2	716	
4AA5EM456FPR	Hairy Buffalo Wide Band Satellite Communications Upgrade						3	600	
4AA5EM434GPR	Scanning Transmission Electron Microscope						4	571	
4AB5EM4000PR	Catapult Site Type 1 Test Vehicle						5	517	
4WD5EM5565PR	Energetics Plant Equipment Modernization				1	641			
4WD4EM4445PR	Coating Capability Upgrade				2	550			
4WD4EM5556PR	Nano-Materials Development				3	280	1	640	
4WD5EM5567PR	Detonation Chemistry Initiative						2	990	
4WD5EM4002PR	AMES II Upgrade						3	600	
4WD5EM5559PR	Threat Hardware and Field Test Activities						4	500	
NNES0000	Subtotal Equip-other than ADPE & TELECOM (<\$.5M)		18	4,158	13	4,388	12	3,396	
TOTAL NAWC EQUIPMENT, OTHER THAN ADPE & TELECOM (<\$1M)			24	6,074	34	9,013	37	9,330	

CAPITAL PURCHASES JUSTIFICATION (Dollars in Thousands)							A. FY2005 PRESIDENT'S BUDGET				
B. Department of the Navy/Research & Development/Air Warfare Center				C. MINOR CONSTRUCTION			D. NAWC				
				NNMC0000							
			2003			2004			2005		
Element of Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost		
TOTAL INVESTMENT COST	2	VAR	1,496	9	VAR	3,632	3	VAR	1,920		
ITEM LINE #	ITEM DESCRIPTION	FY 2003		FY 2004		FY 2005					
8AA3MC8000GC	Parking Lot	1	746								
4AA4MC4000PC	Building 2187 Expansion			1	750						
4AA4MC4340PC	Addition to Building 2188			2	750						
4AA4MC4400PC	Addition to Building 106			3	736						
4AA5MC4400PC	Addition to Bldg 1461						1		750		
8WD3MC0043GC	Construct Inert Weapons Storage Fac. Bldg 20279	1	750								
8WD3MC2008GC	Fire Sciences Lab			1	750						
8WD5MC5013GC	Multi-Level Casting Facility						1		750		
	Subtotal MINOR CONSTRUCTION (<\$.5M)			2	646	1			420		
TOTAL NAWC MINOR CONSTRUCTION		2	1,496	9	3,632	3			1,920		

CAPITAL PURCHASES JUSTIFICATION
(Dollars in Thousands)

A. FY2005 PRESIDENT'S BUDGET

B. Department of the Navy/Research & Development

C. INTEGRATED BATTLESPACE ARENA
IMPROVEMENTS (IBAR) PHASE 2

4WD1TL9106PR

D. China Lake

Element of Cost	2003			2004			2005					
	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost			
INVESTMENT COST				1	1,045	1,045	1	250	250	0	0	0
OPERATIONAL DATE	1-Sep-04											
METRICS:	AVOIDANCE	SAVINGS	TOTAL									
PROJECTED ANNUAL SAVINGS	\$2,402,375	\$0	\$2,402,375									
AVERAGE ANNUAL SAVINGS (Discounted)	\$1,821,378	\$0	\$1,821,378									
PAYBACK PERIOD	1.0	#DIV/0!	1.0									
RATE OF RETURN (ROR)	85%	0%	85%									

PROJECT INFORMATION NARRATIVE: (If more space required, continue on separate sheet.)

- DESCRIPTION & PURPOSE OF PROJECT.** The Integrated Battlespace Arena (IBAR) is a collection of nine (9) laboratories and facilities at the China Lake site dedicated to battlespace engineering at all levels. RDT&E from the sub-component level all the way up to the integrated "system of systems" level is routinely supported. Phase 2 will upgrade, or replace several components in the various integrated laboratories and facilities. The areas targeted for this phase are the, Global Positioning System/Inertial Systems (GPS/INS) Laboratory, Infrared (IR) Target Presentation, Data Link, Signal Processing Development Laboratory, Virtual Prototype Facility and the upgrade of several infrastructure elements in the IBAR, the general laboratory's high pressure gas system, network. In addition to the facilities mentioned above, this Phase will begin the upgrade for the Cockpit Dome Simulator and will continue the upgrade of the IBAR network. The FY 2004 Project will be to upgrade the video projectors for the out-the-window displays of the Virtual Prototyping Facility (VPF).
- WHAT IS THE CURRENT DEFICIENCY/PROBLEM AND HOW WILL THE PROJECT SOLVE THE DEFICIENCY/PROBLEM?** The current simulation requirements from the broad IBAR customer base are beginning to tax the capability of the various IBAR components. As the need to reduce the number of in-flight and live-fire tests increases, reliance on the IBAR is increased.

In the GPS/INS Laboratory, the two Contraves rate tables originally procured in the early-mid 80's are damaged. In the Data Link facility, a gateway is needed to allow data to be shared and distributed by the IBAR components. With a gateway, the IBAR would be able to fuse a number of external (radio) data sources and provide the data for use by any of the simulation and/or hardware in the loop laboratories. In the Virtual Prototype Facility (VPF), the original video projectors, 9 X 12 foot screens and ancillary equipment were purchased in 1996. The screens display high-resolution computer-generated views of terrain and targets during cockpit simulations. Since that time, technology has advanced to provide digital video equipment that offers improved brightness, and resolution that will enable the sharpness and resolution required during cockpit simulations for key target detection and recognition. The current Cockpit Dome Simulator lacks a field of view and prohibits many air-to-air scenarios that require a larger field-of-view, particularly above the aircraft. The addition of a 12-foot diameter hemispherical dome, with projection system and re-configurable cockpit would provide for multi-ship scenarios when linked with the VPF. A key thrust in the IBAR involves operation and evaluation of infrared missile guidance systems, as well as the simulated target presentation systems for them, which require cooling with high-pressure gas. The gas system for the IBAR currently utilizes a bank of very heavy pressurized gas cylinders, which is both costly and dangerous because of the weight of the cylinders and the change out frequency. An integrated high-pressure gas system utilizing nitrogen is needed to run throughout the IBAR, to the GPS/INS navigation Laboratory and to the Geodesic Dome providing high-pressure gas in the 3000 psi to 6000 psi range. The development, fabrication, hardware characterization, and test and evaluation processes for Advanced Digital Signal Processing and IR sensor development is becoming more difficult due to outdated development and test equipment. The upgrades are vital to replace older analog devices and slower test equipment to sustain in-house development capability. The IR Scene Presentation Laboratory provides infrared scene generation and projection assets to support indoor weapon test efforts. The current fastest array operates at 200 Hz and is still too slow for some sensors currently in development for delivery to the fleet. Our compute and projection requirements need to be upgraded to meet the emerging need of our customers.
- WHAT PROJECT ALTERNATIVES HAVE BEEN CONSIDERED?** The alternative is to maintain the status quo and not meet the requirements for real-time simulations for missile and weapons system designers. As a result, the weapons programs may require more in-flight testing that would increase the overall cost of the weapon system.
- IMPACT IF NOT ACQUIRED.** The impact will be additional in-flight tests, captive carry and live-fire testing required by the programs. This will significantly increase the cost of weapon system development and life-cycle costs of the weapons.
- IDENTIFY LOCAL, STATE, FEDERAL REGULATION IF ENVIRONMENTAL PROJECT.** Not Applicable.

CAPITAL PURCHASES JUSTIFICATION (Dollars in Thousands)										A. FY2005 PRESIDENT'S BUDGET		
B. Department of the Navy/Research & Development					C. RADIO COMMUNICATIONS NETWORK UPGRADE 8WD2TL6152GR						D. China Lake	
				2003			2004			2005		
Element of Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost
INVESTMENT COST						0	1	1,220	1,220	1	1,000	1,000
OPERATIONAL DATE	1-Oct-06											
METRICS:	AVOIDANCE	SAVINGS	TOTAL									
PROJECTED ANNUAL SAVINGS	\$200,000	\$0	\$200,000									
AVERAGE ANNUAL SAVINGS (Discounted)	\$151,631	\$0	\$151,631									
PAYBACK PERIOD	7.3	#DIV/0!	7.3									
RATE OF RETURN (ROR)	15%	0%	15%									
PROJECT INFORMATION NARRATIVE: (If more space required, continue on separate sheet.)												
<p>1. DESCRIPTION & PURPOSE OF PROJECT.</p> <p>This is a base-wide replacement to upgrade our many existing radio communication systems into a single consolidated network. The National Telecommunications and Information Administration (NTIA) is currently implementing the digital and narrowband standard. This standard doubles the number of available frequencies. Digital signal processing requires only half of the bandwidth formerly allocated per radio frequency channel. All federal agencies are required to comply with this standard by 01 January 2008. This system will provide clear digital two-way radio communications for public safety, base operations, range operations, airfield operations, public works operations and base activities at China Lake, Point Mugu and San Nicolas Island (SNI). Digital encryption will accommodate the communications security needs of these radio users. It will provide levels of communications interoperability never before possible at these sites. Radio capabilities will be greatly enhanced to meet mutual aid and disaster preparedness. Improvements to two-way radio coverage includes allowing all networks to access all transceiver sites. Radio systems, administered by the U.S. Army at Fort Monmouth, will be providing a Site Survey and Plan of Action for the installation of the new radio system. It will be phased in over a 5-year period. Each year is to be considered a module; therefore, each module can go operational each fiscal year.</p> <p>2. WHAT IS THE CURRENT DEFICIENCY/PROBLEM AND HOW WILL THE PROJECT SOLVE THE DEFICIENCY/PROBLEM?</p> <p>The existing equipment will not meet the Federal Government requirement for 12.5 kHz narrow-band operation and will have to be replaced in the next few years to meet that mandate. The existing infrastructure is old and the equipment is no longer in production, which makes repairs and maintenance unreliable, and upgrades impossible to meet new standards. Putting this new system in place will immediately solve the equipment problems. The software will be upgradeable so that future requirements can be met without replacing the Radio equipment. With this new system, NAWCWD will be compliant with current and imminent regulations for narrow-band frequency usage and the Project-25 Digital Standards for Common Air Interface of two-way radio systems used by the Federal Government.</p> <p>3. WHAT PROJECT ALTERNATIVES HAVE BEEN CONSIDERED?</p> <p>The existing equipment cannot be upgraded to meet the new standards. This is a mandated project from NTIA and the Naval Electromagnetic Spectrum center (NAVEMSCEN).</p> <p>4. IMPACT IF NOT ACQUIRED.</p> <p>If the radios are not replaced by the year 2005, the existing Radio Communications will no longer be approved by the FCC. The frequencies will be lost and radio communications will cease.</p> <p>5. IDENTIFY LOCAL, STATE, FEDERAL REGULATION IF ENVIRONMENTAL PROJECT. Not applicable.</p>												

CAPITAL PURCHASES JUSTIFICATION (Dollars in Thousands)										A. FY2005 PRESIDENT'S BUDGET		
B. Department of the Navy/Research & Development						C. RDT&E NETWORK						CHINA LAKE/POINT MUGU
						7WD4TL4448GR						
			2003			2004			2005			
Element of Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost
INVESTMENT COST						0	1	1,970	1,970	1	1,860	1,860
OPERATIONAL DATE	1-Jun-05											
METRICS:	AVOIDANCE	SAVINGS	TOTAL									
PROJECTED ANNUAL SAVINGS	\$9,020,000	\$0	\$9,020,000									
AVERAGE ANNUAL SAVINGS (Discounted)	\$5,542,400	\$0	\$5,542,400									
PAYBACK PERIOD	0.2	#DIV/0!	0.2									
RATE OF RETURN (ROR)	281%	0%	281%									
PROJECT INFORMATION NARRATIVE: (If more space required, continue on separate sheet.)												
<p>1. DESCRIPTION & PURPOSE OF PROJECT. This project encompasses the other-than-Navy Marine Corps Intranet (NMCI) backbone communications infrastructure for NAWCWD RDT&E at the China Lake and Point Mugu sites. Most activities that support the RDT&E mission at NAWCWD have communications requirements that cannot be met via the current implementation of the NMCI contract. The majority of WD's RDT&E laboratories, Western Ranges, Weapons Software Support Activities (WSSA)'s, secure facilities and tenant activities will only be interconnected through NMCI which will NOT support the bulk of the RDT&E community's communications requirements. The goal of this project and the defacto consensus of these customers is that it is critical to the over-all success of the RDT&E mission at WD for a site-wide Non-NMCI (RDT&E) communications infrastructure to be established. In turn, the Non-NMCI interconnectivity requirements can be met by linking the various RDT&E activities including laboratories, ranges, WSSA's, secure facilities above General Services (GENSER) secret and tenants. The RDT&E activities would continue to maintain control over their own unique RDT&E infrastructures within their respective activities.</p> <p>2. WHAT IS THE CURRENT DEFICIENCY/PROBLEM AND HOW WILL THE PROJECT SOLVE THE DEFICIENCY/PROBLEM? Since January '01, when the Integrated Strike Force (ISF) assumed control of the existing infrastructure, the communications infrastructure has been operating in an "as-is" mode; meaning, the ISF will not upgrade or expand the existing communications infrastructure. It is also unknown at this time what portions of the communications infrastructure may be retained by the ISF and what will be returned to Navy control. At that time the Navy will have to evaluate what it will take to meet the RDT&E community's Non-NMCI requirements. This will include the following:</p> <ul style="list-style-type: none"> a) Replace necessary sections/components of the infrastructure retained by the ISF. b) Decommission systems and sections of the infrastructure no longer required. c) Upgrade necessary systems which were not kept current by the ISF. d) Expand the infrastructure based on a collaboratively established priority scheme that continues to meet and incorporate emerging Non-NMCI requirements of the RDT&E community. <p>3. WHAT PROJECT ALTERNATIVES HAVE BEEN CONSIDERED? Two alternatives are:</p> <p>1) Do nothing and the RDT&E community will have to live with the "as-is" capabilities of the existing infrastructure under ISF control. Once transition of all identified NMCI users and systems has been made to the new NMCI Base Area Network (BAN), the existing communications infrastructure will be retired by the ISF. Site-wide support of the RDT&E Community's Non-NMCI communication requirements that relied on the existing infrastructure for interconnectivity will terminate. This alternative is not feasible, since the primary reason for the existence of NAWCWD is to support the RDT&E mission and its associated customers.</p> <p>2) Do nothing and allow those RDT&E activities with the ability & resources to implement their own Non-NMCI communication infrastructure solution(s). This alternative also is not feasible due to the significant increase of inefficiencies (multiple RDT&E activities developing their own parallel project-specific solutions), decrease of over-all performance, and a significant increase cumulative life-cycle costs across NAWCWD.</p> <p>4. IMPACT IF NOT ACQUIRED. Without a Non-NMCI (RDT&E) communications infrastructure, NAWCWD will not have the strategic asset necessary to successfully compete in the DoD RDT&E arena; specifically, NAWCWD will be unable to fully support NAVY/DoD initiatives that involve Non-NMCI requirements.</p> <p>5. IDENTIFY LOCAL, STATE, FEDERAL REGULATION IF ENVIRONMENTAL PROJECT. Not Applicable.</p>												

CAPITAL PURCHASES JUSTIFICATION (Dollars in Thousands)										A. FY2005 PRESIDENT'S BUDGET			
B. Department of the Navy/Research & Development					C. H-60 FORCENET/NCW SUPPORT					D. Patuxent River			
					2003			2004			2005		
					4AA4KL4K6APN								
Element of Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	
INVESTMENT COST						0	1	843	843		1132	1132	
OPERATIONAL DATE	30-Sep-05												
METRICS:	AVOIDANCE	SAVINGS	TOTAL										
PROJECTED ANNUAL SAVINGS	\$810,000	\$0	\$810,000										
AVERAGE ANNUAL SAVINGS (Discounted)	\$614,107	\$0	\$614,107										
PAYBACK PERIOD	2.9	#DIV/0!	2.9										
RATE OF RETURN (ROR)	31%	0%	31%										
PROJECT INFORMATION NARRATIVE: (If more space required, continue on separate sheet.)													
<p>1. DESCRIPTION & PURPOSE OF PROJECT. This funding request is for the completion and subsequent integration of H-60 avionics suites into the FORCENet C4ISR architecture and its resultant virtual laboratory. H-60s provide a critical element to the overall FORCENet Architecture as the role of multi-mission helicopters becomes increasingly important to the Navy's changing needs and missions. This effort will identify and/or develop the simulation/stimulation hardware and software required to completely integrate H-60 avionics into FORCENet's multi-domain, tiered network architecture of weapons, sensors, platforms, vehicles, and communications nodes to support a global interoperable network that creates a shared, integrated battle space picture for use in testing C4ISR architectures. The current H-60 avionics suites are presently located at the NAWCAD Patuxent River Ship Ground Station (SGS), building 1670, and will be transitioned to MILCON P-562.</p> <p>2. WHAT IS THE CURRENT DEFICIENCY/PROBLEM AND HOW WILL THE PROJECT SOLVE THE DEFICIENCY/PROBLEM? Contemporary operations are transitioning to a littoral environment while emphasizing Joint interoperability based on information superiority permitted by networking force assets. Because of that, new mission areas are evolving and ship/air mission systems interface requirements are being redefined. In order to accommodate RDT&E of new C4ISR, network centric based ship/air mission systems and their associated interfaces, integration into a comprehensive virtual laboratory consisting of a multi-domain, tiered network architecture of weapons, sensors, platforms, vehicles, and communications nodes with other tactical systems will be required.</p> <p>3. WHAT PROJECT ALTERNATIVES HAVE BEEN CONSIDERED? (a.) Use of live assets. Availability, ground and/or flight operating costs, scheduling and connectivity are major detractors. The common battle picture (simulation) will have to be provided all participating live air assets (ground or flight) during any test event. Simulation/stimulation will still be required to drive aircraft systems.</p> <p>(b.) H-60 Avionics Simulators - Requires software development and host hardware. To fully simulate the H-60 aircraft series of avionics suites multiple major software systems development efforts would be required along with their accompanying requirements, documentation, coding and maintenance actions.</p> <p>4. IMPACT IF NOT ACQUIRED. No H-60 mission systems will be available to the FORCENet. There will be a major detrimental impact to NAWCAD's ability to continue marketing technical services to customers desiring access to a modern ship combat system collocated with modern air assets for integrated ship/air mission systems support.</p> <p>5. IDENTIFY LOCAL, STATE, FEDERAL REGULATION IF ENVIRONMENTAL PROJECT. Not Applicable.</p>													

CAPITAL PURCHASES JUSTIFICATION (Dollars in Thousands)										A. FY2005 PRESIDENT'S BUDGET			
B. Department of the Navy/Research & Development					C. NETWORK CENTRIC WARFARE (NCW) COLLABORATIVE ENVIRONMENT (CE)					D. Patuxent River			
					2003			2004			2005		
Element of Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	
INVESTMENT COST						0	1	732	732	1	1117	1117	
OPERATIONAL DATE 1-Dec-05													
METRICS:													
	AVOIDANCE	SAVINGS	TOTAL										
PROJECTED ANNUAL SAVINGS	\$828,061	\$0	\$828,061										
AVERAGE ANNUAL SAVINGS (Discounted)	\$627,801	\$0	\$627,801										
PAYBACK PERIOD	2.7	#DIV/0!	2.7										
RATE OF RETURN (ROR)	34%	0%	34%										
PROJECT INFORMATION NARRATIVE: (If more space required, continue on separate sheet.)													
<p>1. DESCRIPTION & PURPOSE OF PROJECT. The Network Centric Warfare (NCW) Collaborative Environment (CE) consists of a complementary suite of system and software engineering tools. The purpose of this project is to establish a CE for modeling and analysis of system architectures at the Naval Air Warfare Center Aircraft Division (NAWCAD) in support of the Naval Air Systems Command (NAVAIRSYSCOM) NCW project office. This NCW Research, Development, Test, and Evaluation (RDT&E) infrastructure investment will also complement the ongoing work by the Department of the Navy (DoN) Chief Engineer (CHENG), by articulating the air-based system view of candidate operational architectures in engineering detail sufficient to support robust definition of the associated engineering and system acquisition requirements. The effort will be focused on characterizing the detailed attributes and functionality of Naval Aviation systems. This effort will provide more robust system-specific components for higher level operational requirements analysis to define the Mission Capability Packages (MCPs). At the same time, this effort will enable correct interpretation of the operational view and robust definition of the roles and responsibilities of air-based systems. The ability to treat both legacy and new systems in a unified manner that enables acquisition of the intended capability is essential to achieving NCW. This CE will be the core of a System/Software Engineering Environment (S/SEE) that will provide research, engineering, and acquisition processes that can be tailored in response to changes driven by NCW and industry best practices. It will also be able to perform within the constraints of legacy and current systems' program management. Stand-up of this NCW CE capability is planned to occur in three phases. Phase I is the basic laboratory with three workstations, associated "turnkey" software, and training. Phase II will involve integration with the Warfare Analysis Department, NAWCAD-4.10, and engineering integration with the Air Combat Environment Test and Evaluation Facility (ACETEF). Phase III will involve integration into the overarching CHENG Architecture Model Set, including Space and Naval Warfare Center (SPAWAR) and the Naval Sea Systems Command (NAVSEA) connectivity. This phase will include the additional software and initial training to achieve the full NCW CE capability required.</p> <p>2. WHAT IS THE CURRENT DEFICIENCY/PROBLEM AND HOW WILL THE PROJECT SOLVE THE DEFICIENCY/PROBLEM? The goal is to establish a mature and coherent/comprehensive method for implementing NCW for Naval Aviation. The proposed approach builds on existing capabilities and resources so that we can utilize the best practices in architecture, systems, and software engineering from industry. In addition, the project will align legacy and new systems within a unified framework that can evolve incrementally and to ensure flexibility and responsiveness to the fleet.</p> <p>3. WHAT PROJECT ALTERNATIVES HAVE BEEN CONSIDERED? The only practicable project alternative is a complete contractor operated system that relies on leased equipment.</p> <p>4. IMPACT IF NOT ACQUIRED. The impacts if this project is not acquired are the inability for NAWCAD to effectively support the transformation of NCW for Naval Aviation and defining requirements related to Naval Aviation system MCPs, the inability to uniformly characterize individual system behaviors and functionality as components or nodes in a larger naval and joint forces networked architecture, and the inability to effectively translate this NCW analysis into Naval Aviation systems' acquisition, deployment, and sustainment.</p> <p>5. IDENTIFY LOCAL, STATE, FEDERAL REGULATION IF ENVIRONMENTAL PROJECT. Not Applicable.</p>													

CAPITAL PURCHASES JUSTIFICATION (Dollars in Thousands)										A. FY2005 PRESIDENT'S BUDGET		
B. Department of the Navy/Research & Development					C. CORPORATE LEGACY SUN/NT CONSOLIDATION					D. Patuxent River		
					7AA5KL723CGR							
			2003			2004			2005			
Element of Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost
INVESTMENT COST						0			0	1	1,250	1,250
OPERATIONAL DATE	30-Mar-05											
METRICS:	AVOIDANCE	SAVINGS	TOTAL									
PROJECTED ANNUAL SAVINGS	\$730,379	\$0	\$730,379									
AVERAGE ANNUAL SAVINGS (Discounted)	\$553,742	\$0	\$553,742									
PAYBACK PERIOD	2.0	#DIV/0!	2.0									
RATE OF RETURN (ROR)	44%	0%	44%									
PROJECT INFORMATION NARRATIVE: (If more space required, continue on separate sheet.)												
<p>1. DESCRIPTION & PURPOSE OF PROJECT. The purpose of this project is to upgrade and consolidate selected Naval Air Warfare Center Aircraft Division (NAWCAD) servers. The servers offer dynamic system domains and system partitioning that creates self-contained servers within a single physical server. Processors, memory, and input/output (I/O) can be expanded seamlessly and transparently, with linear increases in overall system, user, and application performance. Mainframe like partition capabilities permit extremely flexible processor and memory configurations that improve resource management and availability.</p> <p>2. WHAT IS THE CURRENT DEFICIENCY/PROBLEM AND HOW WILL THE PROJECT SOLVE THE DEFICIENCY/PROBLEM? The goal of this project is to manage resources at an optimal service level for the lowest possible cost to the organization. In addition, the distributed systems cause many users to perform double duties as System Administrators. When systems are consolidated, an experienced System Administrator can do a much better job of bringing together multiple, disparate platforms and run them as a single, seamless environment.</p> <p>3. WHAT PROJECT ALTERNATIVES HAVE BEEN CONSIDERED? The only alternative would be to purchase a new server for every new application required for NAWCAD. This is not a cost effective solution to the issue.</p> <p>4. IMPACT IF NOT ACQUIRED. The impact if not required is that the network traffic will increase, leading to slower data processing. In addition, if another application is created more servers would have to be bought to house them and would thereby increase material, maintenance, and System Administration costs. Last, the current floor space is limited.</p> <p>5. IDENTIFY LOCAL, STATE, FEDERAL REGULATION IF ENVIRONMENTAL PROJECT. Not Applicable.</p>												

CAPITAL PURCHASES JUSTIFICATION (Dollars in Thousands)										A. FY2005 PRESIDENT'S BUDGET		
B. Department of the Navy/Research & Development					C. UCAV HFE SUPPORT					D. Patuxent River		
										4AA5EL4640PP		
			2003			2004			2005			
Element of Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost
INVESTMENT COST						0			0	1	1,112	1,112
OPERATIONAL DATE	30-Sep-05											
METRICS:	AVOIDANCE	SAVINGS	TOTAL									
PROJECTED ANNUAL SAVINGS	\$1,457,532	\$0	\$1,457,532									
PROJECT INFORMATION NARRATIVE: (If more space required, continue on separate sheet.)												
<p>1. DESCRIPTION & PURPOSE OF PROJECT. This project is a new initiative within Crewstation Technology Lab (CTL) to establish a comprehensive support resource for human factors engineering of autonomous military vehicle systems including Unmanned Air Vehicle (UAV) and Unmanned Combat Air Vehicle (UCAV) products. The CTL will establish a center equipped to support advanced system engineering for all crew relevant issues concerning autonomous vehicles. For UAV and UCAV systems, new capabilities will include comprehensive accurate integrated system modeling including workstation rapid prototyping, operator task and workload modeling and assessment, and training system requirements assessment. The new capabilities will support transitional development of ground crewstations to extend them to airborne applications. The capability will permit visualization of mission operations, mission planning, and mission performance assessment for modeled systems both real and conceptual. The capability will allow NAWC engineers to address information, networking and C4 issues, and to address interfaces to intelligence operations at theater and tactical levels.</p> <p>2. WHAT IS THE CURRENT DEFICIENCY/PROBLEM AND HOW WILL THE PROJECT SOLVE THE DEFICIENCY/PROBLEM? Present capabilities offer only limited or rudimentary degrees of capability to model these systems for developmental engineering support work. Crewstation modeling, task and workload modeling with fidelity sufficient to engineering needs and rapid prototyping with dynamic and interactive features for conceptual systems cannot be achieved with present resources. Capability to assess man machine issues at more than a preliminary level does not exist. The concepts now considered or in development for these products critically incorporate advanced information technology and computerized network connected operations. Our capability to organize and model such systems, especially in the network aspects is nonexistent.</p> <p>The crew centered UAV/UCAV human engineering support capabilities developed in this project will comprehensively fill the gap in NAWCAD resources in this area. It will enable timely development of rapid prototyping facilities for complete UAV/UCAV system modeling. The capability will include the ability to address crew system interface design assessment, information technology issues, networking and interoperability issues and to provide man machine integration RDT&E capability of all types for UAV/UCAV applications.</p> <p>3. WHAT PROJECT ALTERNATIVES HAVE BEEN CONSIDERED?</p> <p>Trade off studies, in the sense of comparisons between existing and proposed facilities are not applicable because this initiative covers new resources for new requirements. Detailed plans and hardware-software choices for specific features of the facility will be made downstream when alternative available elements are known and in the context of UAV/UCAV specific system needs. The overall plan outlined here is to extend the methods, techniques, procedures and technical approaches that are proven effective in Human Factors Engineering-Man-Machine Interface (HFE-MMI) work to the UAV/UCAV arena.</p> <p>4. IMPACT IF NOT ACQUIRED.</p> <p>If these capabilities are not acquired, we will not be able to keep pace with technical needs for HFE-MMI work on UAV/UCAV crewstations, user teams and system effectiveness.</p> <p>5. IDENTIFY LOCAL, STATE, FEDERAL REGULATION IF ENVIRONMENTAL PROJECT This initiative does not have regulatory relevant environmental project impact or concerns.</p>												

CAPITAL PURCHASES JUSTIFICATION (Dollars in Thousands)										A. FY2005 PRESIDENT'S BUDGET		
B. Department of the Navy/Research & Development					C. ENGINEERING LAN TECHNOLOGY REFRESH					D. Patuxent River		
					7AA5TL723AGR							
			2003			2004			2005			
Element of Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost
INVESTMENT COST						0			0		843	843
OPERATIONAL DATE	30-Sep-06											
METRICS:	AVOIDANCE	SAVINGS	TOTAL									
PROJECTED ANNUAL SAVINGS	\$833,000	\$0	\$833,000									
AVERAGE ANNUAL SAVINGS (Discounted)	\$631,545	\$0	\$631,545									
PAYBACK PERIOD	3.5	#DIV/0!	3.5									
RATE OF RETURN (ROR)	27%	0%	27%									
PROJECT INFORMATION NARRATIVE: (if more space required, continue on separate sheet.)												
<p>1. DESCRIPTION & PURPOSE OF PROJECT. This submission is for a multi-year project to provide a Engineering Local Area Network (LAN) throughout the Naval Air Warfare Center Aircraft Division (NAWCAD) Webster Field Annex. The current data, video, and voice cable plants are at the end of their life cycle and there is no room for expansion. It is essential to replace those existing plants with an integrated, state-of-the-art, Fiber Optic System. This submission is for transmission equipment for 30 buildings.</p> <p>2. WHAT IS THE CURRENT DEFICIENCY/PROBLEM AND HOW WILL THE PROJECT SOLVE THE DEFICIENCY/PROBLEM? NAWCAD Webster Field Annex has a requirement to support the real-time availability of scientific and laboratory simulation data such as acoustics, flight, weapon systems, and sensor testing. In order to effectively share this volume of information, as well as other general engineering (generated by the 50+ LAN's spread throughout the Annex), a modern, high speed, and expandable communications infrastructure is required. The current capability at Webster Field will not allow the labs and engineering community to collaboratively perform tasks with the labs at the Pax River main campus. The current system is unable to meet the Protected Distribution System (PDS) requirements for unencrypted classified data between labs. With the installation of the new fiber optic technology refreshment a fiber system meeting the PDS requirements will be installed.</p> <p>3. WHAT PROJECT ALTERNATIVES HAVE BEEN CONSIDERED? Several alternatives have been examined that would attempt to satisfy mission requirements. These include (1) maintaining the existing voice and data cable plants; (2) replacing the existing data cable plants; or (3) installing a high-speed outside Fiber Optic Cable Distribution System.</p> <p>4. IMPACT IF NOT ACQUIRED. NAWCAD will not be able to fully support fleet testing requirements.</p> <p>5. IDENTIFY LOCAL, STATE, FEDERAL REGULATION IF ENVIRONMENTAL PROJECT. Not Applicable.</p>												

CAPITAL PURCHASES JUSTIFICATION (Dollars in Thousands)								A. FY2005 PRESIDENT'S BUDGET			
B. Department of the Navy/Research & Development/Air Warfare Center					C. ADPE & TELECOMMUNICATIONS (<\$1M) NNKU0000				D. NAWC		
			2003		2004			2005			
Element of Cost			Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost
TOTAL INVESTMENT COST			7	VAR	2,354	32	VAR	6,356	13	VAR	3,417
ITEM	ITEM										
LINE #	DESCRIPTION			FY 2003		FY 2004			FY 2005		
4AA2KM4551PN	Wave Division Multiplexing Network Components			1	350						
7AA4TM723EGN	Video Distribution Technologies					1	750				
7AA4KM722BGR	Document Management Technology Refreshment					2	750				
7AA4KM722EGR	Web Services Foundation					3	720				
7AA4KM723DGN	Secure Corporate Network Access					4	715				
4AB4KM483KPN	System & Technology Hardware/Software Integration Simulator (SYNTHSIS)					5	625		1	640	
7AA4KM7220GN	E Business Portfolio Management					6	600				
4AB4KM48J4PR	Data Acquisition, Analysis and Plotting System					7	500				
7AA5KM722AGR	Data Warehouse Hardware Upgrade								2	732	
4AA5TM457APN	High Performance Intra-Platform Networks for NCW								3	675	
4AA5KM4584PN	Digital Video Lab								4	504	
NNKS0001	GFE Hardware for ERP					1	400				
NNKS0000	Subtotal ADPE & TELECOMMUNICATIONS (<\$5M)			6	2,004	4	1,296		3	866	
TOTAL NAWC ADPE & TELECOMMUNICATIONS (<\$1M)			7		2,354	32		6,356	13		3,417

CAPITAL PURCHASES JUSTIFICATION (Dollars in Thousands)										A. FY2005 PRESIDENT'S BUDGET				
B. Department of the Navy/Research & Development						C. ENTERPRISE RESOURCE PLANNING (ERP)					D. NAWC			
						2003			2004			2005		
Element of Cost				Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost		
NAWC-AD				1	9,848	9,848	1	9,590	9,590					
NAWC-WD				1	5,961	5,961	1	5,405	5,405					
TOTAL NAWC				2	15,809	15,809	2	14,995	14,995	0	0	0		

Project Information Narrative: (If more space required, continue on separate sheet.)

1. DESCRIPTION & PURPOSE OF PROJECT: As the Navy embarks on the Revolution in Business Affairs initiatives, Enterprise Resource Planning (ERP) is the strategic initiative chosen by the Department of Navy's Working Group (WG) on Commercial Business Practices (CBP). As a result of the decisions of the CBP WG the Naval Aviation Systems TEAM (TEAM) will reengineer and standardize processes, integrate operations and data to increase productivity, and optimize supply chain management. The TEAM intends to manage ERP as a corporate project with constituent parts. Proposed allocations are based on an evolving program plan. Multiple ERP pilots are planned throughout the Navy with functionality determined by the scope of each pilot. Per the CBP WG each ERP pilot will be funded by that WG member's organization. This submission is for a multi-year, Externally Developed Software (EDS) project that will integrate business processes and tools in the areas of financial accounting, materials management, project systems, controlling and human resources. Functionality will encompass the following:

- Financial accounting: general ledger, accounts receivable/payable, financial reports, and special purpose ledger;
- Materials management: procurement and invoices verification;
- Project systems project tracking, work breakdown structure, budget management, cost and revenue planning;
- Controlling cost center accounting and internal orders; and
- Human resources personnel administration, payroll, time management, planning and development, and organization management.

FY04 budgeted funds are required to correct operational deficiencies and provide pilot documentation. They will also be used for software to increase storage capability of systems for efficient execution and for disaster recovery systems. The necessary hardware upgrade is budgeted separately in the ADPE category.

2. WHAT IS THE CURRENT DEFICIENCY/PROBLEM AND HOW WILL THE PROJECT SOLVE THE DEFICIENCY/PROBLEM: Throughout the TEAM there are numerous, independent, stand-alone information systems supporting multiple, inconsistent processes. Data is not timely and is difficult to consolidate. Many systems track similar data without a common data format. No single system does it all (i.e., planning, procurement, etc.). System interfaces are inconsistent non-standard, and rely upon manual intervention. At the core of an ERP system is a central database that draws data from and feeds data into a series of applications supporting diverse functions. ERP will automate manual processes, drastically reduce data reconciliation, and improve the quality of information available to decision-makers. ERP will assist in providing end-to-end capability, in enabling consistent and reliable information on cost and performance, and in integrating business processes to optimize results across the TEAM.

3. WHAT PROJECT ALTERNATIVES HAVE BEEN CONSIDERED: The CBP WG under the auspices of Department of Navy's (DON's) Revolution in Business Affairs was tasked to focus on Commercial Financial Practices and best of breed business solutions. The CBP WG received in-depth briefings from industry, fleet representatives, defense agencies and other government agencies. Of all the alternatives briefed and considering all the data provided, the members were unanimous in concluding that the best solution to business practices would be realized through ERP solution. As a result of the recommendation of the CBP WG, NAVAIR issued a request for proposal. Several companies bid, integrator and COTS solutions were evaluated through the source selection process and a contract was awarded for the NAVAIR ERP program management (PM) pilot.

4. IMPACT IF NOT ACQUIRED: The TEAM would have to continue business as usual and could not achieve gains in productivity through reengineering processes and an integrated information system. Non-standard, costly maintenance, and duplicative legacy systems would persevere. The TEAM would be unable to manage costs for maximum reallocation of savings for the recapitalization and modernization of naval aviation. As the business case analysis demonstrates current anticipated quantitative and qualitative benefits would not be realized. If ERP is funded, the ERP will assist other systems in becoming compliant with statutory requirements, the Government Management Reform Act (GMRA), the Government Performance and Results Act (GPRA), and the Chief Financial Officer (CFO) Act.

5. IDENTIFY LOCAL, STATE, FEDERAL REGULATION IF ENVIRONMENTAL PROJECT. Not Applicable.

CAPITAL PURCHASES JUSTIFICATION (Dollars in Thousands)								A. FY2005 PRESIDENT'S BUDGET			
B. Department of the Navy/Research & Development/Air Warfare Center						C. SOFTWARE DEVELOPMENT (<\$1M) NNDU0000			D. NAWC		
			2003			2004			2005		
Element of Cost			Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost	Qty	Unit Cost	Total Cost
TOTAL INVESTMENT COST			1	VAR	300	0	VAR	0	0	VAR	0
ITEM LINE #	ITEM DESCRIPTION		FY 2003			FY 2004			FY 2005		
NNDS0000	Subtotal Software Development (<\$.5M)		1		300	0		0	0		0
TOTAL NAWC SOFTWARE DEVELOPMENT (<\$1M)			1		300	0		0	0		0