

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

APPROPRIATION/ BUDGET ACTIVITY RDTE, Defense Wide BA# 7	PE NUMBER AND TITLE 0607828D8Z - Joint Integration and Interoperability								
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate						
P818	52.214	49.100	46.214						

A. Mission Description and Budget Item Justification:

The Unified Command Plan 2004 assigned USJFCOM with the mission as the Joint Force Integrator for interoperability and integration of future and fielded capabilities critical to Joint, Multi-National, and Interagency warfighting operations. In addition, Management Initiative Decision (MID) 912 signed by the Deputy Secretary of Defense (DEPSECDEF) 7 January 2003 expanded the USJFCOM JI&I role to increase operational through tactical level joint integration of the following capabilities: Common Operational and Tactical Pictures; Combat Identification; Situational Awareness; Adaptive Mission Planning and Rehearsal; Interoperability among Service/Agency intelligence systems; Interoperable Joint Fires, Maneuver, and Intelligence; and Integrated Joint Battle Management Command and Control. In support of these missions, the outcome of USJFCOM JI&I program is to:

- identify, assess and develop mission capable solutions for COCOM interoperability and integration capability shortfalls;
- provide Combatant Commanders with interoperable combat identification and situational awareness capabilities among United States Forces, Interagencies, and Allied and Coalition Forces in support of the Global War on Terrorism operations;
- develop joint requirements supporting specific joint missions identified in MID 912 (Joint Close Air Support, Joint Fires, etc.);
- develop joint integrated architectures that guide service capability mapping to achieve joint interoperability; and,
- establish joint data standards and cross domain solutions to facilitate future system interoperability and integration.

The Quadrennial Defense Review (QDR) and follow-on Strategic Planning Guidance emphasized the need to continue building upon the Department's capability-based planning and management initiatives. To promote this shift and better integrate joint capability development across the Department's requirements, acquisition and resource allocation processes, the Deputy Secretary of Defense (DSD) appointed the CDRUSJFCOM as the designated Command and Control (C2) Capability Portfolio Manager (CPM). The C2 CPM has appointed the USJFCOM, J8 as the Command's Joint Capability Developer (JCD), charged with responsibility for day-to-day execution of CPM roles and responsibilities. The outcome of the JCD as the working management arm of the JC2 CPM is to develop courses of action to resource, acquire, and develop C2 related Doctrine, Organization, Training, Material, Leadership, Personnel, Facilities (DOTMLPF) capabilities in conjunction and coordination with the Combatant Commanders, Services and Agencies.

The primary outputs include:

- Coordinated, synchronized and integrated development and delivery of C2 capabilities to address Warfighting capability area gaps and shortfalls, and
- Provide systems engineering and data strategy expertise and analysis (C2 Communities of Interest (COIs) and appropriate architectures) on C2 portfolio capabilities development.

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<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010	FY 2011
Previous President's Budget (FY 2008/2009)	53.425	49.371	48.108	
Current BES/President's Budget (FY 2010)	52.214	49.100	46.214	
Total Adjustments	-1.211	-0.271	-1.894	
Congressional Program Reductions				
Congressional Rescissions		-0.271		
Congressional Increases				
Reprogrammings	-0.275			
SBIR/STTR Transfer	-0.838			
Other	-0.098		-1.894	

FY 2010/2011: Change reflects executive programmatic decision.

C. Other Program Funding Summary: Not applicable for this item.

D. Acquisition Strategy: Not applicable for this item.

E. Performance Metrics:

FY	Strategic Goals Supported	Existing Baseline	Planned Performance Improvement / Requirement Goal	Actual Performance Improvement	Planned Performance Metric / Methods of Measurement	Actual Performance Metric / Methods of Measurement
08						

Comment:

Performance of Joint Integration and Interoperable systems is measured by successful delivery of systems solutions to Combatant Commands by required delivery dates.

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COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate				
P818 Joint Integration and Interoperability	52.214	49.100	46.214				

A. Mission Description and Budget Item Justification:

The Unified Command Plan 2004 assigned US Joint Forces Command (USJFCOM) with the mission as the Joint Force Integrator for interoperability and integration of future and fielded capabilities critical to Joint, Multi-National, and Interagency warfighting operations. Management Initiative Decision (MID) 912 signed by the Deputy Secretary of Defense (DEPSECDEF) 7 January 2003 expanded the USJFCOM role to pursue, within its authorities in the military needs and operations domain, integration of key joint military capabilities at operational through tactical levels. In consonance with these assigned missions, the Joint Integration and Interoperability Program (JI&I) funds USJFCOM efforts to identify critical characteristics of joint military capabilities and synchronize Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities (DOTMLPF) capability elements into a coherent package for employment by joint commanders.

The JI&I Program provides resources for a wide spectrum of efforts to define, refine, and deploy integrated joint capabilities. JI&I-funded endeavors aim to improve US and coalition capabilities to conduct coordinated operations. Necessarily, JI&I-funded projects most frequently address Command & Control (C2) and Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) - the capstone capabilities for integrating disparate elements of military force for joint and coalition operations. The JI&I Program supports tasks and projects associated with USJFCOM's role as co-lead (with ASD Networks Integration & Interoperability) of the C2 Capability Portfolio including coordination of C2 operational architectures, strategies, and policies. Likewise, JI&I partially funds integration activities associated with the C2 Configuration Integration Board (C2CIB), a senior council co-led by USJFCOM, US Strategic Command (USSTRATCOM) and ASD(NII). The C2CIB integrates oversight of C2 Configuration Portfolio Management (CPM) and the Netcentric CPM.

With USJFCOM as executive agent, the JI&I Program delivers outcomes conforming to joint integration missions.

- In concert with the separately funded Joint Systems Integration Command (JSIC), JI&I resources investigate joint C2/C4ISR shortfalls and ascertain characteristics of DOTMLPF remedies to meet mission requirements. The remedies are then pursued through partnerships with Component force development authorities and acquisition sponsors;
- Consistent with USJFCOM's role as operational sponsor for joint C2, JI&I underwrites Joint Combat Capability Developer (JCCD) activities compiling operational requirements for C2/C4ISR capability development and integrated testing;
- Delivers assessment and recommendations for improvement of interoperable Combat Identification (CID) and Situational Awareness (SA) capabilities among United States forces, interagency organizations, and allied/coalition forces;
- Establishes joint data standards and cross domain solutions to facilitate future system interoperability and integration.

B. Accomplishments/Planned Program:

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	
Joint Command and Control (JC2) Capability Portfolio Manager (CPM)	12.100	12.782	17.382	

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Primary OUTCOME (objective) for this effort is to establish an interoperable Command and Control (C2) environment that creates C2 capabilities that are "born interoperable" not "made interoperable". According to the QDR, the key role of interoperability is to improve warfighting capability and effectiveness. Building upon foundational work accomplished by the Joint Battle Management Command and Control (JBMC2) Program in FY06-07, the CPM has evolved to execute and fulfill that key role through a unique partnership among the joint warfighting, engineering, policy, acquisition and budget communities to work together in the assessment and resolution of joint operational capability and interoperability gaps. For example, the CPM working with this unique community assessed and delivered a number of warfighting capability enhancement recommendations across the DOTMLPF-P solution spectrum that were acted upon in the FY09-13 Integrated Program/Budget Review cycle; significantly closing many long-standing joint capability gaps in the areas of: Net-Enabled Command Capability, Integrated Joint Fires and Blue Force Tracking, Deployable C2, Machine Foreign Language Translation, Data Link architectures to manage net-enabled weapon systems, and Joint Collaborative Information Environment.

In accordance with QDR 2006 direction and DSD designation of CDRUSJFCOM as the Department's Command and Control (C2) Capability Portfolio Manager (CPM), JBMC2 was assimilated into the C2 Portfolio in FY 2007. The initial JBMC2 Joint Mission Thread - Joint Close Air Support (JCAS) was completed and brought to maturity the proposed solution products initiated through static and technical assessments. The successfully proven methodology used to assess the Joint Close Air Support Mission Thread remains a useful construct for the CPM in assessing other C2 programs/systems, data strategy, architectures and their linkage from Joint Capability Area(s) to Mission Tasks to Functions, to determine which functions/systems/applications within the C2 portfolio should be continued, converged or eliminated to improve warfighter capability and interoperability.

These processes and relationships in the Joint Capability Area (JCA) of C2 will be leveraged by the C2 CPM and are instrumental in successfully accomplishing the objectives of portfolio management; balanced, optimized mix of portfolio capabilities given risk and fiscal realities.

The Joint Battle Management Command and Control (JBMC2) program and processes, now part of the C2 CPM portfolio, have and will continue to produce the following products: capability/interoperability requirements, e.g., turning concept/capability documentation into enforceable technical requirements the Services and/or Agencies like DISA can design and build to; validated system of system architectures; operational assessments and proof of concept demonstrations for Joint solution sets.

The primary outputs and efficiencies to be realized as part of an overall C2 CPM approach: 1) Improved, integrated, interoperable, and networked joint force; 2) Reduction in duplicative C2 systems/programs across the DoD portfolio; 3) Improved portfolio decisions and recommendations regarding investment strategies and development efforts; 4) Associated benefits to warfighter efficiency and effectiveness:

- Reduced fratricide, increased availability of close air support for troops under fire, more effective coordination of air assets, increased weapon accuracy and time sensitive targeting;
- Common shared situational awareness;
- Coherent, coordinated operations, distributed and dispersed, including forced entry into anti-access or area-denial environments;
- Information superiority enabling more agile, more lethal, and survivable joint operations;
- Real-time offensive and defensive fires while minimizing fratricide;
- Transition from legacy, platform-centric systems to a net-centric environment focused on plug-and-play interoperability and application-independent data flow.

FY 2008 Accomplishments:

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The C2 CPM orchestrated a Focused Integration Team effort in an open and transparent process with full COCOM/Service/Agency and Joint Staff stakeholder engagement and delivered a fiscally balanced program change proposal packet for the Department's P/BR 09-13 cycle consideration, which resulted in the movement of \$600M and a number of policy related directives across the DOTMLPF-P spectrum to enhance joint warfighting capabilities across the portfolio. In early FY 2008, as the Program Decision Memorandums were published for the P/BR 09-13 cycle, the C2 CPM began working the capability analyses to inform the development and build for POM 2010-2015. This analysis included technical and operational assessments in the mission areas of: Combat ID and Blue-Force Tracking, Adaptive Planning, Deployable C2, Collaborative Information Environment, Data Strategy, and Joint Task Force Headquarters (JTFHQ) manning and equipping issues. The output of this effort resulted in C2 CPM POM 10 Recommendations issued by OSD, PA&E to the Components for their consideration in developing their POM 10 plans and programs. This analytic effort and collaborative teaming will continue throughout the Program/Budget Review FY2010-2015 cycle to develop the best possible mix of C2 capabilities within the portfolio given risk and resource constraints.

In concert with the POM 2010-2015 effort, the C2 CPM is currently engaged in the development of the C2 Capability Mix Study directed in the Guidance for Development of the Force (GDF) and the development of a DoD C2 Roadmap directed in DoDD 5100.30 to guide the migration of legacy systems and enable the Department's transition to a net-enabled, service oriented architecture environment. Additionally, the C2 CPM will continue necessary foundational work required to document and baseline the DoD C2 portfolio regarding systems mapping, architecture, requirements, data standards, and associated resources to inform current and future (POM 12) budget and investment recommendations.

FY 2009 Planned Output:

Continued refinement of the analytic C2 baseline, methodology and portfolio management information to better identify and analyze current and future C2 capabilities in comparison to the POM 10 baseline to inform: investment and trade-off recommendations for FY2011-2015 Program/Budget Review cycle; refinement of Tier II and III Joint Capability Area (JCA) attributes and metrics; C2 systems and architecture mapping; C2 policy and direction, and the DoD C2 Roadmap. Provide oversight of final approved POM 2010-2015 investment decisions.

FY 2010 Planned Output:

Follow-up and oversight of C2 Capability Mix Study and DoD C2 Roadmap recommendations and execution. C2 CPM directed studies, analyses and operational assessments for the development of C2 Portfolio capability solutions necessary to satisfy warfighting requirements and inform the Components POM 2012-2017 development in coordination with the stakeholder community; associated joint programming guidance, assessments, and oversight of execution of prior year investment decisions (FY 2011-2015).

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Joint Blue Force Situational Awareness (JBFSA)	8.300	3.700	1.300

Primary OUTCOME (objective) for this effort is to improve overall Blue Force Situational Awareness and to develop solutions that reduce the potential for friendly fire. Blue Force Tracking (BFT) Beyond Line-of-Sight/Non-Line-of-Sight Mission Needs Statement (BFT BLOS/NLOS MNS) (Apr 02) and subsequent Joint Requirements Oversight Council Memorandum (JROCM) 128-03, and Combatant Command Joint Urgent Operational Need statements / requirements validated the need for an outcome that produced a joint, integrated, interoperable BFT / JBFSA air / ground / maritime operations capability. JROCM 076-05 endorsed specific approaches and actions identified by US Joint Forces Command (USJFCOM) in response to Operation Iraqi Freedom (OIF) Lessons Learned Report on preventing friendly fire incidents (fratricide prevention).

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The primary outputs and efficiencies to be realized are: 1) Increased development and integration of common data formats and the modification of supporting software / architectures in order to allow Position Location Information (PLI)/Situational Awareness (SA) data to flow freely among U.S., NATO and coalition forces. 2) Increased capability and capacity for Data Dissemination through the establishment of net-centric integrated services that allows for seamless access to BFT / JBFSA information to prosecute operations in a bandwidth limited environment by all warfighting echelons; 3) Increased / improved Joint Air - Ground Situational Awareness Sharing capacity / capability through technical solutions, Concept of Operations, Tactics, Techniques and Procedures (TTP) delivery, along with the development, integration, testing, production, and deployment of airborne BFT / JBFSA capabilities; 4) Improved and increased force capability for Battlefield Deconfliction / Fratricide Avoidance, by increasing interoperability of systems through BFT / JBFSA data exchange standardization; and 5) Increased integration and availability of BFT and JBFSA data between tactical and logistics support forces.

FY 2008 Accomplishments:

Planned, developed, and integrated capability for the Mission Management Center (MMC) and BFT Global Network (BGN) Operations Center to dynamically exchange BFT data at the tactical level between US, NATO, and coalition forces. Incorporated BFT / JBFSA capability to improve tactical level visibility efficiencies by 50 percent by building an initial capability that integrated a NATO interface through the MMC allowing visibility of NATO/Coalition BFT systems on Force XXI Battle Command Brigade and Below (FBCB2) . Developed Extensible Markup Language (XML) schemas and message translators to permit interoperability and display of blue force tracks on the Common Operational Picture (COP)/Common Tactical Picture (CTP). Improved disadvantaged user visibility on CTP by 60 percent through improvements to BFT reporting and dissemination capability using netcentric services. Converged systems of records through assessment of key legacy systems to recommend integration or phase out - reduce number of systems by 10 percent. Fully transitioned MMC test bed capability into MMC and overarching BFT architecture, to include an initial capability to support coalition architectures. Develop and implement technical and policy solution to resolve BFT data security/protection issues within the joint/coalition force.

FY 2009 Planned Output:

Integrate blue force logistics information into the COP. Complete Army - Marine Corps Command and Control (C2)/Situational Awareness (SA) convergence effort at Battalion and Above level. Support development and implementation of the Army-USMC terrestrial (Enhanced Position Locating Reporting System (EPLRS) -based) interoperability solution to share Command and Control (C2)/Situational Awareness information at Brigade and Below level. Implement certified and accredited net-centric solutions to improve global BFT data dissemination.

FY 2010 Planned Output:

Conduct analysis of L-Band BFT SATCOM bandwidth availability to determine need to develop alternative SATCOM connectivity. Identify and assess Low Probability of Intercept (LPI) /Low Probability of Detection (LPD) waveform options, including integration of Global Personnel Recovery System capability to support Special Operations. Support integration of HOOK 2 and Combat Survivor Evader Locator (CSEL) radios to provide an interoperable Personnel Recovery capability.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Joint Airborne Communications Capability	9.300	9.400	

Primary OUTCOME (objective) for this effort is to enhance Joint Force Commanders ability to exercise Operational and Tactical Command and Control. JACC was initiated in response to OEF/OIF Lessons Learned, COCOM command and control (C2) requirements, joint warfighter urgent operational needs and as a result of USJFCOM Hurricane Katrina disaster assistance.

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JACC is programmed to provide Joint Force Commanders with a deployable communications network that connects joint edge users to each other and to the Global Information Grid (GIG) using legacy radios via an airborne gateway. JACC serves as the relay and makes dissimilar data and voice radios interoperable on the ground, at sea, or in the air. The three-year project under sponsorship of USJFCOM and USSTRATCOM will leverage the capabilities developed by the US Air Force sponsored Battle Field Airborne Communications Node (BACN), Rapid Attack Information Dissemination Execution Relay/Joint Translator Forwarder (RAIDER/JxF), Joint Communications Support Element (JCSE) JACS relay technology and DUSD(AS&C) CABLE JCTD initiatives and transform them into a single "joint" capability.

The primary outputs and efficiencies to be realized are: 1) Increased interoperability between tactical data links. 2) Increased access to net-centric functionality for edge users. 3) Expansion of wideband connectivity for the joint warfighter. Objective capability efficiencies are:

- Establishing 100% connectivity to all tactical data links and voice systems that have access to JACC;
- Extending the range to 100% of all line of sight (LOS)-constrained systems within the 300 nautical miles JACC footprint
- Including 100% of battlespace nodes through networking capabilities
- Providing net-centric data storage and on-demand access to JACC users

The FY07 activities consisted of responding to the CENTCOM Joint Urgent Operational Needs (JUON) # CC-0174. The end product consists of 12 Joint Airborne Communications Systems of the version 2 variant. On 3 July 2007, the C2 Functional Capabilities Board (C2FCB) and Joint Rapid Action Cell (JRAC) validated and endorsed the CENTCOM JUON. The USJFCOM solution provides a communications relay capability that meets the initial intended JACC capability goal of fielding war fighter improved C2 capability. Closing out the remaining FY07 goals involved embedding the capability on a manned aircraft. The Joint Rapid Acquisition Cell (JRAC) directed USAF to pursue this option when it endorsed the JUON on 3 July and report on a selected platform for interim fielding to the CENTCOM AOR in response to CENTCOM JUON #CC-0174.

FY 2008 Accomplishments:

The FY08 activities continued to be driven by refinement of the CENTCOM C2 requirements defined in Joint Urgent Operational Needs (JUON) # CC-174. These refined C2 requirements were clarified in JUON CC# 292. The smaller JACS version II packages were developed, delivered, tested and accepted by the USJFCOM Joint Communications Support Element (JCSE) during the first quarter of FY08. The delivery and government acceptance testing with modifications performed on the packages was completed in March. Employment of the JACS version II packages was delayed pending certification by USAF on the C-130 or some other platform. Remaining FY08 funds were focused on continued development of the JACS capability which will result in a POD version.

FY 2009 Planned Output:

Finalize employment of the JACS version II in the CENTCOM AOR. Complete development of the JACS version III (POD Variant) and incorporate into a Service UAV Program. Requirement discussions have commenced with Army Warrior Program as the target program for transition

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Coalition Combat Identification (CCID) Advanced Concept Technology Demonstration (ACTD)	0.500	4.000	4.000

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Primary OUTCOME (objective) for this effort is to inform U.S. and coalition investment in combat identification interoperability. The Coalition Combat Identification Advanced Concept Technology Demonstration (CCID ACTD) assessed the military utility of emerging combat identification technologies in a series of operational demonstrations conducted during 2003-2007. The technologies assessed provide a cooperative and non-cooperative target identification capability enabling coalition ground forces and aircrew to identify friendly, enemy and neutral ground entities. During the course of the ACTD, international participation, with both technologies and forces, grew from an original three nation partnership to a coalition team of ten nations collaborating in the operational demonstrations, Urgent Quest (September-October 2005) and Bold Quest (September 2007). Upon conclusion of these events, the Coalition Military Utility Assessment (CMUA) was produced and presented, along with system cost estimates, to U.S. Service investment decision-makers. The Service authorities accepted the ACTD's conclusions and recommendations and are converged on implementing joint acquisition strategies for four of the ACTD's core technologies, the Battlefield Target Identification Device (BTID), Radio Based Combat Identification (RBCI), Synthetic Aperture Radar/Aided Target Recognition and the Laser Target Imaging Program (LTIP).

During May 2008, the USD AT&L proposed the extension of the ACTD through FY 2010. The outcome of the Extension of the CCID ACTD is to assess the military utility of emerging advanced combat identification capabilities. In order to achieve this outcome, the candidate technologies will be demonstrated under conditions designed to represent coalition operations. The assessment of technologies and associated Tactics, Techniques and Procedures (TTP) will consider, as required, other relevant fielded or emerging elements in the Combat Identification-Blue Force Tracking/ family of systems. These assessments will leverage metrics developed in recently developed CID requirements documents. These metrics include but are not limited to the following as assessed under conditions representative of operations (e.g. daylight, terrain, obscurants, target aspects):

The following Technologies and Programs were assessed during Bold Quest:

--Laser Target Imaging (LTI) - LTIP provides positive, day/night, timely and reliable stationary ground target detection, cueing and pilot interpreted identification at ranges compatible with advanced weapons (JDAM, JSOW).

--Synthetic Aperture Radar Aided Target Recognition (SAR/ATR) - SAR/ATR provides positive, all weather, day/night, timely and reliable stationary ground target detection, cueing and aided target recognition at ranges compatible with advanced weapons (i.e., JDAM, JSOW)

--Radio Based Combat ID/Situational Awareness (RBCI/SA) - RBCI is a software only modification to existing combat radios to provide interrogation and reply combat identification capability. During Bold --Quest, this proven technology will undergo interoperability testing with the UK Bowman Radio system.

--Radio Based Situational Awareness (RBSA) extends the RBCI capability to provide continuous situational awareness information to participating units via Battle Management System Displays.

--Reverse IFF - Reverse IFF uses the existing Mode S Air-to Air Interrogator installed on a Mirage 2000D aircraft to query transponders installed on ground vehicles.

FY 2008 Accomplishments:

Transition of the CCID ACTD Extension capabilities will be via a two-pronged approach consisting of an Extended User Evaluation (EUE) and Follow-On Development, Production and Sustainment efforts. The first prong is the FY 2008 EUE, during which the ACTD team conducts additional technical testing and TTP development for selected CCID ACTD technologies. This work, follow-on to the Bold Quest demonstration, is referred to as Bold Quest Plus and is scheduled for execution at Eglin AFB FL during 11-25 July 2008. The second prong involves the transition of the previously demonstrated NCTI technologies (SAR/ATR and LTIP) in the POM10-15 process. The transition of both NCTI technical to acquisition is being monitored via the C2 CPM process.

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FY 2009 Plan: As outlined in the USD AT &L Memo dtd May 30, 2008, Combat Identification (CID) is a key area for effective joint and coalition operations in preventing fratricide and maximizing combat effectiveness. Noting the CCID ACTD contribution to establishing positive momentum in coalition combat identification capability development, USD AT&L and CDRJFCOM will continue sponsorship of the CCID ACTD through FY10 in order to sustain collective progress and leverage the CCID ACTD's established teaming and procedures. The planning will begin immediately to be completed by December 2008 and the execution will be completed NLT December 2010. This last extension of the CCID ACTD will consider the impact of improved ground and air operational pictures on combat identification at the point of engagement. Coalition interest and commitment to these demonstrations has been very encouraging. The USJFCOM will take the lead in establishing a recurring cycle of activity that produces periodic assessments of the emerging Coalition Combat Identification capability. It is estimated that this cycle will repeat every 18-24 months, with events and products timed to inform the appropriate capability development and management processes. This approach will not be limited to the assessment of materiel solutions; rather, it will address, as necessary, the doctrinal, training and other elements of the CCID capability. Properly institutionalizing this approach on a long term basis will require synchronizing CCID capability development activities with annual budget and exercise schedules; therefore, in the nearer term (2009-2010), USJFCOM will operationally sponsor one more "Quest" cycle under auspices of the CCID ACTD, leveraging the established CCID ACTD team and management structure.

FY 2010 Planned Output: The Extended User Evaluation (EUE) and post-operation demonstration period will consist of follow-up testing, refinement of TTP's, and follow-on technology transition and sustainment efforts. Additionally, per the USD AT&L endorsed extension of the CCID ACTD, U.S. and Allied participants will begin planning toward advanced capability assessments after FY09 that are conducted outside of the JCTD/ACTD program. This approach may take one or both of two basic courses of alternatives; assessments that leverage major scheduled exercise or assessments that are built as standalone events.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Joint Combat Capability Developer (JCCD)	7.100	7.600	7.600

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Primary OUTCOME (objective) for this effort is to identify and develop the capability needs and essential DOT_LPF and Policy attributes in support of Net-Enabled Command Capability (NECC) for use in the development of the NECC system of C2 capabilities. Strategic Planning Guidance (SPG) directed establishment of a transformation path to achieve a joint command and control capability for DoD - "Strengthening joint operations through ... improved joint command and control is an indispensable step forward in transformation." Unified Command Plan (UCP) 06 assigned USJFCOM as the Joint Force Integrator to lead the development of joint command and control doctrine, concepts, requirements and integrated architectures. Furthermore, DoD Directive 5100.30 (U), 1/5/2006, "Department of Defense (DoD) Command and Control (C2)" established USJFCOM as the advocate for joint command and control in the Department of Defense. Joint Requirements Oversight Council Memorandum (JROCM) 167-03, 22 August 2003 designated USJFCOM as operational sponsor for NECC and further delegated NECC (originally named Joint Command and Control (JC2) Capability) non-Key Performance Parameter (KPP) requirement adjustment approval authority to USJFCOM. NECC Acquisition Decision Memorandum (ADM), 07 March 2006 approved NECC program Milestone (MS) A and authorized entry into the Technology Development (TD) phase. DepSecDef Memorandum of 14 Sep 2006 directed capability portfolio management test-cases and empowered CDR USJFCOM as the C2 Capability Portfolio Manager (C2 CPM). USJFCOM J8 has been designated the Joint Capability Developer (JCD) and execution arm of the C2 CPM portfolio and C2 Capability Integration Board (C2CIB). The JCD takes direction from the CPM and the C2CIB and authority as appropriate and develops courses of action to source, acquire, and develop NECC capabilities in conjunction with the CCDRs and Services. JROCM 173-07, 16 July 2007, approved the NECC Increment I CDD and Extensions, and validated the Key Performance Parameters (KPPs). The JROCM further states that the JROC will maintain approval authority for all KPP changes, delegates approval authority oversight for changes to key system attributes (KSA) to the Joint Capabilities Board (JCB), and delegates approval authority for all non-KPP changes to USJFCOM (via the JCCD organization). The Assistant Secretary of Defense (ASD) Networks and Information Integration (NII) Terms of Reference for NECC, 26 July 2007, states that the Commander, JFCOM serves as the NECC operational sponsor and as the lead for the JCCD organization and process in conjunction with Service combat development commands, Joint Staff, and materiel developer. Finally, Program Decision Memorandum (PDM) II, 19 Nov 2007, states that the JCCD and materiel provider (DISA) in consultation with the users (CCDRs and Services) can prioritize the delivery of functionality within already provided funding for the NECC Increment 1 and furthermore that the DOT_LPF-P capability requirements will be defined by the JCCD in consultation with ASD (NII), DISA, CCDRs and Services and identified within existing Service, Joint and Agency funding and infrastructure.

FY2008 Accomplishments:

Milestone B (System Development and Demonstration) and pre-Milestone C (Production & Deployment). Capability Definition Packages (CDP) 2 thru 6 have been completed and forwarded to the materiel developers and CDPs 7, 9, 16 and 21 are currently in various stages of development - all covering the Shared Situational Awareness and Joint Planning, Readiness and Execution mission capability areas as well as intelligence support to C2. These CDPs also will include emerging requirements and changes for the GCCS Family of Systems (FoS) as capabilities transition and integration to NECC. Corresponding CDP DOTMLPF and Policy Constructs (1 thru 6) were developed and were submitted for exercise and refinement during capability developmental test and operational test to ensure delivery of holistic C2 DOTMLPF capabilities to the warfighter. As directed by the OSD Joint Analysis Team, the JCCD, Service Combat Capability Developers (SCCD) Charter was developed and staffed to the COCOMs/Services and Agencies to capture roles and responsibilities, overarching governance structure and the end-to-end doctrine, organization, training, materiel, leadership awareness, personnel, facilities and policy (DOTMLPF-P) capability development process. Developed Disconnected Operations/Dispersed C2 Operational Concept (OPSCON). Mission Capability Area Team (MCAT) completed their studies and analysis of a fully Joint approach to decomposing the GCCS FOS into "As Is" and "To Be" Capabilities. The net enabled requirements identified database (NRID) achieved IOC and is becoming the primary tool for providing capability prioritization and mid-course realignment recommendations for NECC. Migrated requirements to NRID. Conducted NRID Training Workshop to inform potential users of NRID input procedures and functionality. Developed draft CJCSM on NRID processes; focused on ensuring accurate identification of mandatory data fields. Continued NECC evaluations and assessments to provide supporting metrics for continued development of an NECC capability within the acquisition system. Collected/analyzed After Action / Lessons Learned from the Warfighter EARLY USER participant community; revised and improved the Warfighter Engagement process. Coordinated utilization / federation of NECC and JTF HQ Core architecture.

FY2009 Planned Output:

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Milestone C (Production and Deployment). JCCD continues development and mapping of requirements to additional CDPs, including emerging requirements and engineering changes for the GCCS FoS as capabilities transition and integration to NECC; NRID will achieved FOC and will continue to be managed/administrated; continue DOTMLPF and Policy Construct development and validation as part of CDP development; and interoperability demonstrations, technical evaluations and capability warfighter utility assessments. Execute JCCD, CPM (JCD) and C2 governance processes via NRID: Collect, identify, aggregate, assess, and prioritize C2 requirements across DOTMLPF-P. Continue NECC evaluations and assessments to provide supporting metrics for continued development of an NECC capability within the acquisition system. Early assessment of the pilot capabilities modules will be conducted to track and determine if there is a decrease in the number of interoperability fixes required to operationally employ the developed system. JCCD will commence interoperability effort to link NECC with the Distributed Common Ground Systems (DCGS), to be demonstrated in EMPIRE CHALLENGE 09. Develop NECC Incr I CDD Change 2 Annex to support updates in Key Performance Parameter and Key System Attributes. JCCD will commence development of Increment II Capability Development Document (CDD) or its approved equivalent. Continue to provide JCCD perspective to DoD C2 community via JCIDS document review.

FY2010 Planned Output:

Continued capability production and deployment. NECC achieves IOC in FY2010. JCCD continues development and mapping of requirements to additional CDPs, including emerging requirements and engineering changes for the GCCS FoS as capabilities transition and integration to NECC; continues management of the NRID.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Joint Data Integration	1.090	1.120	1.968

Primary OUTCOME (objective) for this effort is an improved information management process that enhances the Joint Task Force Commander's situational awareness and decision cycle. The Joint Data Integration (JDI) operational concept, endorsed by USPACOM's fully deployable joint warfighting staff (JTF 519) and based upon OIF/OEF Lessons Learned, directly addresses the challenges of data management in the JTF HQ C2 Joint Mission Thread. The concept of JDI is to combine the data contained within intelligence, data link, ground data, and sensor networks to produce an accurate, timely, complete and unambiguous Common Tactical Picture (CTP) for JTF use and for sharing with Functional Component Commanders. This common tactical picture becomes the basis for the CJTF's input to the COCOM's Common Operational Picture (COP), which is distributed via GCCS/NECC to supported/supporting commands and higher authority.

The primary outputs and efficiencies to be realized are: 1) Improved quality of the common tactical picture in order to enhance Joint Task Force Headquarters Command and Control capabilities. 2) Increased standardization of data management tasks in future C2 systems. 3) Improved/increased automation requirements across future C2 systems. 4) Reduced commander's decision cycle and accelerated process for endgame Course of Action selection (Finish portion of the Find-Fix-Finish engagement chain), as a result of an increase in the commander's overall situational awareness.

FY 2008 Accomplishments:

Completed Joint Data Network Operations (CONOPS) for toolset development. Validated Functional Needs Analysis with warfighter input; prioritized development of DOTMLPF solutions to capability gaps identified in 2007 FAA that, if corrected, would yield the greatest return on investment as well as meet operational priorities noted in CCDR IPLs for the FY 10-15 timeframe. Provided updated data requirements for automation to Net-Enabled Command and Control Capability Production Documents. Confirmed Service acquisition plan for fielding Joint Interface Control (JICO) Support System (JSS). Initiated Interoperability Change Proposal (ICP) to transition Joint OPTASK Common Tactical Picture (CTP) Common Operational Picture (COP) message into US message transmission format. Coordinated JDI interfaces with USPACOM in order to improve the content of the COCOM's COP in Terminal Fury 08. Teamed with Navy's Center for Surface Combat Systems and Army Forces Command Joint Interoperability Division to write initial set of configuration control/filter settings/permission set TTP for network management functions. Teamed with Navy NETWARCOM/PEO IWS and USAF Global Cyberspace Integration Center to identify potential Service material solutions to data integration and candidate technologies for use as JDI toolsets in Terminal Fury 09 and Trident Warrior 09. Successfully completed a Joint Data Integration Joint Feasibility Study, establishing the foundation for a potential FY 09-11 Joint Test to integrate JDI into Service programs. Participated in development of the "EMPIRE CHALLENGE 08 ANNEX K, creating the airborne network and assisting in creation of the Ground Data Network. Supported ongoing JC2 CPM efforts for POM 10.

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FY 2009 Planned Output:

Complete a JDI Functional Solutions Analysis (FSA). Implement the first of three phases of a JDI Joint Test, incorporating USPACOM, USSTRATCOM and USEUCOM objectives in a synthetic venues selected by operators. Develop and validate in operational scenarios TTP for CTP to common operational picture integration. Initiate a feasibility assessment of options to embed JDI training in Joint schoolhouses; provide interim JDI training in the form of Mobile Training Teams available to support COCOM/JTF operational needs upon request. In coordination with Air Combat Command and USSTRATCOM, develop courses of action for allied/coalition data sharing operations and cross domain solutions with NATO forces. Begin coordination with NORTHCOM for potential inter-Agency use of JDI capability and procedures. Apply data obtained in Terminal Fury 09 and Trident Warrior 09 to the prioritization of C2 CPM Service programs; also use technical findings to enhance the development of NECC requirements.

FY2010 Planned Output:

Complete and staff an Initial Capability Document (ICD), based on the FY 09 FSA findings. Implement the second phase of a JDI Joint Test, with a focus on USPACOM's JTF 519 operations in a live operational environment (Valiant Shield 10). Evaluate the performance of Navy PEO IWS Multi-Source Integration capability as potential data fusion device in land based and live fleet testing during Trident Warrior 10. Evaluate the performance of USAF Air Combat Command's multi-level security and data fusion device in USTRATCOM's Data Fusion Integration Center. On request, provide interim JDI training to JTF Staff. Integrate interim JDI training with USJFCOM's Joint Deployment Training Center's GCCS COP curriculum. Initiate CTP visualization tool development incorporating scalable, operator selectable, doctrine statement controlled data management capability. Apply data obtained in Valiant Shield 10 and Trident Warrior 10 to the prioritization of C2 CPM Service programs; also use technical findings to inform the development of NECC machine to machine automation requirements.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Turnkey Command and Control C2	1.700	0.550	1.350

Primary OUTCOME (objective) for this effort is to establish a logical, repeatable methodology to assist designated Joint Task Force (JTF) Headquarters (HQ) in reducing the ad hoc nature of the joint command and control equipping portions of their forming process. The JTF Enterprise Architecture, consisting of Increment 1 (JTF HQ), Increment 2 (JTF Functional Component Commands), and Increment 3 (Multinational and Interagency) architectures provide support to the JTF Command and Control Equipping process, and serve as a key aspect for many of the architectural efforts. Focuses and refines Command and Control (C2) systems, applications, and telecommunications requirements for JTF HQ in order to increase readiness of the JTF HQ formation. To assist Allied Command Transformation (ACT) in supporting International Security Assistance Force (ISAF) by developing ISAF HQ C2IS Template and Architectures.

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JTF HQ Command and Control Equipping Process supports QDR 2006 and the Unified Command Plan 2006 task to the CDRUSJFCOM certify the readiness of assigned HQ Staffs designated to perform as a JTF HQ. The JTF HQ C2 Equipping Process provides a tailorable 6-step process that uses the JTF HQ C2 Baseline Templates and Architectures augmented by additional specialized architecture products and staff assistance visits for the JTF HQ. The JTF HQ Templates provide the JTF HQ with Joint Manning Documents (JMDs) and C2 Baseline Template and Architectures that lay out the historically required and doctrinally-based capabilities, requirements and manning, in addition to systems, applications, and network requirements, including telecommunications and VTC capabilities, for various types of JTF HQ operations. Current Templates address the range of types of military operations such as Major Combat Operations (MCO), Defense Support of Civil Authorities (DSCA), Disaster Relief and Foreign Humanitarian Assistance/Disaster Relief (FHA/DR), and Crisis Response and Limited Contingency Operations (Stability Operations), and provide a starting point for the JTF Commander's forming and planning process. USJFCOM personnel work with the designated JTF HQ to help define their unique capabilities required capabilities using the Templates as a starting point, and then analyze and compare current capabilities to determine existing shortfalls and gaps. JTF HQ C2 Equipping Process personnel works with the JTF HQ to assist them in identifying their C2 capabilities and equipping solutions and determines and recommends associated sourcing options for shortfalls. JTF HQ C2 Equipping Process personnel have created a web-enabled "Playbook" on the US SIPRNET that serves as a repository site for the JTF CDR and Staff to access the JTF HQ Templates as well as JFCOM and other selected organization and agency-produced information and products. A USJFCOM cross-directorate working group is using established processes to support sustaining the readiness phase of Commander, Second Fleet (C2F) JTF HQ Certification, the prepare and certify phases for 20th Support Command as JTF-Elimination, support USCENTCOM in their certification for USNAVCENT/5th Fleet and other selected designated Service HQs as appropriate.

FY 2008 Accomplishments:

JTF HQ C2 Equipping Process worked with C2F (JTF-South) to improve and sustain their readiness as a JTF Capable HQs and supported the designated JTF HQ (JTF - E 20TH Support Command) in their preparation and certification phases. The work included the development of the Joint Mission Essential Equipment List (JMEEL) and with the USJFCOM J1 to analyze and improve Joint Manning Document (JMD). In addition, JTF HQ C2 Equipping Process supported USCENTCOM as they prepared and certified USNAVCENT/5th Fleet as a designated JTF. The JTF HQ C2 Equipping Process products and people have also conducted staff assistance visits to the other geographic combatant commands in support their JTF HQ Certification Programs. Turnkey has worked with ACT in support of the ISAF HQs to expand the architecture views provided in 2007 to enhance their value and accuracy, assist Allied Command Transformation (ACT) in their revision of the ISAF HQ CONOPS, development of an ISAF HQ Template to serve as a baseline for the HQ, and to support the upcoming rotations. Turnkey worked with NATO to assist in the development of a NATO architecture data base similar to the JTF database in JACAE, which is the foundation for the development of the DoD JTF HQ Templates. Developed a JTF HQ Implementation Plan as a follow on to the JTF HQ CONOPS. Supported the JTF HQ Focus Area Team as part of J8's C2 Capability Portfolio Management (CPM) mission and other related efforts to include the USJFCOM J6 led task to support C2 for Cyberspace. JTF HQ Templates were refined to reflect the changes in JTF organization and the lessons learned from working with real-world JTF HQs. As part of the Templates refinement process and in support of the JFCOM J8 Architecture efforts the JTF Enterprise Architecture Increment I (JTF HQ) was also refined, as it is a primary component of the Template. Additionally, Increment II of the JTF Enterprise Architecture (Functional Component Command Headquarters, including Joint Special Operations Task Force and Joint Psychological Operations Task Force Headquarters) was completed and staffed.

FY2009 Planned Output:

JTF HQ C2 Equipping Process will support future designated JTF HQ in their preparation and certification phases to include the completion of 20th Support Command, and USCENTCOM's certification efforts. JTF HQ C2 Equipping Process will continue to support C2F as they maintain their readiness as a designated JTF for SOUTHCOM. The JTF HQ Working Group will also conduct staff assistance visits to other geographic combatant commands (e.g. CENTCOM, NORTHCOM and SOUTHCOM) in support their JTF HQ Improving Readiness Programs. Turnkey will continue to work with ACT, multi-national partners and Interagency organizations to improve their ability to be able to be integrated into a JTF HQ as fully functioning partners. JTF HQ C2 Equipping Process will continue to support The JFCOM capability portfolio manager (CPM) mission with its process and information gathered on JTF C2 Systems and other related efforts (e.g. Cyberspace and Irregular Warfare efforts). The JTF HQ will prepare, certify and sustain the readiness of JTF HQs and will work with the USJFCOM J7 to create a "one stop shop" for relevant JTF information for the JTF CDR, staff and additional users as appropriate.

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FY2010 Planned Output:

JTF HQ C2 Equipping Process will support future designated JTF HQs in their preparation and certification phases. Turnkey will continue to support C2F, 20th Support Command, in sustaining their readiness as a designated JTF HQs. The JTF HQ Working Group process, product, and people will also conduct staff assistance visits to other geographic combatant commands (e.g. CENTCOM, NORTHCOM and SOUTHCOM) in support their JTF HQ Certification Programs. Turnkey will continue to work with ACT, multi-national partners and Interagency organizations to improve their ability to be able to be integrated into a JTF HQ as fully functioning partners.

Accomplishments/Planned Program Title:

FY 2008

FY 2009

FY 2010

Joint Data Strategy

1.000

1.000

1.500

Primary OUTCOME (objective) for this effort is to ensure the Joint Warfighter has the ability to access and share critical Command and Control (C2) information. Currently, Warfighter consumers of data cannot determine what data exists for their operational use. If they are able to determine what data is available, they experience difficulty in accessing it primarily due to a lack of system or software interoperability. If they are able to access the data, they are not able to determine if the data is actually what they need, still current, or the legitimacy of its pedigree. Warfighter producers of data struggle with procedures on how to share their data with the consumers and on how to describe their data so that others understand it.

USJFCOM, J87, has been designated the lead of the C2 Portfolio Data Strategy. As the lead, JFCOM will work with COCOMs, Services, and Agencies (C/S/A) to achieve the primary outputs and efficiencies: making C2 data assets visible, accessible, understandable and interoperable by (1) Leading an effective C2 Portfolio Data Strategy Management Construct; (2) establishing a C2 Data Framework, C2 data standards, and Best Practices; and (3) supporting key data pilots, Communities of Interest and other Data Strategy implementation activities in order to increase the Joint Warfighter's timely access to critical C2 information.

The DoD Net-Centric Data Strategy: A DoD-wide effort to move from privately owned and stored data in disparate networks and within legacy systems/applications to an enterprise information environment where authorized known and authorized unanticipated users can access any information and can post their contributions for enterprise-wide access. If this initiative is not funded, the Warfighter will continue to not know what data exists for use, how to access available data, if data they accessed is what they really need, how to tell others what data they need, how to share their data with others, and how to describe their data so that others may use it.

FY 2008 Accomplishments:

Conducted quarterly meetings of the C2 Portfolio Data Strategy Steering Committee, which provides a formal process for the C2 CPM to establish C2 data sharing priorities and standards for C2 capabilities; Led the C2 CPM POM 10 Data Focus Area Team, which developed and implemented 7 recommendations for improving C2 Portfolio data strategy implementation; Completed the C2 Data Framework Concept and Technical Guidance V1.0, a document which articulates the C2 Portfolio Data Strategy and provides implementation guidance to C2 programs and C2-related Communities of Interest; Developed a C2 Data Campaign Plan V 1.0, which articulates the objectives and milestones for developing and implementing an effective C2 Portfolio data strategy; Developed and documented the C2 Core V1.0, a comprehensive C2 data standard which will enable joint, multinational, and interagency data interoperability within C2 Portfolio capabilities; Developed the C2 Data Needs Matrix and visualization tool which identifies authoritative C2 data sources and their relationship to C2 capabilities in support of the Net-Enabled Command Capability and the C2 Portfolio; Developed a C2 data standards concept of operations and established a configuration management process for C2 Portfolio data standards and management artifacts; Co-led C2 Data Pilot Phase 3, an effort to expose C2 Data Assets and support the development and refinement of the underlying technologies supporting net-centric C2 capabilities

FY 2009 Planned Output:

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Continued leadership of the C2 Portfolio Data Strategy Steering Committee; Refinement of the C2 Data Needs Matrix and visualization tool; integration of C2 Data Needs and C2 data standards information into the Joint Command and Control Architecture and Capability Assessment Enterprise (JACAE) tool; Continued identification and refinement of COCOM data sharing needs and priorities; Further development and refinement of the C2 Core data standard and C2 Data Framework, to include piloting and testing; Management of the C2 Namespace; Support of the Force Management Implementation Project's data visibility initiative through C2 Data Pilot Phase IV; Increased involvement in multinational C2 data standards development processes to include a multinational C2 data pilot; Support to various C2 data initiatives to expose critical C2 data; Development of the data and service annex to NECC Capability Development Packages.

FY 2010 Planned Output:

Continued leadership of the C2 Portfolio Data Strategy Steering Committee; Development of tools to track C2 Authoritative Data Sources; Continued integration of C2 Data Needs and C2 data standards information into the Joint Command and Control Architecture and Capability Assessment Enterprise (JACAE) tool; Continued identification and refinement of COCOM data sharing needs and priorities; Continued development and refinement of the C2 Core data standard and C2 Data Framework; Management of the C2 Namespace; Continued involvement in multinational C2 data standards development processes; Supervise Service adherence to data related POM 10 recommendations.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Recognition of Combat Vehicles (ROC-V)	2.533	1.400	1.400

The primary outcome for Recognition of Combat Vehicles (ROC-V) is to enhance Air-to-Ground and Maritime combat identification capabilities, thereby reducing the potential for friendly fire. ROC-V is a training aid for ground forces, aircrews and ship crews that perform combat identification (CID) by visual identification of detected entities in the operational battlespace. It standardizes realistic Combat Visual Identification (CVI) training that is critical to both combat effectiveness and fratricide prevention. The program materiel developer for ROC-V is the U.S. Army Night Vision and Electronics Sensors Directorate (NVESD), Ft. Belvoir, VA, which currently receives approximately \$1.5M per year from the Army and Marines to develop, maintain and distribute a Ground-to-Ground version of ROC-V. Resources provided in this Program Element will support the NVESD expansion of the program to facilitate the development of Air-to-Ground and Maritime versions of the training program. The funding will be used in general to expand the ROC-V training program database by adding US, Coalition, and Threat-type vehicles, maritime environment/small boat threats, and all aspect/extended range air-to-ground imagery with emphasis on concurrent development of Coalition releasable products. Additionally, the funding will allow development of a standardized air-to-ground, all aspect and range CVI training program for pilots, aircrew, Joint Terminal Attack Controllers (JTACS), and Unmanned Aerial Vehicle (UAV) operators. It will begin creation of a standardized maritime environment small boat threat CVI training program and begin the development of a deployable/portable CVI training capability. It also supports standardization efforts to incorporate these visual signatures into a Sensor Signatures Database Program for non-cooperative target identification.

Primary Outputs and Efficiencies to be demonstrated:

- 1) Expansion of data Collection / Range Support for additional combat vehicles and Navy littoral watercraft
- 2) Improved processing, integration, and design of ROC-V modules for a standardized Joint A-to-G training aid
- 3) Expansion of personnel capable of supporting data field collection
- 4) Increased collection of mid-wave (3-5 micron), long-wave (8-12 micron) and short-wave (1-2 micron) thermal images
- 5) Expansion of Thermal and Daylight Visible images by 85-100 tactical vehicles and littoral watercraft for the A-to-G CVI training aid to include 60, 45, 25, and 15 look-down slant angles at select ranges.

FY 2008 Accomplishments:

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Began development of Air-to-Ground and Maritime ROC-V training software modules. Collected 85-100 tactical vehicle and 15-20 small boat thermal and daylight visible all aspect and multi-range images in a controlled range environment. Initiated Model & Simulation development efforts to transition already collected images to 3-D models. Fielded CVI training products to the warfighter.

FY 2009 Planned Output:

Continue development and maintenance of Air-to-Ground and Maritime ROC-V training software modules. Collect 20 tactical vehicle and 15-20 small boat thermal and daylight visible images per FY in a controlled range environment. Continue Model & Simulation development efforts to transition already collected images to 3-D models. Continue fielding Air-to-Ground CVI training products to the warfighter

FY 2010 Planned Output:

Transition JFCOM developmental support to Services. Complete development and maintenance of Air-to-Ground and Maritime ROC-V training software modules. Complete Model & Simulation development efforts to transition already collected images to 3-D models. Complete fielding Air-to-Ground CVI training products to the warfighter.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
System of Systems Engineering (SoSE)	2.000	2.000	2.100

Primary OUTCOME (objective) of this effort is to provide System-of-Systems Engineering (SoSE) support to the Joint Command and Control (JC2) Capability Portfolio Manager (CPM) and Joint Combat Capability Developer (JCCD). Leveraging architectural products, data and data relationships residing in the Joint Command and Control Architecture and Capability Assessment Enterprise (JACAE) tool (including authoritative and traceable requirement sources, technical documentation, capability issues, previous analyses and assessments), the SoSE team provides detailed system analysis and end-to-end systems engineering rigor for JC2 CPM decision-making. End-to-end interoperability engineering includes capability mapping and integration, detailed analysis and assessment of CPM issues, executable architecture design and implementation and modeling and simulation analysis.

SoSE for CPM is required by DEPSECDEF Capability Portfolio Management (CPM) MEMO date; 14 Sep 06; DOD 5000-series Directives and Instructions; Defense Acquisition Guidebook - Chapter 4.2.6., Joint Capability Developer Campaign Plan DRAFT v0.8 20 Nov 2007; and CPM Issue Findings and Recommendations. The CPM SoSE effort will follow the Office of the Secretary of Defense (Acquisition, Technology, & Logistics) (OSD AT&L) and Joint Staff core elements of SoSE as presented to Deputies Advisory Working Group (DAWG). Core elements of SoSE provide the context for the application of systems engineering to JC2 CPM processes. Through data collection and mapping efforts SoSE will translate CPM System-of-Systems (SoS) capability objectives into high level requirements and provide the CPM an understanding of the components of the CPM SoS and their relationships over time. Through detailed analysis SoSE will assess the extent to which the CPM SoS meet capability objectives; will develop, evolve, and maintain a design for the CPM SoS; and will monitor and assess potential impacts of changes on CPM SoS performance.

FY 2008 Accomplishments: Supported the Joint Personnel Recovery Agency Quick Look effort by completing a desk top analysis and made specific recommendations to support and document the requirements for the disadvantaged users. Completed executable architectures that laid out the requirements for the disadvantaged users based on a JPRA provided mission thread. The support to JPRA continues in 2009 as a broader effort.

The SoSE branch supported the JFCOM C2 CPM effort by providing systems engineering and analysis in developing an executable Joint Close Air Support (JCAS) Architecture in support of the POM-10 cycle. The SOSE branch worked the JPRA disadvantaged user effort as a POM 12 submission.

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The Strikelink A effort was successfully completed with the system flying in June 2008 and successfully demonstrating a fully digitally aided CAS mission. Detailed bit-level system-of-systems analysis in JBMC2 drove testing and assessment design and execution at a level that could not have been accomplished without the depth of analysis provided. The analysis identified cross-Service solutions that included a design to upgrade aircraft situational awareness data transfer which is independent of the Onboard Fight Program (OFP) and the radio, and therefore has the potential result of saving millions of dollars in life cycle costs and reducing fratricide risks while making the Joint Close Air Support (JCAS) process more lethal and effective.

JCAS Coordinated Implementation (CI) completed a survey of all the CAS participants and completed a charter for CI to get JROC approval leading to all CAS participants being fully interoperable by FY 2012 - 15.

The SoSE Branch has related their tactical level executable architecture to a campaign level model, Joint Analysis System (JAS).

The SoSE developed JCAS model will support the J85 led effort to develop a JCAS Joint Capability Document (JCD).

FY 2009 Planned Output:

The SoSE team will analyze C2 CPM POM-12 issues to determine analytical complexity, timelines, and resources required; refine issues and gather system(s) data for analysis; task front-end architecture, data standards, & end-state assessment and testing requirements; assess issue-identified systems against capabilities, activities, nodes, system functions and system attributes in the performance of desk top analysis; deliver desk top analysis, executable architectures, reports and objective data to JC2 CPM Issue leads, Joint Systems Integration Center, or other leads for detailed assessment and testing, and deliver implementation/execution plans. In response to needs for additional mapping depth and maturity, the team will manage mapping activity to deliver capability to identify current C2 baseline, and then analyze changes to that baseline, including system changes, system attribute changes, and more holistic changes (applying Network Centered Enterprise Services, and Network Enabled Command and Control overlays); to provide C2 CPM capability mapping and analysis products for POM issues; mature mapping for all C2 systems, and continue to build a baseline of C2 system attributes into a mapping repository .

The SOSE branch will broaden the work started in 2008 for the JPRA Quick Look and take it forward as a POM 12 submission .

The SOSE branch will continue the JCAS Coordinated Implementation effort leading to all CAS participants being fully interoperable by FY 2012 - 15.

FY 2010 Planned Output: The SoSE team will continue to support C2 CPM for POM-12 and POM 14 issues as required. The SoSE team using architectural products, data, and relationships residing in JACAE, will provide detailed analysis supporting POM 12 and 14 C2 CPM functions from managing capability mapping integration, providing executable architecture capable of support modeling and simulation, to supporting issue analysis and assessment. They will continue to provide the detailed system analysis and end-to-end capability engineering rigor for C2 CPM decision-making. Continue to support JPRA and other similar Command initiatives with systems engineering and analysis. SoSE branch will coordinate their efforts with JSIC, JTIC and JFIT to improve engineering products in support of C2 CPM.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
Integrated Fires Consolidated Activities	3.200	3.329	4.214

Primary OUTCOME (objective) for this effort is the integration of Joint Fires Capabilities for US and Coalition Partners that improves combat / mission effectiveness while minimizing fratricide focus is on the following area: Joint Close Air Support (JCAS), Combat Identification (CID), Blue Force Tracking (BFT) (including Joint Blue Force Situational Awareness), Joint Fires, Fires related Joint Command and Control Capabilities, and Integrated Air and Missile Defense (IAMD).

FY 08 Accomplishments:

Executed CID-BFT Action Plan CY08-09

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APPROPRIATION/ BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

RDTE, Defense Wide BA# 7**0607828D8Z - Joint Integration and Interoperability****P818**

- Led actions to determine/resolve Service/COCOM position location information (BFT) security policy (JROCM 122-08)
- Evaluated the operational demonstration of Patriot Missile unit in a Joint IAMD environment at WTI Event October 2007
- Monitored POM 10 plan for a synchronized Service acquisition and fielding of a Mode 5 identification friend or foe (IFF) capability, with an IOC of 2014 and FOC of 2020.
- Assessed the results of the CCID ACTD Extension (Exercise Bold Quest) to evaluate/assess the optimal mix of CID-BFT/JBFSA capabilities, with emphasis on NCTI technologies in the A-G environment that will provide the basis for investment recommendations to inform POM 10/POM12.
- Provide an assessment of the reliability and estimated life of alternative BFT communications platforms in order to reduce BFT reliance on National Technical Means through the review and utilization of existing Service, COCOM, Joint Staff, and JROC assessments.
- Established and maintained a Joint Friendly Fire Data Base of real world combat fratricide events, and conducted trend analysis.
- Evaluated emerging and promising technologies to identify high pay-off, emerging technologies for CID-BFT/JBFSA that have joint applicability and that are worthy of focused acceleration, including the Joint Sensor Signatures Database (JSSD)

Executed JCAS Action Plan

- Evaluated and monitored standardization and maintenance of Joint Terminal Attack Controller (JTAC) training throughout Department of Defense and participating Coalition countries.
- JCAS ESC continued to lead in consolidating U.S. input into the NATO standardization processes through engagement with the NATO Standardization Agency in the rewrite of NATO STANAGS.
- Worked toward achieving C2 interoperability in the JCAS mission area through establishment of a JCAS digital standard to improve warfighting capability and reduce fratricide.
 - Continued to define and evaluate the simulation capabilities required for the JCAS mission area by exploiting existing systems and new technologies; identifying JCAS tasks where simulation can be used to obtain appropriate qualifications, update currency requirements, and maintain proficiency for key JCAS personnel.
 - Pursued initiatives that will more closely integrate the services' and SOCOM's JCAS training programs and exercises at the tactical level.
 - Evaluated and monitored standardization and maintenance of Forward Air Controller (Airborne) training throughout the Department of Defense; invited Coalition countries with evolving FAC(A) programs to participate in the standardization process
 - Developed JCAS JCD (Phase 1 - SEP 08)
 - Completed Concept of Operations (CONOPS)
 - Completed Phase 1 Capabilities Based Assessment (FAA & FNA)
 - Led Integration of US & Coalition JTAC Standardization
 - Developed Allied/Coalition Joint Fires Capability
 - Published JTF Fires & Targeting Handbook
 - Delivered Weapon Data Link Network ACTD
 - Developed IAMD ICD (Phase 1 - SEP 08)
 - Completed Operational Concept.
 - Completed Phase 1 Capabilities Based Assessment (FAA & FNA)

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FY 2009 Planned Output.

Continue Execution of CID-BFT Action Plan

- Lead actions to incorporate PLI (BFT) security policy in applicable documents and instructions.
- Monitor PB09/POM 10 execution for a synchronized Service acquisition and fielding of a Mode 5 IFF capability, with an IOC of 2014 and FOC of 2020.
- Monitor and assess the results of the CCID ACTD Extension (Next Quest) to evaluate/assess the optimal mix of CID-BFT/JBFSA capabilities, with emphasis on NCTI technologies in the A-G environment that will provide an input for investment recommendations to inform POM 12.
- Provide an assessment of the reliability and estimated life of alternative BFT communications platforms in order to reduce BFT reliance on National Technical Means through the review and utilization of existing Service, COCOM, Joint Staff, and JROC assessments.
- Maintain a Joint Friendly Fire Data Base of real world combat fratricide events, and conduct trend analysis.
- Evaluate emerging and promising technologies to identify high pay-off, emerging technologies for CID-BFT/JBFSA that have joint applicability and that are worthy of focused acceleration, including the Single Card Solution for SOCOM.
- Develop CID-BFT Joint Capabilities Document (JCD) (Phase 1 of Spiral 2 (air domain) - MAY 09)
- Continue spiral development of JCD for associated domains.
- Complete Phase 1 of Spiral 2 Capabilities Based Assessment (FAA & FNA)

Continue Execution of JCAS Action Plan:

- Evaluate and monitor standardization and maintenance of Joint Terminal Attack Controller (JTAC) training throughout Department of Defense and participating Coalition countries. Expand Coalition participation both in JCAS ESC and JTAC Standardization Team.
- Finish integration of STANAG 3797.
- Work toward achieving C2 interoperability in the JCAS mission area through establishment of a JCAS digital standard to improve warfighting capability and reduce fratricide.
- Continue to define and evaluate the simulation capabilities required for the JCAS mission area by exploiting existing systems and new technologies; identifying JCAS tasks where simulation can be used to obtain appropriate qualifications, update currency requirements, and maintain proficiency for key JCAS personnel.
- Pursue initiatives that will more closely integrate the services' and SOCOM's JCAS training programs and exercises at the tactical level
- Evaluate and monitor standardization and maintenance of Forward Air Controller (Airborne) training throughout the Department of Defense; invite Coalition countries with evolving FAC(A) programs to participate in the standardization process.
- Develop JCAS JCD (Phase 2 - SEP 09)
- Complete Phase 2 Capabilities Based Assessment (FAA & FNA)

Develop Allied/Coalition Joint Fires Capability through Technical Cooperation Program, Action Group 15 leadership

Continue leading Integrated Air and Missile Defense integration efforts:

- Develop and deliver IAMD ICD (JAN09)
- Develop SIAP CDD v.2.
- Oversee BMD ITWG products in response to COCOM requirements

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Conduct analysis to support C2-CPM Integrated Fires/BFT Cell POM12 development.
 Support Joint Urban Fires Prototype (JUFP) Experiments (J9 Project Resourced).
 Support JFIIT Activities (Training/Assessment/Analysis) (JFIIT Project Resourced).
 Coordinate UAS Center of Excellence Activities w/JFCOM

Planned FY2010 Planned Output: Continue execution of JCAS and CID-BFT/JBFS Action Plans. Migrate JCAS ESC to Joint Fire Support (JFS) ESC. Develop JFS Action Plan. Expand coalition participation in the JTAC MOA and JTAC Standardization Teams. Deliver JCAS JCD, Air-Ground Phase of CID JCD and IAMD JCD.

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	
Joint Architecture Integration and Development	3.391	2.219	3.400	

Primary OUTCOME (objective) for this effort is to integrate and develop joint architectures, in direct support of Joint C2 (JC2) Capability Portfolio Management and for cross-portfolio integration and federation efforts between the Joint Capability Areas (JCAs), and the mission areas of the Global Information Grid (GIG): Warfighter Mission Areas (WMAs), Enterprise Information Environment Mission Area (EIEMA), Defense Intelligence Mission Area (DIMA), and Business Mission Area (BMA). The centerpiece of this effort is to develop and sustain a command and control (C2) capabilities mapping baseline and repository, in conjunction with a Joint Task Force (JTF) Enterprise Architecture (EA). The C2 capabilities mapping framework and the JTF EA will provide reusable data and information for objective C2 capabilities analysis and assessment to inform C2 CPM decision-making and cross-portfolio architecture driven analyses, while simultaneously improving JTF performance via more efficient and effective JTF planning, certification, and sustainment.

FY 2008 Accomplishments:

- Enriched and expanded current information and refine C2 Capability Mapping processes and procedures to accommodate capabilities under review for POM 10 and beyond. Supported C2 Functional Areas, JSIC, and other analytical and assessment entities .
- Developed the Joint Common Systems Function List (JCSFL) v1.0 as the first-ever joint architecture standard, completed its Joint Staff Action Processing (JSAP) staffing with Joint Staff J6 sponsorship, and inserted it as a requirement for C2 capability development into the revision of CJCSI 6212, Interoperability and Supportability of Information Technology and National Security Systems.
- Refined roles and responsibilities and improved the repeatable process to overlay "to be" capabilities against the "as is" JTF Enterprise Architecture and C2 CPM capability baseline.
- Expanded the Joint Architecture and Capability Assessment Enterprise (JACAE) tool and repository to accommodate 24-hour, 7-days-per-week service to 500 concurrent COCOM, Service, and Agency users.
- Deployed JACAE testing and development capability, independent of the production suite, on both the NIRPnet and SIPRnet, allowing for an unclassified Service extension as well as the ability to test vendor software updates and modify the JACAE schema, without impacting production.
- Completed a successful demonstration of the capability to publish and subscribe to JACAE information through intermediary web services, without being inside the JACAE environment - the first step to developing web-services based on the detailed, complex relationships in the extensive data sets resident in JACAE.

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- Provided "best practice" demonstrations to the DoD Architecture Framework (DoDAF) 2.0 Data and Methodology Working Groups, and hosted a DoDAF 2.0 Operational Requirements Workshop, to help ensure the next version of DoDAF provides the maximum commonality to improve joint warfighting capabilities, while allowing for the flexibility to accommodate rapid, modular capability development.
 - Developed detailed JACAE Functional Requirements Document, Standard Operating Procedures, and Configuration Management Plan to ensure rigorous enforcement of JACAE methodology and reusability of all enterprise objects, as well as the ability to horizontally trace the reuse of C2 Baseline components.
 - JACAE's successes allowed it to effectively compete from among 28 entries to win the prestigious Enterprise Architecture Achievement Organization Award is presented by the DoD, in conjunction with the Association for Enterprise Integration (AFEI), to the organization that most exemplifies the use of enterprise architecture in its transformation towards becoming a net-centric enterprise.
 - Under the cross-C/S/A Joint Architecture Integration Working Group (JAIWG) chaired by USJFCOM J89, established two sub-working groups: one for architecture analysis, examining a real-world Joint Close Air Support incident, and one for the federation of JACAE information with the Army's unclassified architecture development tool and repository, Capability Architecture Development and Integration Environment (CADIE).
 - Developed Architectures and C2 Mission Thread in support of the USJFCOM-J6 led C2 Process Cyberspace effort as directed by the Chairman of the Joint Chiefs of Staff, to examine C2 capabilities within the Cyperspace capability area.
 - Expanded and baselined Architectures and developed NATO C2 Templates for the International Security Assistance Forces (ISAF) organization in Afghanistan, allowing coalition partners to standardize their warfighting capabilities to improve efficiency and effectiveness of mission execution, while reducing C2 and communications capabilities' maintenance and training. Provided ISAF with the as is view from which they are able to make changes and have a better understanding of the impact of those changes.
- FY 2009 Planned Output:
- Refine C2 Capability Mapping Baseline and integrate processes and procedures that will be captured in a published Terms of Reference (ToR) to instantly accommodate capabilities' reviews and issue development. Develop templates for DOTMLPF Change Recommendations and other Joint Capability Integration Development System (JCIDS) documents, so that Service Program Managers and Program Executive Offices can automatically extract joint architecture, or other C2 CPM-related information, directly from JACAE.
 - Completely federate JACAE with other COCOM and Service databases, registries, and repositories, to provide for near real-time cross-portfolio analysis. Federation candidates include USTRANSCOM Corporate Resource Information Source (CRIS), the Business Enterprise Architecture (BEA repository), AT&L's Matrix Mapping Tool (MMT), Army's Capability Architecture Development and Integration Environment (CADIE), Navy's SYSCOM Architecture Development and integrated Environment (SADIE), and the Department of Defense (DoD) Information Technology Portfolio Repository (DITPR).
 - Develop, review, and baseline the JTF Enterprise Architecture's Spiral II for Increment 2 (Functional Component Command) for the Joint Forces Land Component Commander (JFLCC); Joint Forces Maritime Component Commander (JFMCC) and the Joint Forces Air Component Commander (JFACC).
 - Expand the Irregular Warfare Architecture baseline to include additional architecture development for SOF and Conventional Force integration endeavors including Cyberspace.
- FY 2010 Planned Output:
- Continue support to C2 CPM-directed studies and analyses and guide operational assessments for the development of C2 Portfolio capability solutions.
 - Provide architecture input to C2 portfolio capability planning guidance to Components for POM 2012-2016 development studies, analyses and operational assessments.
 - Continue to refine C2 Capability Mapping processes and procedures, and promulgate mapping and architecture standards, including subsequent versions of the Joint Common System Function List, which will be expanded to describe the functionality of systems within other Joint Capability Areas and capability portfolios, and will include web/net-centric service functional descriptions.

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C. Other Program Funding Summary: Not applicable for this item.

D. Acquisition Strategy: Not applicable for this item.

E. Major Performers: Not applicable for this item.

OSD RDT&E COST ANALYSIS (R3)

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT				
7 - Operational System Development			0607828D8Z - Joint Integration and Interoperability							P818				
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Analyses	Analyses		1184	950	1-4Q	980	1-4Q	1000	1-4Q					
Subtotal:			1184	950		980		1000						
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Systems Engineering Support	Systems Engineering Support MIPR	MITRE	423	586	1Q	586	1Q	600	1Q					
Systems Engineering Support	MIPR	SPAWAR, Charleston (JACC)	5400	8365										
Systems Engineering Support	MIPR	Sequoyah TMO (S2S)	3700		1Q		1Q	3700	1Q					
Systems Engineering Support	MIPR	Space & Missile Defense Battlelab, Peterson AFB (JBFSa)	2280	8300		3700		3500	1-4Q					
Systems Engineering Support	MIPR	Various (JBMC2/JMT)	4751	14325		20649		14032	1-4Q					
Systems Engineering Support	T&M	Science Application International Corp.	2557	3000	1-3Q	3000	1-3Q	3100	1-3Q					
Systems Engineering Support	CPFF	Old Dominion University Research Foundation	1200	885	1-3Q	935	1-3Q	1400	1-3Q					
Systems Engineering Support	MIPR	SPAWAR/NAVSEA (Alliance)	3640	2600		1800		1940	1-4Q					
Systems Engineering Support	MIPR	Various	12801	12603	1-4Q	13350	1-4Q	12842	1-3Q					
Subtotal:			36752	50664		44020		41114						
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Test & Evaluation Support	MIPR	Various (JAVELIN)	9600											
Test & Evaluation Support	Test & Evaluation Support	Various	5600	500		4000	1-4Q	4000	1-4Q					

OSD RDT&E COST ANALYSIS (R3)

BUDGET ACTIVITY 7 - Operational System Development				PE NUMBER AND TITLE 0607828D8Z - Joint Integration and Interoperability						PROJECT P818			
Subtotal:				15200	500		4000		4000				
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date				
Travel			100	100		100	1-4Q	100	1-4Q				
		Various DoD & Internal											
Subtotal:				100	100		100		100				
Project Total Cost:				53236	52214		49100		46214				

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY 7 - Operational System Development	PE NUMBER AND TITLE 0607828D8Z - Joint Integration and Interoperability	PROJECT P818
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Event Name	FY 08				FY 09				FY 10																		
	1	2	3	4	1	2	3	4	1	2	3	4															
FY 2010 JI&I Profile	FY 2010 Project Assessments				FY 2010 JI&I Profile																						
(1) FY 2010 Project Selections					▲ FY 2010 Selections																						
FY 2010 Assessments					FY 2010 Assessments																						
Project Funding									Funding																		
Project Development									FY 2010 Development																		

Schedule Profile (R4a Exhibit)

May 2009

BUDGET ACTIVITY 7 - Operational System Development		PE NUMBER AND TITLE 0607828D8Z - Joint Integration and Interoperability					PROJECT P818	
<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>					
FY 2010 JI&I Profile		2Q - 4Q	1Q - 4Q					
FY 2010 Project Selections		4Q						
FY 2010 Assessments		2Q - 4Q						
Project Funding			1Q - 4Q					
Project Development			1Q - 4Q					