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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Office of Secretary Of Defense **DATE:** February 2010

APPROPRIATION/BUDGET ACTIVITY 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> BA 7: <i>Operational Systems Development</i>			R-1 ITEM NOMENCLATURE PE 0305199D8Z: <i>Net Centricity</i>								
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	12.277	1.467	29.831	0.000	29.831	30.434	31.230	32.009	32.649	Continuing	Continuing
199: <i>GIG Evaluation Facilities (GIG-EF) and GIG Enterprise-Wide Systems Engineering Advisory Activities</i>	12.277	1.467	29.831	0.000	29.831	30.434	31.230	32.009	32.649	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element will support enterprise-wide systems engineering, information management and information technology activities focused on the development, integration, testing and assessment of capabilities and applications in support of joint and coalition warfighter needs. Resources will support net centric collaborative development and operations to improve situational awareness, interoperability and performance and operational planning efforts. This program will instantiate enterprise-wide systems engineering guidance and provide technical solutions to solve enterprise interoperability and performance issues to enable the warfighter, intelligence, and business communities to meet their respective mission requirements. This program is funded under Budget Activity 7, Operational System Development, because it supports engineering development.

The Enterprise-Wide Systems Engineering (EW SE) project provides the engineering resources necessary for performing the Global Information Grid (GIG) enterprise-wide systems engineering oversight function and supplying effective guidance and direction for the ongoing evolution of the GIG from an end-to-end (E2) perspective. The project provides the capability needed to enable the DoD programs to synchronize and integrate GIG Net-Centric solutions to meet the E2E mission execution. Resources will be applied to enterprise-wide systems engineering topics related to the successful integration of several programs that will form the GIG in areas such as information assurance (IA), quality of service (QOS), network management, interface definition and standards selection, and routing protocols. The EW SE effort:

- Provides continuous oversight of the GIG's evolution
- Develops and evolves an enterprise-wide technical foundation to support the GIG evolution using an innovative, standard based technology approach and industry best practice
- Analyzes gaps and identifies new capabilities needed for enterprise-wide applications by synchronizing an integrating existing and future capabilities from the DoD programs
- Oversees cross-program and cross portfolio GIG experiments, pilots, demonstrations, testing and studies to ensure operational relevance of the technical foundation
- Provides oversight of technical and operational compliance with the technical foundation
- Maintains a GIG enterprise-wide technical foundation
- Provides an independent, overarching review of technology and interface standards.

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- Ensures technical issues are identified early and schedules synchronized to produce a jointly interoperable, timely and cost-effective architecture development.
- Prevents costly program reworks and restructuring, and more importantly, avoid delays in providing joint warfighter connectivity.

Note that FY09/10/11 funding disconnect resulted from duplicate cuts to a program titled Horizontal Fusion (HF) formerly part of this PE to support priority net centric transformation. These cuts not only zeroed out the HF funding but also cut deeply into the GIG Evaluation Facility and GIG End-to-End Systems Engineering Activities in FY2010.

B. Program Change Summary (\$ in Millions)

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Previous President's Budget	12.647	1.479	0.000	0.000	0.000
Current President's Budget	12.277	1.467	29.831	0.000	29.831
Total Adjustments	-0.370	-0.012	29.831	0.000	29.831
• Congressional General Reductions		0.000			
• 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			
• Program Adjustment	-0.370	-0.012	29.831	0.000	29.831

Change Summary Explanation

FY 2009: Program adjustment -0.370 million.
 FY 2010: FFRDC reduction -0.006 million, Economic Assumptions -0.006 million.
 FY 2011: Program adjustment 29.831 million.

C. Accomplishments/Planned Program (\$ in Millions)

	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011 Base</u>	<u>FY 2011 OCO</u>	<u>FY 2011 Total</u>
Net Centricity Plans and Accomplishments	12.277	1.467	29.831	0.000	29.831

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C. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p><i>FY 2009 Accomplishments:</i></p> <ul style="list-style-type: none"> – Ensured the GIG end-to-end quality of service framework evolves in accordance with the evolution of commercial products, services and technology – Refined the GIG IA, routing architecture, and network management framework to be consistent with evolving commercial products, services, and technology – Evolved the service oriented architecture for tactical users and translate to GIG technical guidance – Evolved the interface requirements for tactical network management and translate to GIG technical guidance – Evolved the HAIPE peer discovery service description and translate to GIG technical guidance – Evolved the HAIPE Peer Discovery Service solution for the tactical edge – Developed the draft EW SE Roadmap to define EWS SE strategic functions and provide overview of EW SE implementation plan – Engaged with DISA EW SE, Joint Staff and USD (AT&L) to develop guidance, directives and policies in support of the GIG enterprise-wide systems engineering – Developed and evolved the enterprise-wide technical foundation to support the GIG evolution – Evolved the NCID 3.0 to the GIG Technical Guidance (GTG) and multiple associated GIG Enterprise Service Profiles (GESPs) – Evolved the GIG Interoperability Compliance Assessment tool into the GTG Online tool and coordinated with multiple program offices on potential pilot efforts – Used the GIG Performance Evaluation Tool (PET) to support end to end enterprise level analysis and the NC Portfolio Management process – Completed and released PET 5.0 and completed performance analysis of terrestrial transport performance – Completed PET accuracy assessment for nearly 1000 satellite network architectures – Completed satellite bandwidth saving analysis for Southwest Asia – Began development of Scenario PET v1.0 for evaluation scenario level E2E performance 					

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C. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<ul style="list-style-type: none"> - Worked with Services and Defense Agencies to identify and address cross-program issues and influence programs to implement compatible designs that maximize end to end performance - Performed end-to-end analysis for encrypting unclassified traffic across the GIG - Performed end-to-end analysis for converging top secret WANs - Evaluated vulnerability of IPv6 networks and address issues - Evaluated cross program technical dependencies of the NECC program and address technical issues <p><i>FY 2010 Plans:</i> Due to the reduced funding level only a minimal, skeletal effort will be accomplished Most of the previously planned technical work required to continue to evolve the GIG to provide the basis for net centricity will need to shift to FY2011.</p> <ul style="list-style-type: none"> - Ensure DoD Policy evolves to support effective governance to implement an interoperable GIG infrastructure - Complete development of EW SE Roadmap and implementation plan - Evolve the GIG compliance effort through continued participation in the GTG Configuration Management Board (GTG CMB) and inputs to technical review - Work with Services and Defense Agencies to promote net centricity, identify and address cross-program issues and influence programs to implement compatible designs that maximize end to end performance - Evolve the GIG Technical Guidance to include developing additional GIG Enterprise Service Profiles (GESPs) in the areas of enterprise services and network management at the tactical edge - Work with Programs to pilot the PET and the GICA to refine the tools - Complete development of Scenario PET - Interface with Portfolio Managers, DISA, the Services and Joint Staff to promote and co-ordinate GIG EW SE effort 					

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C. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<p>The following efforts were planned but will be deferred due to the funding shortfall:</p> <ul style="list-style-type: none"> – Ensure the GIG end-to-end quality of service (QoS) framework evolves in accordance with the evolution of commercial products, services and technology – Examine the GIG “Black Core” vision and define a plan for evolving to this vision, tracking implementation of the plan, and focusing on the tactical edge – Develop the Cost Benefit Analysis and Implementation Plan for the Black Core, focusing on the tactical environment, to support future POMs – Implement the HAIPE Peer Discovery Service based on the previously developed specification that supports fielding of this capability prior to FY12 to allow for the migration to the Black Core – Develop a specification to support HAIPE Peer Discovery in the tactical environment – Evolve the GIG Interoperability Compliance Assessment (GICA) tool with new technical guidance, to include enterprise level information assurance guidance – Evolve the GIG Performance Evaluation Tool (PET) and Performance Assessment Framework (PAF) and use these tools as part of the end-to-end performance analysis process in support of the Capability Portfolio Management decisions <p><i>FY 2011 Base Plans:</i></p> <ul style="list-style-type: none"> – Ensure the GIG end-to-end quality of service framework evolves in accordance with the evolution of commercial products, services and technology, in particular at the tactical edge – Examine the GIG “Black Core” vision and define a plan for evolving to this vision, tracking implementation of the plan, and focusing on the tactical edge – Develop the Cost Benefit Analysis and Implementation Plan for the Black Core, focusing on the tactical environment, to support future POMs – Ensure DoD Policy continues to evolve to support effective governance to implement an interoperable GIG infrastructure – Continue to work with Services and Defense Agencies to promote net centricity, identify and address cross-program issues and influence programs to implement compatible designs that maximize end to end performance 					

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C. Accomplishments/Planned Program (\$ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
<ul style="list-style-type: none"> – Implement the HAIPE Peer Discovery Service based on the previously developed specification that supports fielding of this capability prior to FY12 to allow for the migration to the Black Core – Develop a specification to support HAIPE Peer Discovery in the tactical environment – Develop GIG Technical Guidance artifacts to enable seamless interoperability between NECC and several supporting Programs such as NCES, PKI, CDS, and JEDS. – Evolve Data interoperability standards to promote interoperability and insert into the GIG Technical Guidance. – Evolve the GIG Technical Guidance (GTG) to include developing GIG Enterprise Service Profiles (GESPs) in the areas of enterprise services and network management at the tactical edge – Evolve the GTG Online tool with new technical guidance, to include enterprise level information assurance guidance – Evolve the GIG Performance Evaluation Tool (PET) and Framework, and use this tool as part of the end-to-end performance analysis process in support of Capability Portfolio Management decisions – Utilize the PET, PAF, and GICA to conduct interoperability and E2E performance studies across programs and portfolios in support of warfighter requirements – Work with Programs to formally pilot the PET, PAF and GICA to refine the tools and gain their acceptance – Execute a GIG Program compliance effort and work with Portfolio Managers to determine cost/benefit of addressing compliance issues – Continue to interface with Portfolio Managers, DISA, the Services and Joint Staff to promote and coordinate GIG EWSE effort <p><i>FY 2011 OCO Plans:</i> N/A</p>					
Accomplishments/Planned Programs Subtotals	12.277	1.467	29.831	0.000	29.831

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APPROPRIATION/BUDGET ACTIVITY
0400: *Research, Development, Test & Evaluation, Defense-Wide*
BA 7: *Operational Systems Development*

R-1 ITEM NOMENCLATURE
PE 0305199D8Z: *Net Centricity*

D. Other Program Funding Summary (\$ in Millions)

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

User Activity and Participation - A key measurement of GIG-EF success is the amount of user/program participation and usage of the GIG-EF in support of Joint warfighting requirements.

- Contributions to GIG development and transition.
- Demonstrations in support of GIG overall goals.
- Number of GIG Enterprise-Wide Systems Engineering Oversight working group requirements addressed.
- Tangible products such as frameworks and design guidance used for program assessments and reviews.
- Streamlined business processes for documenting GIG enterprise-wide technical guidance.
- Prioritized listing of enterprise-wide technical issues.
- Technical solutions to enterprise interoperability and performance issues.
- Specific modifications to Programs based on the frameworks and guidance that improve program compatibility and end-to-end performance.
- A more collaborative environment where systems engineering organizations of individual GIG programs and the enterprise-wide systems engineering oversight organization mutually identify and solve issues related to maximizing end to end performance.

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