

Exhibit R-2, RDT&E Budget Item Justification				Date: May 2009
Appropriation/Budget Activity RDT&E DW/BA #5			R-1 Item Nomenclature: Common Joint Tactical Information/0604771D8Z	
Cost (\$ in millions)	FY 2008	FY 2009	FY 2010	
Link-16 Tactical Data Link (TDL) Transformation/P771	16.893	20.487	20.633	
<b>A. Mission Description and Budget Item Justification:</b>				
<p>The P771 program was developed to transform Joint Tactical Data Links (TDLs) (primarily the J Series of Link 16, Link 22, and Variable Message Format) to comply with the Department's Net-Centric vision. The program encapsulates the Department's needs for joint and combined network-enabled capabilities for TDLs and is being expanded to assess and transform Joint data link communications, such as the Common Data Link (CDL) and Weapons Data Link (WDL), to the net centric standards, and to ensure interoperability and seamless integration with Joint communication systems. The implementation of these network capabilities into the data link environment will enhance the decision cycle between sensor-to-shooter; providing information-superiority, shared environment that enhances combat power by increasing speed of command, higher tempo of operations, greater lethality, increased survivability, and self synchronization. This transformation must balance the needs of the warfighters with the requirements for net centric operations</p> <p>The funds provided by this budget request were used in 2008 to ensure the timely implementation of net centric goals by incorporating these network-enabling capabilities into the Joint Tactical Data Enterprise Services (TDES) Migration Plan (JTMP). JTMP will be used as a baseline to support the Office of the Secretary of Defense (OSD) in further analyzing the validated warfighter capability needs for the primary TDL and CDL communications across the full set of mission areas in order to identify possible solutions to meet those needs across the range of Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities (DOTMLPF) and assess the synchronization planning and capability delivery management activities to support Joint Net-Centric Operations Capability Portfolio Management (NC CPM) objectives. In addition the funds were used to develop an integrated joint airborne architecture, ensuring adherence to the GIG enterprise wide technical baseline. The NC CPM will work with the Services in this near-term analysis and with our Allied/Coalition partners in future analysis to validate the acquisitions and fielding plans needed for net centric goals. In addition, an Advanced Tactical Data Link (ATDL) study was started to evaluate various data link alternatives for contested and anti access airspace scenarios. This study will be expanded in 2009 and 2010 to incorporate the CDL family of tactical Intelligence, Surveillance, and Reconnaissance (ISR) communications systems, including the systems used with Unmanned Aerial Systems (UAS) and the Integrated Broadcast Service (IBS), with subsequent year's funding being used to expand the JTMP to include the results of this CDL analysis. A final area to be added will be to ensure that TDLs systems are properly integrated with the other systems part of the net centric architecture, utilizing a new analysis tool the Integrated Master Schedule (IMS).</p> <p>The program will continue to fund the development of spectrum management and oversight for the TDES systems, and to fund for the coordination of these development efforts with the Services and other US and International spectrum management agencies, including the Federal Aviation Agency (FAA) and National Telecommunications and Information Administration (NTIA), to obtain Link 16 spectrum certification. In addition, funding will continue to be used to support the Defense Information System's Agency's (DISA) and</p>				

Services' interoperable improvement efforts and processes in the development of common standards and protocols. This effort includes initiating the Joint Interoperability Enhancement Process (IEP) that allows operators, engineers, and program managers to verify capabilities and identify issues in a design with Joint /Allied units prior to system fielding, or with fielded systems to identify required systems changes for systems upgrade planning. DISA and Joint Forces Combatant Command (JFCOM) will lead the effort to transform the current standards and interoperability management tools to a common set of Joint network-enabled standards to ensure adherence to the GIG enterprise wide technical baseline and for implementation of future TDES capabilities. These joint standards, protocols, and processes will be used for implementation and testing to ensure the TDES capabilities are synchronized with the development and integration timelines of other planned network-enabled Global Information Grid (GIG) initiatives. The threats to the networking waveforms and the Joint NET CENTRIC migration will also be looked at in cooperation with the Intelligence agencies.

**Plans and Accomplishments:**

FY 2008 Accomplishments (\$16.893 million):

- Published update of the 2006 Joint Tactical Data Enterprise Services (TDES) Migration Plan (JTMP).
- Continued analysis to evaluate expanded data link communities and their migration to Net Centric capabilities and incorporation into the JTMP.
  - Initiated analysis on the warfighter capabilities of the Common Data Link (CDL) and Integrated Broadcast Service (IBS) environments to guide the net-centric migration of Joint Intelligence, Surveillance, and Reconnaissance (ISR) and Joint Intelligence assets.
  - Initiated work to incorporate Low Observable (LO) data links to address stealth platform requirements for Low Probability of Intercept (LPI) and Low Probability of Exploitation (LPE) digital communications.
- Continued implementation and maintenance of the Interoperability Enhancement Process (IEP) with DISA and JFCOM to:
  - Populate and maintain a database of Joint TDES implementations and interoperability assessments
  - Identify Net Centric Operations and Warfare (NCOW) program dependencies and integration points
  - Ensure adherence to the GIG enterprise-wide technical baseline
- Continued to assist PEO C4I&S in executing the:
  - Agreements and conditions identified in the Department of Transportation (DoT) and DoD for sharing the 960 to 1215 Mhz band
  - Link 16 Spectrum Support Certification.
  - Technical assistance for the JTIDS/MIDS Multinational Working Group and other international forums related to ensuring spectrum access.
- Finalized the airborne architecture portion of the Net Centric integrated architecture.
- Initiated the integration of Allied participants in the JTMP starting with the United Kingdom (UK).
- OSD/NII and the NC CPM continued to provide technical oversight, planning, and coordination of Joint TDL interoperability and transformation initiatives.

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- Acted as Joint TDL subject matter experts and participate with GIG End-to-End Systems engineering and related teams.
  - Continued development of standards, protocols, and processes for implementation and testing end-to-end across programs.
  - Continued to assess cross-program engineering, integration, and test for NC CPM programs and capabilities.
  - Continued risk assessments and Independent Program Assessments for NC CPM programs.
  - Provided insight into operationally driven, technical functionalities needed to meet tactical data exchange requirements within a critical and/or warfighting environment.
  - Conducted analytic evaluations to define and plan implementation of key technologies to include tactical information integration and configuration management.
  - Established policy, provided oversight, and developed net-centric architectures to will address the wireless and mobility aspects of IP.
  - Developed policy-based network management preferred system concept and methodology for enterprise situational awareness.
  - Evaluated need for a common interface and visualization approach for autonomous Programs of Record in development.
  - Developed an ad hoc mobile net-centric tactical wireless architecture for 2020 that interfaces with the GIG.
  - Developed NC CPM integrated architecture and Capability Delivery Plan.
  - Supported incorporation of data links into the Functional Solution Analyses (FSA) and FSA Integration efforts.
  - Developed Strategic Plan and Portfolio Guidance for APOM 09 and POM10.
  - Ensured the Single Integrated Air Picture (SIAP), the airborne portion of the Joint Theater Air and Missile Defense (JTAMD) Family of Systems, progressed from being net-ready to being net-centric, in compliance with the NCOW and as part of the 2008 NC CPM focus on airborne networking.
    - Provided oversight to ensure the stages of development across the Integrated Air and Missile Defense (IAMD) roadmap encompass the tenets of the NC CPM and incorporate or interoperate with net-centric data links.
    - Provided oversight for the integration of relevant architectures under development by IAMD stakeholders.
    - Ensured the accuracy and completeness of the operations concept which will serve as an integrating structure for future IAMD operational architectures.
    - Employed, capability development, and force integration efforts across air, cruise, and ballistic missile defense for theaters, regions, and the homeland
    - Participated in a group effort to consider the transport path/program milestones and way ahead the Department should consider providing the sensor net defined for the 2020+ time period. Radio requirements would be defined and compared to potential Joint Tactical Radio System (JTRS) data link capabilities, determining if and when JTRS will be able to provide the needed capability. Additionally, the group addressed the information path requirements necessary to perform the Air and Missile Defense mission
  - Conducted a detailed study on new airborne tactical data links including
  - Initiated a new integrated Master Schedule tool that synchronized the numerous data links with platforms and other net centric systems.
- Initiated work on an information transport FSA to assess the gaps in current programs between current and planned data links with the

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remaining portions of the communication systems.

FY 2009 Planned (\$20.487 million):

- **Provide Spectrum Support and oversight for TDES systems:** provide department subject matter experts and representation to the national and international spectrum management boards and forums to ensure Joint Service access to TDES related spectrum to support worldwide operations and training in CONUS
- **Data Link Migration Engineering Support:** 1) Update 2008 TDES migration plan 2) develop modeling and simulation capability to support data link technical and operational capability assessments including integration to other components of the GIG
- **Net centric engineering:** 1) conduct an ad hoc mobile net-centric tactical wireless architecture for 2020 that interfaces with the GIG 2) provide oversight, and develop net-centric architectures which will address the wireless and mobility aspects of IP 3) update Information FSA analysis
- **GIG Engineering support:** Develop analytic tools to support technical and performance analysis including 1) develop initial modeling and simulation tool for integrating TDES with other related network systems 2) update capabilities of the Integrated Master Schedule (IMS) tool for new systems and host on classified and unclassified server platforms 3) analyze NC CPM programs and capabilities dependencies and integration points and ensure their adherence to the GIG enterprise-wide technical architecture.
- **Joint Initiatives: Advanced Tactical Data Link (ATDL) Study Update to include:** Refined analysis of total aerial network requirements, such as system throughput, single user throughput, performance in a jammed environment, latency, LPI/LPD/LPJ performance for non-low observable aircraft, and security. Incorporating: Helicopters, ship /maritime MCO, phase 4 operations (stabilization and reconstruction), and platforms with Link 16 & ATDL into the study; and initiate MIDS JTRS/JTRS migration plan
- **Joint TDES migration: Technical oversight, planning and coordination of joint TDL interoperability and transformation including:** 1) Provide insight of functionalities needed for technical data exchange in a warfighting environment; 2) Plan implementation of tactical information integration and configuration management; 3) Develop an ad hoc mobile net-centric tactical wireless architecture for 2020; 4) Assess data link interoperability and networking performance; 5) Lead Joint team with OSD, JCS, DISA, Services, and Agencies for TDES migration to include integration and synchronization of NC CPM capabilities; 6) lead TDES teams to address transformation of the tactical gateways and the JINTACCS process
- **Joint and international engineering:** 1) development of approved standards, protocols and processes incorporating end-to-end implementation and testing across programs 2) Conduct risk assessments and independent Program Assessments for NC Portfolio programs and capabilities 3) conduct risk assessments and Independent Program Assessments for NC programs
- **Joint Interoperability Enhancement Process (IEP):** 1) conduct analytic evaluations to define and plan implementation of TDES technologies to include tactical information integration and configuration management 2) develop policy-based network management preferred system concept and methodology for enterprise situational awareness.

FY 2010 Planned (\$20.633 million):

- **Provide Spectrum Support and oversight for TDES systems:** Conduct analysis and provide department subject matter experts

- and representation to the national and international spectrum management boards and forums to ensure Joint Service access to TDES related spectrum to support worldwide operations and training in CONUS
- **Data Link Migration engineering support:** Publish updated TDES migration plan including ISR and starting to include selected Allied data ; using modeling and simulation capability to assess advanced data link capability integration to the GIG and the technical capabilities and the operational benefits of the advanced technologies.
  - **Net Centric Engineering:** Maintain and update the necessary Net Centric architecture and capabilities definition documents to include the following: 1) update Net Centric Architectures to reflect developments in waveform, enterprise services, information assurance, and knowledge management; 2) verify proper network performance; 3) Complete Information FSA analysis;
  - **GIG Engineering support:** Develop analytic tools to support technical and performance analysis including :1) model and simulate various conflict scenarios, showing network performance when transitioning between aerial layer of network and GIG; 2)Update the Integrated Master Schedule (IMS) to reflect all airborne both manned and UAV) platforms as well as ground mobile networking systems; 3) conduct analysis to verify development of CDL backbone and information assurance (IA) technologies permit rapid, seamless exchange of large ISR data files from tactical edge to GIG and back.
  - **Joint Initiatives: Advanced Tactical Data Link (ATDL) Study Update to include:** review of DoD efforts to develop an ATDL with greater system throughput and performance in a jammed environment; determination of which aircraft and other platforms should receive an ATDL; need for gateways to allow aircraft on ATDL to remain interoperable with aircraft that won't be upgraded, within DoD and among allies
  - **Joint TDES migration: Technical oversight, planning and coordination of joint TDL interoperability and transformation including:** Continue the expansion of the TDES community participation including the incorporation of the ISR and UAS communities, and beginning the incorporation of Allied partners into the JTMP process.
  - **Joint and International engineering:** model and simulate various coalition aerial networks, showing interoperability between US aircraft in US-only nets, US aircraft in coalition networks, and allied aircraft ; oversight for the integration of data link interoperability with Allied systems
  - **Joint Interoperability Enhancement Process (IEP):** Update policy, directives and the analytic evaluation process to define and plan : 1) implementation of TDES technologies to include tactical information integration and configuration management 2) continues to develop policy-based network management preferred system concept and methodology for enterprise situational awareness
- B. Program Change Summary:**
- |                                  | <u>FY 2008</u> | <u>FY 2009</u> | <u>FY 2010</u> |
|----------------------------------|----------------|----------------|----------------|
| Previous Presidents Budget       | 16.384         | 20.600         | 20.757         |
| Current Presidents Budget        | 16.893         | 20.487         | 20.633         |
| Total Adjustments                | 0.509          | -0.113         | -0.124         |
| Congressional program reductions |                |                |                |

Congressional rescissions			
Congressional increases			
Reprogrammings			
SIBR/STTR Transfer			
Program Adjustment	0.509	-0.113	-0.124
PBD Adjustment			

Program Change Explanation:  
 FY 2008: Program adjustment.  
 FY 2009: Program adjustment.  
 FY 2010: Program adjustment.

**C. Other Program Funding Summary:** N/A

**D. Acquisition Strategy:** In executing JTDL tasking, existing cost-plus contracts will be utilized. -driven reviews in support of the JCIDS, acquisition and PPBE processes

**E. Performance Metrics:**

**Enterprise-Wide Alignment:** Accelerate DoD information age transformation to increase the effectiveness and efficiency of the warfighting, intelligence and business missions.

Measures:

- Timely development and issuance of policy and guidance
- Instantiation of enterprise-wide system engineering for the Global Information Grid across DoD

**Portfolio Management:** Provide for the timely and effective delivery of key Net-Centric capabilities through portfolio management

Measures:

- Key milestones completed for major net-centric acquisitions
- Number of major systems through net-centric event

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Exhibit R-3, RDT&E Project Cost Analysis										Date: May 2009		
Appropriation/Budget Activity RDT&E DW/BA #5				Program Element: 0604771D8Z					Project Name and Number: Link-16 Tactical Data Link (TDL) Transformation - P771			
Cost Categories (\$ in millions)	Contract Method & Type	Perform ing Activity & Locatio n	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date	Cost to Complete	Total Cost	Target Value of Contract
<b>Product Development</b>												
Spectrum Support	Various	Various	13.357	1.618	Various	2.029	Various	1.200	Various	Continuing	Continuing	Continuing
Data Link Migration Engineering Support	Various	Various	14.227					0.450			14.727	
Net-Centric Engineering	Various	Various	3.770	3.070	Various	3.839	Various	5.490	Various	Continuing	Continuing	Continuing
GIG Engineering Support	Various	Various	9.530	5.686	Various	7.130	Various	4.500	Various	Continuing	Continuing	Continuing
Enhancements	Various	Various	0.918									
JICO Toolset (JSS) Development	Various	Various	0.529									
Joint Initiatives	Various	Various	3.099	2.221	Various	2.533	Various	2.550	Various	Continuing	Continuing	Continuing
Joint TDES Migration and Technology Insertion Plan	Various	Various	6.812	1.927	Various	2.321	Various	2.888	Various	Continuing	Continuing	Continuing
Joint and International Engineering	Various	Various	4.726	1.372	Various	1.495	Various	0.700	Various	Continuing	Continuing	Continuing
Joint Interoperability Enhancement Process	Various	Various	0.477	0.999	Various	1.140	Various	2.855	Various	Continuing	Continuing	Continuing
Weapons Networks	Various	Various	1.403									
Web Enabled Cockpit	Various	Various	1.280									
<b>Subtotal Product Development</b>			<b>60.128</b>	<b>16.893</b>		<b>20.487</b>		<b>20.633</b>				
<b>Total Cost</b>			<b>60.128</b>	<b>16.893</b>		<b>20.487</b>		<b>20.633</b>				

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