| Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Information Systems Agency | | | | | | | | | | DATE: February 2010 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | | | | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | | | | | | | |
| **COST ($ in Millions)** | **FY 2009 Actual** | **FY 2010 Estimate** | **FY 2011 Base Estimate** | **FY 2011 OCO Estimate** | **FY 2011 Total Estimate** | **FY 2012 Estimate** | **FY 2013 Estimate** | **FY 2014 Estimate** | **FY 2015 Estimate** | **Cost To Complete** | **Total Cost** |
| Total Program Element | 16.002 | 16.435 | 16.629 | 0.000 | 16.629 | 9.102 | 8.913 | 9.221 | 9.345 | Continuing | Continuing |
| E65: *Modeling and Simulation* | 6.395 | 7.163 | 8.526 | 0.000 | 8.526 | 6.048 | 6.114 | 6.318 | 6.397 | Continuing | Continuing |
| KCD: *UHF SATCOM Integrated Waveform* | 6.986 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| T62: *GIG Systems Engineering and Support* | 2.621 | 9.272 | 8.103 | 0.000 | 8.103 | 3.054 | 2.799 | 2.903 | 2.948 | Continuing | Continuing |

**A. Mission Description and Budget Item Justification**

The Global Information Grid (GIG) Enterprise Wide Systems Engineering (EWSE) project resolves near term (1 to 3 years) high-priority technical issues defined by Assistant Secretary of Defense-Networks and Information Integration (ASD-NII) and DISA, that impact operational capabilities affecting GIG end-to-end (E2E) interoperability and performance. The Chief Technology Officer (CTO) supports efforts that will strengthen the delivery of critical Global Information Grid (GIG) products, services, and capabilities to the warfighter through the establishment of DISA technology positions, strategies, frameworks, and roadmaps, as well as technology development and insertion into DISA programs of record while also influencing Service/Agency program technology investments. The CTO provides the venue for technology assessment and insertion in DISA (and DoD) resulting in more efficient and effective technology investments and ultimately improved global, net-centric operations. This effort will support end-to-end reviews of all solutions, programs, and services to ensure all are consistent with GIG architecture and standards. This program supports definition of various aspects of evolving the GIG, including developing system architecture constructs for the GIG and components, providing engineering guidance for component evolution, including incorporation of new technology from industry. The program provides direct support to Military Services, COCOMS, OSD, and the Joint Staff as well as the DoD business and acquisition communities and the intelligence community. The Modeling and Simulation project provides architecture, systems engineering and end-to-end analytical functions for DISA and its customers, ensuring integrated capabilities to fulfill warfighter mission requirements. Continuous direct beneficiaries of these capabilities include DISN (DISA Network Services), Program Executive Office-Mission Assurance (PEO-MA), Joint Task Force-Global Network Operations (JTF-GNO), Enterprise Wide Systems Engineering (EWSE), Joint Communications Simulation System (JCSS) availability to all DoD, and continual taskings from other DISA programs/projects such as Net-Centric Enterprise Services (NCES), Thin Client, Centrixs Cross Enclave Requirement (CCER) (PEO-C2C), etc., for the special skills Modeling and Simulation offers. The Interoperability Enhancement Process (IEP) supports the resolution of Tactical Data Enterprise Services (TDES) implementation and issues resolution, the development of TDES capability, and TDES verification and certification. The overarching objective of the IEP will be to support the realization and maintenance of interoperable Net-Centric weapons, sensors, and Command and Control (C2) systems at the tactical edge. The Ultra High Frequency (UHF) satellite communications (SATCOM) system provides the US Department of Defense (DoD) and other US Government departments and agencies critical beyond line-of-sight communications for tactical and special forces operations. UHF SATCOM is currently the only

military system that enables users to operate communications on-the-move and under all weather conditions and cover. Demand-Assigned Multiple Access Compatible (DAMA-C) UHF SATCOM is an essential capability supporting combat search and rescue missions, and other safety-of-life operations. It will provide significantly improved sharing of legacy UHF satellite resources for tens of thousands of disadvantaged user terminals, mainly handhelds deployed as survival radios, or as support to Special Operations Forces. Any loss of funding for development of DAMA-C capability would negatively impact the US Government's ability to save lives, to share scarce satellite resources, and to increase the utility of many already fielded radios.

Lack of funding will result in extra costs (inefficient capacity planning) to the DISN; decreased DISN performance; termination of the standard DoD-wide JCSS modeling tool for Joint Tactical communications; inability to model the impact of new network technologies and the projected impact/performance/scalability of new net-centric applications. IEP risk of not funding years 2 and 3 is that DoD would continue to have a limited ability to ensure data throughout DoD is visible, available, and usable when needed and hinders any accelerated decision cycles. Not creating the IEP/ Joint- Interoperable Systems Management and Requirements Transformation (J-iSMART) Portfolio cohesive decision-support environment that clearly depicts the relationships between warfighter needs and a common data collection strategy increases the difficulty in establishing a DoD-wide basis for achieving Tactical Data Link (TDL) interoperability and data sharing in a net-centric environment. If CTO is not funded the DoD will lose this crucial capability to the warfighter that ensures engineering rigor, technical soundness, and alignment with GIG architectural constructs in the products, services, and capabilities delivered to the Services, COCOMS, OSD, Joint Staff as well as the DoD business and acquisition communities and the intelligence community.

**B. Program Change Summary ($ in Millions)**

| | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
|---|---|---|---|---|---|
| Previous President's Budget | 15.852 | 17.655 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 16.002 | 16.435 | 16.629 | 0.000 | 16.629 |
| Total Adjustments | 0.150 | -1.220 | 16.629 | 0.000 | 16.629 |
| • Congressional General Reductions | | -1.220 | | | |
| • Congressional Directed Reductions | | 0.000 | | | |
| • Congressional Rescissions | 0.000 | 0.000 | | | |
| • Congressional Adds | | 0.000 | | | |
| • Congressional Directed Transfers | | 0.000 | | | |
| • Reprogrammings | 0.000 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.150 | 0.000 | 16.629 | 0.000 | 16.629 |

| Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Information Systems Agency | DATE: February 2010 |
|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* |

**Change Summary Explanation**

The increase of $0.150 million in FY 2009 supported Enterprise Wide Systems Engineering (EWSE) IPTs to resolve near term technical interoperability issues affecting the GIG. The adjustments of -$1.146 million and -$0.074 million in FY 2010 are due to Congressional taxes for Federally Funded Research Development Center (FFRDC) related costs and Economic Assumptions, respectively. The DoD did not estimate FY 2011 cost when the FY 2010 President's Budget was prepared.

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | | DATE: February 2010 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>E65: *Modeling and Simulation* | |

| COST ($ in Millions) | FY 2009 Actual | FY 2010 Estimate | FY 2011 Base Estimate | FY 2011 OCO Estimate | FY 2011 Total Estimate | FY 2012 Estimate | FY 2013 Estimate | FY 2014 Estimate | FY 2015 Estimate | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E65: *Modeling and Simulation* | 6.395 | 7.163 | 8.526 | 0.000 | 8.526 | 6.048 | 6.114 | 6.318 | 6.397 | Continuing | Continuing |
| Quantity of RDT&E Articles | | | | | | | | | | | |

**A. Mission Description and Budget Item Justification**

The Modeling and Simulation project provides architecture, systems engineering and end-to-end analytical functions for DISA and its customers, ensuring integrated capabilities to fulfill warfighter mission requirements. Modeling and Simulation performs a broad spectrum of activities for the DoD communications planning and investment strategy, to include: application assessments, contingency planning, network capacity planning and diagnostics, and systems-level modeling and simulation. Modeling and Simulation develops across-theater information awareness for Combatant Commands through application solutions for integrated networks, to include DoD's missions in Iraq and Afghanistan and the Defense Information Systems Network (DISN), by: (1) supporting the development and implementation of GIG Enterprise Wide Systems Engineering (EWSE) processes essential to evolving the GIG in a manner that enables interoperability and end-to-end performance for critical GIG programs; (2) developing standardized DISA systems analyses and integration processes to improve systems integration across DISA for all DISA developed communication systems and services; and (3) providing the underlying modeling and simulation and analytical support for end-to-end DISA and DoD systems engineering and assessment. These operations are to provide DoD decision makers, from the OSD level to the warfighter, with services and a suite of tools capable of identifying key points of impact on DoD command and control information systems and recommending tradeoffs within the GIG configuration with regard to prioritized performance, availability, and security. This effort will provide improved performance and cost-avoidance in the selected transitions and network deployments; improved network performance and efficient topology changes via accurate capacity design, as facilitated by insightful traffic analyses; improved performance of applications for DoD and the warfighter; efficient means of troubleshooting and enterprise applications redesign; and reduced risk in the program products provided to the warfighter.

The Interoperability Enhancement Process (IEP) supports the resolution of Tactical Data Enterprise Services (TDES) implementation and issues resolution, the development of TDES capability, and TDES verification and certification. The overarching objective of the IEP will be to support the realization and maintenance of interoperable Net-Centric weapons, sensors, and C2 systems at the tactical edge. The IEP will utilize a jointly defined and developed interoperability tool set to determine the TDES interoperability capabilities of systems. Interoperability shortfalls (gaps) will be identified for each system. The gaps will be based on weapon, sensor or C2 system demonstrated information exchange capabilities analyzed with respect to the current policies, doctrines, architectures, operational concepts, concepts of employment, standards, roadmap(s), and the JMTs that collectively form the standard view of the TDES Architecture. The interoperability gaps will be documented to provide each system a common format implementation specification for TDES Interoperability. This requirements process will be updated consistent with the maintenance/upgrade cycle for each system. For emerging (future) systems, the IEP will be conducted prior to Milestone "C" of the platform. DISA will support this process via: the establishment and maintenance of the IEP databases that contain platform system interoperability capabilities; the Jointly approved standard view

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>E65: *Modeling and Simulation* |

of the TDES Architecture; and the implementation specification(s) for TDES Interoperability. The Services will be responsible for development of the material solutions that provide system compliance with their respective implementation specification(s) for TDES Interoperability. The Services will update the DISA IEP databases with system interoperability capabilities as validated by flag level review. Validated data will include capability deviations and schedules for "full" Joint certification. A second component of the IEP will provide warfighters operationally relevant information to maximize employment of Net enabled systems. Services have agreed upon common capability characteristics to identify system performance in a joint environment. The collection of these efforts, when synchronized across the services and available to joint warfighters via Net-centric capabilities is called Joint Capabilities and Limitations.

**B. Accomplishments/Planned Program ($ in Millions)**

| | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
|---|---|---|---|---|---|
| Modeling and Simulation | 6.395 | 7.163 | 8.526 | 0.000 | 8.526 |
| *FY 2009 Accomplishments:*<br>Funded Enterprise Wide Systems Engineering (EWSE) IPTs to resolve near term technical interoperability issues affecting the GIG. Developed GIG technical implementation guidance, High Assurance Internet Protocol Encryption (HAIPE) Peer Discovery interoperability reference architecture and developed recommendations for implementing encryption of unclassified traffic at different network layers.<br><br>• Modeling and Simulation produced: Strategic DISN IP and Transport Asynchronous Transfer Module (ATM) elimination and Technology Refresh models for the Pacific and CONUS theaters. A DISN goal is to eliminate the ATM layer of the current network, for both cost-efficiencies and to achieve IP convergence.<br>• Strategic IP modeling and analysis for NIPRNET Hardening Initiatives, which greatly strengthens the NIPRNET Information Assurance (IA) defenses in exchanges with the Internet. Modeling and analysis helps ensure no unintended impacts on performance for the users by the new insertions into the network, as well as the expected impact on Internet exchanges.<br>• DoD Internet usage and growth projection models and analyses for capacity planning and information assurance initiatives. | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>E65: *Modeling and Simulation* |

**B. Accomplishments/Planned Program ($ in Millions)**

| | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
|---|---|---|---|---|---|
| • Software release for Joint Communication Simulation Support (JCSS); JCSS training class for users of JCSS software; JCSS User Conference for discussion of new requirements and developments among the widespread community of users.<br>• Defense Switched Network (DSN) performance reporting and outage scenario assessments.<br>• Baselining of the allied and coalition partners Combined Cross Enclave Requirements (CCER) communications in Southwest Asia (SWA).<br>• HAIPE - Border Gateway Protocol Peer Discovery analyses.<br><br>The Interoperability Enhancement Process executed Stage 1 initiation – Data Acquisition/Discovery. Minimum data requirements established. Data collection efforts initiated for development of the data forms in order to exchange data. FY 2009 data exercise conducted defined specific collection of units and data items. Benefit of FY 2009 efforts: established flow of authoritative, actionable information from the tactical community and evaluation of the operational utility of the information. Benchmarked the level of effort required to maintain the data flow and assess what infrastructure is required to improve the information flow.<br><br>*FY 2010 Plans:*<br>Funds EWSE efforts to resolve near term (1 to 3 years) high-priority technical issues impacting operational capabilities affecting GIG end-to-end (E2E) performance. Produce a consolidated/unified E2E Service Oriented Architecture (SOA) for the GIG core infrastructure services, GIG enterprise level technical guidance for NetOps data interoperability, and perform modeling and simulation of E2E application performance of enterprise services such as NCES in different tactical network/transport environments.<br>This project supports DoD Programs of Record, JTF-GNO, OASD NII/DoD CIO, JCS/J6 and DoD Components. The cost per project/effort is $0.675 million.<br><br>Modeling and Simulation funding supports continued, enhanced, modeling capabilities that will provide: | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | **R-1 ITEM NOMENCLATURE**<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | **PROJECT**<br>E65: *Modeling and Simulation* |

**B. Accomplishments/Planned Program ($ in Millions)**

| | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
|---|---|---|---|---|---|
| • DISN IP and Transport Capacity Planning models for FY 2011 - CONUS, SWA, EUROPE, and PACIFIC theaters, to support decision-making on DISN changes to meet evolving user requirements.<br>• JCSS software release, with integration of new communication device models; model development guide; training of new users.<br>• DoD Internet usage and growth projection models and analyses for capacity planning and information assurance initiatives, for DISA Director, JTF-GNO, and Network Services (NS) decisions.<br>• New/enhanced modeling tools to provide inputs to network planning in support of UCR goals of the evolving DISN, with focus on the transition of DSN from its current circuit-switched technology to an IP service.<br>• Continued IP modeling and analyses for new/augmented NIPRNET Hardening Initiatives.<br>• Performance measurements and analyses to guide Thin Client and DCO program decisions.<br>• Enterprise Wise Systems Engineering (EWSE) modeling support.<br><br>The Interoperability Enhancement Process conducts a proof of concept for IEP capability at a selected Joint Exercise. Conduct initial Joint Mission Area / Military Utility Assessment. Submit Issue Paper for IEP institutionalization in May of FY 2010. Support Net Centric and C2 Capability Portfolio Managers with Joint Mission Area interoperability assessments. Five Link 16 Platforms from each Service with documented bit-level implementation data: APIS / PIDD / PRDD. Map Joint- Interoperable Systems Management and Requirements Transformation (J-iSMART) program capabilities to JCIDS Documentation, (e.g. Information Support Plan (ISP), System View (SV-11) and Net-Ready Key Performance Parameters (NR-KPPs). Define and outline integration requirements with Joint Caps & Lims. Develop a Security Classification Policy Letter and staff a DODI IEP/Joint-iSMART Security Classification Directive.<br><br>*FY 2011 Base Plans:*<br>Funds will provide continual EWSE efforts to resolve near term (1 to 3 years) high-priority technical issues impacting operational capabilities affecting GIG end-to-end (E2E) performance in transport, computing services, applications, information assurance (IA), NetOps and Enterprise Services. | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>E65: *Modeling and Simulation* |

**B. Accomplishments/Planned Program ($ in Millions)**

| | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
|---|---|---|---|---|---|
| Modeling and simulation funding will provide continued, enhanced, modeling capabilities that will provide:<br>• DISN IP and Transport Capacity Planning models, to include addressing FY 2012 Technology Refresh and new user requirements in each theater when identified.<br>• DoD Internet traffic models and analyses for capacity planning and IA initiatives, for DISA Director, JTF-GNO, and NS.<br>• New/enhanced modeling tools to provide inputs to network planning in support of UCR and end-end security goals of the evolving DISN, to ensure timely support of the plans/stages in the DISN Technical Evolution Plan and GIG Convergence Master Plan.<br>• Enhanced modeling and instrumentation techniques for net-centric applications planning and tuning.<br>• Modeling support for customer needs in DISA program/project decisions and planning.<br><br>Increased funding in FY 2011 will permit broader revision/addition to modeling tools and techniques to more comprehensively represent the future worldwide DISN of IP convergence and widespread HAIPE deployments, to include lessons learned from pilot Real Time Services deployments in FY10. DISN modeling must support meeting the performance and reliability requirements of voice, video, data and virtually dedicated services to the users in an IP-converged architecture.<br><br>Lack of funding in FY 2011 would cause DoD to continue to have a limited ability to ensure data throughout DoD is visible, available, and usable when needed and hinders any accelerated decision cycles. Not creating the IEP/Joint iSMART Portfolio cohesive decision-support environment that clearly depicts the relationships between warfighter needs and a common data collection strategy increases the difficulty in establishing a DoD wide basis for achieving Tactical Data Link (TDL) interoperability and data sharing in a net-centric environment. Limited funding would add extra costs (inefficient capacity planning) to the DISN; decrease DISN performance; terminate the standard DoD-wide Joint Communications Simulation Support (JCSS) modeling tool for Joint Tactical | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>E65: *Modeling and Simulation* |

**B. Accomplishments/Planned Program ($ in Millions)**

| | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
|---|---|---|---|---|---|
| Communications Planning; and create an inability to model the impact of new network technologies and the projected impact/performance/scalability of new net-centric applications. | | | | | |
| Accomplishments/Planned Programs Subtotals | 6.395 | 7.163 | 8.526 | 0.000 | 8.526 |

**C. Other Program Funding Summary ($ in Millions)**

| Line Item | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total | FY 2012 | FY 2013 | FY 2014 | FY 2015 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • O&M, DW/PE 0302019K: *O&M, DW* | 18.154 | 19.348 | 16.868 | | 16.868 | 18.047 | 20.513 | 20.937 | 21.190 | Continuing | Continuing |

**D. Acquisition Strategy**

The GIG EWSE project uses a number of contractors for technical IPT support, and piloting and validation support with SRA, Booz Allen Hamilton, Northrop Grumman, Lockheed Martin and Raytheon being the main providers for this support. These companies are uniquely qualified to provide the necessary level of technical support needed to address GIG end-to-end performance issues.

Modeling and Simulation uses a range of contractors for modeling support to the various projects. Contractors range from small to large business, dominantly using open competition methods and Firm Fixed Price (FFP) tasks, and seeking multi-year (base plus option years) contracts as possible. Support includes network modeling tool and processes development to adapt to ever-evolving OSD/DISA programs and projects, and analyses, capacity planning and network redesign using the models. Some specific support (e.g., integration with proprietary OPNET software) will require contracting with OPNET (e.g., sole source). Federally Funded Research and Development Centers (FFRDC) considered as well, dependent upon the task.

The Interoperability Enhancement Process funds are executed via Military Inter-departmental Purchase Requests (MIPR) with associated Service Level Agreements to USAF and Navy IAW the execution of IEP Management plan.

**E. Performance Metrics**

Modeling and Simulation measures its performance by determining the successful execution of processes, sub-processes, and procedures conducted by individual action officers, and from customer feedback. Individual action officers measure technical performance by constantly validating customer requirements, continuously monitoring the fidelity of the model and improving it as needed, and iteratively assessing the correctness of simulation results. Reviews with the customer on each

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>E65: *Modeling and Simulation* |

significant analysis/modeling result, as well as close interaction throughout each task, assess with surety that the product has met customer expectations and is truly useful to them in their decisions and planning.

The IEP utilizes the Joint set of Net-Ready Key Performance Parameters (NR-KPPs) as the metrics for interoperability assessment. These NR-KPPs are applied to all legacy or new weapons, sensors and C2 systems. iSmart tracking matrix measures data reuse, and data validation process with feedback loops to validate data based upon JITC testing results.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Defense Information Systems Agency | | | DATE: February 2010 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>E65: *Modeling and Simulation* | |

**Product Development ($ in Millions)**

| | | | | FY 2010 | | FY 2011 Base | | FY 2011 OCO | | FY 2011 Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Joint Communication Simulation Systems | SS/FFP | OPNET Tech, Inc.<br>Bethesda, MD | 1.262 | 0.880 | Aug 2010 | 0.880 | Aug 2011 | 0.000 | | 0.880 | Continuing | Continuing | 3.800 |
| IP Traffic Navigator | C/CPFF | APPTIS<br>Chantilly, VA | 0.514 | 0.303 | Jan 2010 | 0.320 | Jan 2011 | 0.000 | | 0.320 | Continuing | Continuing | 0.873 |
| Modeling and Simulation Tools | SS/FFP | Noblis<br>Falls Church, VA | 0.632 | 0.340 | Jan 2010 | 0.340 | Jan 2011 | 0.000 | | 0.340 | Continuing | Continuing | 0.980 |
| JCSS | C/FFP | Booz Allen & Hamilton<br>McLean, VA | 1.092 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | 1.092 |
| Enterprise Wide Systems Engineering (EWSE) 1 | C/FFP | Northrop Grumman<br>Fairfax, VA | 1.784 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | 1.784 |
| Enterprise Wide Systems Engineering (EWSE) 2 | C/FFP | NRL<br>Washington, DC | 0.100 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | 0.100 |
| Enterprise Wide Systems Engineering (EWSE) 3 | C/CPFF | TBD<br>TBD | 0.161 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | 0.161 |
| Enterprise Wide Systems Engineering (EWSE) 4 | C/FFP | TBD<br>TBD | 0.000 | 1.100 | Dec 2009 | 1.100 | Dec 2010 | 0.000 | | 1.100 | Continuing | Continuing | 3.300 |
| Enterprise Wide Systems Engineering (EWSE) 5 | C/CPFF | TBD<br>TBD | 0.000 | 0.426 | Dec 2009 | 0.500 | Dec 2010 | 0.000 | | 0.500 | Continuing | Continuing | 0.500 |
| | C/CPFF | TBD | 0.000 | 1.670 | Mar 2010 | 1.439 | Mar 2011 | 0.000 | | 1.439 | Continuing | Continuing | 3.147 |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Defense Information Systems Agency | | | DATE: February 2010 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>E65: *Modeling and Simulation* | |

**Product Development ($ in Millions)**

| | | | | FY 2010 | | FY 2011 Base | | FY 2011 OCO | | FY 2011 Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Enterprise Wide Systems Engineering (EWSE) 6 | | TBD | | | | | | | | | | | |
| Enterprise Wide Systems Engineering (EWSE) 7 | MIPR | Defense & Military Agencies Defense & Military Agencies | 1.420 | 2.044 | Dec 2009 | 3.547 | Dec 2010 | 0.000 | | 3.547 | Continuing | Continuing | 7.011 |
| | | Subtotal | 6.965 | 6.763 | | 8.126 | | 0.000 | | 8.126 | | | 22.748 |

**Remarks**

**Test and Evaluation ($ in Millions)**

| | | | | FY 2010 | | FY 2011 Base | | FY 2011 OCO | | FY 2011 Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Net-centric Applications | SS/CPFF | Comptel Arlington, VA | 1.272 | 0.400 | Jan 2010 | 0.400 | Jan 2011 | 0.000 | | 0.400 | Continuing | Continuing | 1.200 |
| | | Subtotal | 1.272 | 0.400 | | 0.400 | | 0.000 | | 0.400 | | | 1.200 |

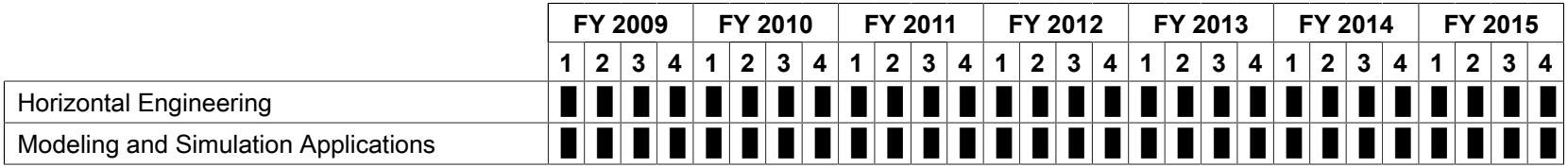
**Remarks**

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Defense Information Systems Agency | | | DATE: February 2010 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>E65: *Modeling and Simulation* | |

| | Total Prior Years Cost | FY 2010 | | FY 2011 Base | | FY 2011 OCO | | FY 2011 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Project Cost Totals | 8.237 | 7.163 | | 8.526 | | 0.000 | | 8.526 | | | 23.948 |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2011 Defense Information Systems Agency | | | DATE: February 2010 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>E65: *Modeling and Simulation* | |



| Exhibit R-4A, RDT&E Schedule Details: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | **R-1 ITEM NOMENCLATURE**<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | **PROJECT**<br>E65: *Modeling and Simulation* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Event** | **Quarter** | **Year** | **Quarter** | **Year** |
| Horizontal Engineering | 1 | 2009 | 4 | 2015 |
| Modeling and Simulation Applications | 1 | 2009 | 4 | 2015 |

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | | DATE: February 2010 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>KCD: *UHF SATCOM Integrated Waveform* | |

| COST ($ in Millions) | FY 2009 Actual | FY 2010 Estimate | FY 2011 Base Estimate | FY 2011 OCO Estimate | FY 2011 Total Estimate | FY 2012 Estimate | FY 2013 Estimate | FY 2014 Estimate | FY 2015 Estimate | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| KCD: *UHF SATCOM Integrated Waveform* | 6.986 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | | | | | | | | | | | |

**A. Mission Description and Budget Item Justification**

The Ultra High Frequency (UHF) satellite communications (SATCOM) system provides the US Department of Defense (DoD) and other US Government departments and agencies critical beyond line-of-sight communications for tactical and special forces operations. UHF SATCOM is currently the only military system that enables users to operate communications on-the-move and under all weather conditions and cover. The present UHF SATCOM constellation is aging, and remains extremely oversubscribed. The replacement system, the Mobile User Objective System (MUOS) initial operational capability (IOC) is well behind in schedule, and will not provide final operational capability (FOC) until approximately 2015. The MUOS deployment is also contingent on the Joint Tactical Radio System (JTRS) terminals being fielded across all services. Even after MUOS and JTRS are fully deployed, the need and demand for legacy UHF SATCOM will remain. DISA developed the Integrated Waveform (IW) as an improvement on the present UHF SATCOM waveforms. The IW implementation will more than double the UHF SATCOM capacity in accesses and data throughput. The majority of fielded UHF SATCOM terminals are software programmable and can be upgraded to IW by updating the software in the field. The Commander of US Central Command (CENTCOM) reports that for the present military operations in Iraq and Afghanistan, CENTCOM was provided additional UHF SATCOM channels from the USPACOM and USEUCOM apportionments. But even with these additional channels, existing UHF SATCOM bandwidth resources are not sufficient to meet CENTCOM needs.

**B. Accomplishments/Planned Program ($ in Millions)**

| | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
|---|---|---|---|---|---|
| UHF SATCOM Integrated Waveform | 6.986 | 0.000 | 0.000 | 0.000 | 0.000 |
| *FY 2009 Accomplishments:*<br>Continued development of IW initial capabilities in PRC-117F, PSC-5C/D, ARC-231, MD-1324A, and RT1828 radios for IW users. | | | | | |

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>KCD: *UHF SATCOM Integrated Waveform* |

**B. Accomplishments/Planned Program ($ in Millions)**

| | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
|---|---|---|---|---|---|
| *FY 2010 Plans:*<br>No funding in FY 2010<br><br>*FY 2011 Base Plans:*<br>No funding in FY 2011 | | | | | |
| Accomplishments/Planned Programs Subtotals | 6.986 | 0.000 | 0.000 | 0.000 | 0.000 |

**C. Other Program Funding Summary ($ in Millions)**

N/A

**D. Acquisition Strategy**

Based on current military operations, Joint Staff and STRATCOM evaluated and recommended which fielded terminals should be IW upgraded. The Net-Centric Functional Capabilities Board endorsed the recommendations and DISA took the lead for the software development for six families of deployed UHF SATCOM terminals. The terminal list includes: the PRC-117F developed by Harris Corporation; the PSC-5C, PSC-5D and ARC-231 developed by Raytheon Corporation; and the MD-1324 and RT-1828 developed by ViaSat Corporation. In addition, the software of the channel Control Terminal (CT) and the Satellite Access Control (SAC) system developed by ViaSat Corporation will be fielded to support IW. Fixed price contracts have been awarded for IW software development for the selected UHF SATCOM terminals. The software will be certified for waveform compliance and interoperability and then fielded. Software installation and operating instructions will be developed to assist the UHF SATCOM users with the software upgrades and operation of the terminals.

**E. Performance Metrics**

The system engineering for the IW waveform improvement for the initial IW capability is complete and published in the latest revisions of information technology standards for UHF SATCOM. Integrated Waveform demonstrations using UHF SATCOM terminals have proven the performance improvement of IW, in terms of link margin, voice quality and capacity. The performance of the terminal software developed by the various vendors will be measured against the IW standards interoperability and performance requirements. Standards compliance and interoperability testing will be performed by the Joint Interoperability Test Command (JITC) on each and every terminal type upgraded to IW. Currently, all terminals with the exception of the MD1324 and RT1828 have completed initial capability testing at JITC. In addition, the following metrics have been implemented:

1. Planned versus actual schedule (difference in days) for major milestones/deliverables.

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | **R-1 ITEM NOMENCLATURE**<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | **PROJECT**<br>KCD: *UHF SATCOM Integrated Waveform* |

2. Number of planned versus actual funds spent.
3. Adherence of contractor deliverables to SOW specifications.
4. Compliance with Performance Plans contained in contracted efforts.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Defense Information Systems Agency | | | DATE: February 2010 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>KCD: *UHF SATCOM Integrated Waveform* | |

**Product Development ($ in Millions)**

| | | | | FY 2010 | | FY 2011 Base | | FY 2011 OCO | | FY 2011 Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Integrated Waveform software development for deployed legacy terminals 1 | C/FFP | Harris Corp Rochester,NY | 14.817 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | 17.817 |
| Integrated Waveform software development for deployed legacy terminals 2 | C/FFP | Raytheon Corp Ft.Wayne, IN | 12.674 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | 12.674 |
| Integrated Waveform software development for deployed legacy terminals 3 | C/FFP | ViaSat Corp Carlsbad, CA | 1.547 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | 4.547 |
| Channel Controller (CC) Software development | C/FFP | ViaSat Corp Carlsbad, CA | 9.318 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | 9.318 |
| CC terminal Software development | C/FFP | Gen. Dynamics Scottsdale, AZ | 1.824 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | 1.824 |
| Integrated Broadcast Service Software development | C/FFP | Xenotran Linthicum Heights, MD | 4.604 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | 4.604 |
| | | **Subtotal** | 44.784 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | | 50.784 |

**Remarks**

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Defense Information Systems Agency | | | DATE: February 2010 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>KCD: *UHF SATCOM Integrated Waveform* | |

**Support ($ in Millions)**

| | | | | FY 2010 | | FY 2011 Base | | FY 2011 OCO | | FY 2011 Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Engineering & Help Desk Support | C/FFP | Able Comm. Sterling, VA | 9.524 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | 10.017 |
| Fielding | C/FFP | Able Comm. Sterling, VA | 0.746 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | 0.746 |
| | | Subtotal | 10.270 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | | 10.763 |

**Remarks**

**Test and Evaluation ($ in Millions)**

| | | | | FY 2010 | | FY 2011 Base | | FY 2011 OCO | | FY 2011 Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Terminal certification testing | Various/ Various | JITC Various Contracts<br>JITC Various Contracts | 3.792 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | 4.285 |
| | | Subtotal | 3.792 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | | 4.285 |

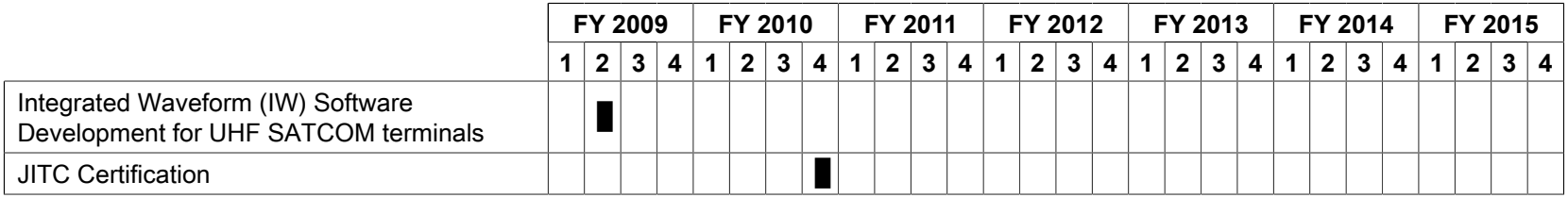
**Remarks**

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Defense Information Systems Agency | | | DATE: February 2010 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>KCD: *UHF SATCOM Integrated Waveform* | |

| | Total Prior Years Cost | FY 2010 | | FY 2011 Base | | FY 2011 OCO | | FY 2011 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Project Cost Totals | 58.846 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | | 65.832 |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>KCD: *UHF SATCOM Integrated Waveform* |



| Exhibit R-4A, RDT&E Schedule Details: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | **R-1 ITEM NOMENCLATURE**<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | **PROJECT**<br>KCD: *UHF SATCOM Integrated Waveform* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Event** | **Quarter** | **Year** | **Quarter** | **Year** |
| Integrated Waveform (IW) Software Development for UHF SATCOM terminals | 2 | 2009 | 2 | 2009 |
| JITC Certification | 4 | 2010 | 4 | 2010 |

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | | DATE: February 2010 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>T62: *GIG Systems Engineering and Support* | |

| COST ($ in Millions) | FY 2009 Actual | FY 2010 Estimate | FY 2011 Base Estimate | FY 2011 OCO Estimate | FY 2011 Total Estimate | FY 2012 Estimate | FY 2013 Estimate | FY 2014 Estimate | FY 2015 Estimate | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T62: *GIG Systems Engineering and Support* | 2.621 | 9.272 | 8.103 | 0.000 | 8.103 | 3.054 | 2.799 | 2.903 | 2.948 | Continuing | Continuing |
| Quantity of RDT&E Articles | | | | | | | | | | | |

**A. Mission Description and Budget Item Justification**

The DISA Chief Technology Officer (CTO) provides the venue for technology assessment and insertion in DISA (and DoD) that will result in more efficient and effective technology investments and ultimately improved global, net-centric operations. CTO core engineering and technical support of the DISA programs implementing the GIG involves technical research and analysis of state-of-the-art and emerging technologies, security, architectures, and application frameworks. This involves the identification and recommendation of innovative engineering techniques, technologies and products that are critical to the DISA in its role of instantiating the GIG architecture; the support of information exchanges with the Services, OSD, the COCOMS, and the Joint Staff to identify opportunities, issues, and solutions to improve the DISA products; and, facilitation and harmonization of cross-corporate programs relative to the DISA programs and the GIG. This program provides direct support to Military Services, COCOMS, OSD, and the Joint Staff as well as the DoD business and acquisition communities and the Intelligence Community. The end result is more efficient and effective technology investments and ultimately improved global, net-centric operations which are delivered via GIG products, services, and capabilities to the Military Services, COCOMS, OSD, and the Joint Staff as well as the DoD business and acquisition communities and the IC.

Demand-Assigned Multiple Access Compatible (DAMA-C) is an essential capability supporting combat search and rescue missions, and other safety-of-life operations. The DAMA-C program will provide significantly improved sharing of legacy Ultra High Frequency satellite resources for tens of thousands of disadvantaged user terminals, mainly handhelds deployed as survival radios, or as support to Special Operations Forces. DAMA-C will operate within existing DAMA systems using legacy UHF Satellite Communications; DAMA provides better access to legacy UHF SATCOM by allowing sharing of channels, but handheld radios do not have the power or security features needed to enter current DAMA systems. DAMA-C creates subsystems within DAMA for handhelds. Development of a DAMA-C standard and infrastructure for IOC will cost $11.7 million, including assessment and/or certification by both JITC and NSA, and including commencement of fielding. FY 2010 ($7.7 million) funding will support completion of engineering and development of the DAMA-C Military Standard specification; and for design, hardware fabrication and software generation for the DAMA-C controller infrastructure and terminals for IOC. FY 2011 ($4 million) funding will support completion of IOC development, assessment/certification, fielding of infrastructure.

**B. Accomplishments/Planned Program ($ in Millions)**

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>T62: *GIG Systems Engineering and Support* |

**B. Accomplishments/Planned Program ($ in Millions)**

| | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
|---|---|---|---|---|---|
| Subtotal | 2.621 | 9.272 | 8.103 | 0.000 | 8.103 |

*FY 2009 Accomplishments:*

FY 2009 funding of $2.621 million continued CTO core engineering and technical support for Technology Readiness Assessments of several key DISA programs of record; GIG FDCE/ FORGE.mil foundational efforts; cloud computing concept development, refinement and technology demonstrations; demonstration of broadcast-to-desktop video services in support of DISN Video Services (DVS) using non-traditional fielded technology; the development of the DISA and (proposed) DOD Wireless Strategy and Roadmap; and focused technology investigation into several commercial product assessments for the possible inclusion of these capabilities into the next generation GIG to improve information sharing, information security, and network performance.

*FY 2010 Plans:*

FY 2010 funding of $9.272 million continues CTO core support of Technology Readiness Assessments of several key DISA programs of record; cloud computing architecting and capability/ service modeling; and establishment of CTO Technology Management Framework to include a technology “Watch-List”, outreach, and focused investigation efforts of commercial and government sponsored product/service developments, to include technical assessments, for the possible inclusion of these capabilities into the next generation GIG to improve information sharing, information security, and network performance. In addition, continue support of the Thin-Client Joint Staff pilot and development of a complete systems analysis and model for extending Thin-Client to the enterprise (i.e. entire Joint Staff all COOCOMs). The increased funding of $6.651 million in FY 2010 completes engineering and development of DAMA-C Military Standard specification; and for design, hardware fabrication and software generation for the DAMA-C controller infrastructure and terminals for IOC. The DAMA-C waveform will support survival radios such as the Combat Survivor Evader Locator (CSEL) radio system, used exclusively as an emergency radio by downed pilots. Other handheld radios are also used by downed aircrews and for other survival applications, by special rescue teams and in other special circumstances, normally deep beyond enemy lines. DAMA-C will be deployed on tens of thousands of such software-defined handheld radios.

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>T62: *GIG Systems Engineering and Support* |

**B. Accomplishments/Planned Program ($ in Millions)**

| | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total |
|---|---|---|---|---|---|
| *FY 2011 Base Plans:*<br>FY 2011 funding of $8.103 million continues CTO core engineering and technical support for Technology Readiness Assessments of key DISA programs of record; stand-up of a inter-community (DoD and IC) cloud computing proof-of-concept resource and service capability; and refinement of methods and processes behind the CTO Technology Management Framework reflecting lessons-learned and customer/peer feedback as well as continued outreach and investigation of commercial and government sponsored products and services for possible inclusion into next generation GIG. More specifically, $1.5 million in FY 2011 will support the Joint Staff Thin Client Pilot capability to include Defense Enterprise Computing Center (DECC) hosting. In addition, it will support development and validation testing of the enterprise target and transition architectures, to include technology gap analysis and investigation into the incorporation of NCES common service offerings such as People Discovery, Service Security, and Enterprise Service Management. $4.0 million in FY 2011 will complete IOC development, assessment and/or certification, and to begin fielding of DAMA-C infrastructure for IOC.<br><br>If funding is reduced for this program, the DoD will lose the crucial capability to the warfighter that ensures engineering rigor, technical soundness, and alignment with GIG architectural constructs in the products, services, and capabilities delivered to the Services, COCOMS, OSD, Joint Staff as well as the DoD business and acquisition communities and the intelligence community. The additional impacts of not funding this effort include: not satisfying VCJCS Thin Client transformation requirement to DISA or the vision for DoD Net-centricity; and the missed opportunities for DISA to deliver on its strategic vision, share critical data in order to improve the time it takes between making decision and the execution of the decision, and to accelerate delivery of new software and cloud computing services. | | | | | |
| Accomplishments/Planned Programs Subtotals | 2.621 | 9.272 | 8.103 | 0.000 | 8.103 |

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>T62: *GIG Systems Engineering and Support* |

**C. Other Program Funding Summary ($ in Millions)**

| Line Item | FY 2009 | FY 2010 | FY 2011 Base | FY 2011 OCO | FY 2011 Total | FY 2012 | FY 2013 | FY 2014 | FY 2015 | Cost To Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|
| • O&M, DW/PE 0302019K : *O&M, DW* | 0.691 | 0.726 | 2.168 | | 2.168 | 2.233 | 2.472 | 2.236 | 2.279 | Continuing | Continuing |

**D. Acquisition Strategy**

These projects provide technical, engineering, and integration expertise to the DISA Chief Technology Officer (CTO) in support of the major GIG components, which include: GIG Enterprise Services (GES), Defense Information Systems Network (DISN), Satellite Communications (SATCOM), GIG Directory Service, Global Combat Support System (GCSS), Net-Enabled Command Capability (NECC), Teleport, Global Command and Control System (GCCS), Enterprise Services Management (ESM), Information Assurance (IA), Wireless Services, Net-Centric Enterprise Services (NCES), and other related components. These projects provide technical, engineering, and integration expertise to the DISA Chief Technology Officer (CTO) in support of Thin Client VCJCS initiatives. This effort will provide support to DISA and Joint Staff in its mission of providing an MLS Thin Client solution developed by AFRL for the DoD for GIG Enterprise Services. The Enterprise Thin Client MLS solution will transition into programs of record, to be delivered in the DISA Computing Services Cloud. Through this project MITRE will support the definition and implementation of various aspects involving the GIG. MITRE will provide support to DISA in its mission of providing end-to-end systems engineering for the DoD for GIG Enterprise Services. MITRE will ensure that system integration and implementation is coordinated with other major C2 systems via its support to other C2 System Program Executive Offices. DAMA-C engineering support is being provided by Defense Microelectronics Activity (DMEA).

**E. Performance Metrics**

The CTO has developed different sets of metrics to ensure that whichever metrics are applied, they are relevant and have meaning to each project's purpose and projected outcome, consistent with DISA mission objectives, POR technology requirements and gaps, and CTO technology themes. For more traditional projects like Thin Client and cloud computing, performance is measured by achievement of project milestones and the acceptance/transition of these technologies/services/capabilities into programs of record or as a new, separate program/service offering to the DoD and IC communities. Each project will incorporate internal processes to enhance financial reporting and track contractor spending. Monthly reports provide timely information on contractor expenditures. The Program will utilize several web-based financial management tools to obtain budget and execution information and also evaluate additional internal measures, including timeliness of equipment purchases, travel, and demonstration support to assess if each requirement effectively meets overall mission requirements. For efforts funded under technology innovation that are designed to facilitate bringing critical, mid-term, and longer-term high-potential over-the-horizon technology into programs supporting the Agency mission and ultimately the warfighter, CTO will align with best commercial and government laboratory practices regarding idea maturation and eventual product development and deployment, with several projects failing but others maturing and providing the "game-changing" capabilities only available through true technology innovation. Regularly scheduled In-progress Program Reviews (IPRs) meetings to monitor status of engineering projects/tasks. Each current project/task is evaluated

| Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>T62: *GIG Systems Engineering and Support* |

in terms of how well the technical work is progressing and how allocated resources are being utilized. Adjustments to resources, schedules, and technical directions are made, as required. Future projects tasks are also discussed, thereby ensuring an integrated approach is maintained across all related project/task areas.

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Defense Information Systems Agency | | | DATE: February 2010 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>T62: *GIG Systems Engineering and Support* | |

**Product Development ($ in Millions)**

| | | | | FY 2010 | | FY 2011 Base | | FY 2011 OCO | | FY 2011 Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Engineering / Tech Serives | FFRDC | MITRE<br>McLean, VA | 19.764 | 1.032 | Oct 2009 | 1.632 | | 0.000 | | 1.632 | Continuing | Continuing | 22.428 |
| GIG-Technical Insertion Engineering | C/FFP | SRA, Inc.<br>Fairfax, VA | 1.211 | 0.410 | Oct 2009 | 0.851 | Oct 2010 | 0.000 | | 0.851 | Continuing | Continuing | 2.472 |
| Engineering / Tech Serives | MIPR | Defense Microelectronics Activity<br>N/A | 0.000 | 7.700 | Mar 2010 | 4.000 | Mar 2011 | 0.000 | | 4.000 | 0 | 11.700 | 11.700 |
| Engineering Support for Thin Client | MIPR | Air Force Research Laboratory<br>Air Force Research Laboratory | 0.000 | 0.000 | | 1.500 | Sep 2011 | 0.000 | | 1.500 | 0 | 1.500 | 1.500 |
| | | **Subtotal** | 20.975 | 9.142 | | 7.983 | | 0.000 | | 7.983 | 0.000 | 13.200 | 38.100 |

**Remarks**

**Support ($ in Millions)**

| | | | | FY 2010 | | FY 2011 Base | | FY 2011 OCO | | FY 2011 Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Industrial Tech Research | MIPR | DISA Computing Service | 0.051 | 0.130 | Oct 2009 | 0.120 | Oct 2010 | 0.000 | | 0.120 | Continuing | Continuing | 0.428 |

| Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>T62: *GIG Systems Engineering and Support* |

**Support ($ in Millions)**

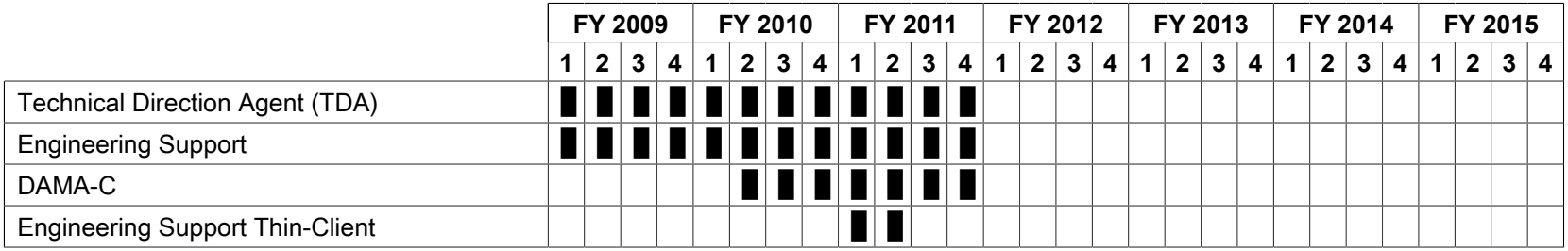
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Total Prior Years Cost | FY 2010 Cost | FY 2010 Award Date | FY 2011 Base Cost | FY 2011 Base Award Date | FY 2011 OCO Cost | FY 2011 OCO Award Date | FY 2011 Total Cost | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | (CSD) | | | | | | | | | | | |
| | | Subtotal | 0.051 | 0.130 | | 0.120 | | 0.000 | | 0.120 | | | 0.428 |

**Remarks**

| | Total Prior Years Cost | FY 2010 | | FY 2011 Base | | FY 2011 OCO | | FY 2011 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Project Cost Totals | 21.026 | 9.272 | | 8.103 | | 0.000 | | 8.103 | 0.000 | 13.200 | 38.528 |

**Remarks**

| Exhibit R-4, RDT&E Schedule Profile: PB 2011 Defense Information Systems Agency | | | DATE: February 2010 |
|---|---|---|---|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | R-1 ITEM NOMENCLATURE<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | PROJECT<br>T62: *GIG Systems Engineering and Support* | |



| Exhibit R-4A, RDT&E Schedule Details: PB 2011 Defense Information Systems Agency | | DATE: February 2010 |
|---|---|---|
| **APPROPRIATION/BUDGET ACTIVITY**<br>0400: *Research, Development, Test & Evaluation, Defense-Wide*<br>BA 7: *Operational Systems Development* | **R-1 ITEM NOMENCLATURE**<br>PE 0302019K: *Defense Info. Infrastructure Engineering and Integration* | **PROJECT**<br>T62: *GIG Systems Engineering and Support* |

## Schedule Details

| | Start | | End | |
|---|---|---|---|---|
| **Event** | **Quarter** | **Year** | **Quarter** | **Year** |
| Technical Direction Agent (TDA) | 1 | 2009 | 4 | 2011 |
| Engineering Support | 1 | 2009 | 4 | 2011 |
| DAMA-C | 2 | 2010 | 4 | 2011 |
| Engineering Support Thin-Client | 1 | 2011 | 2 | 2011 |