

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									DATE June 2001	
BUDGET ACTIVITY 05 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604740F Integrated Command & Control Applications					
COST (\$ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost	5,871	7,941	224	243	261	280	285	291	Continuing	TBD
2523 Product Lines	169	213	224	243	261	280	285	291	Continuing	TBD
2524 Reuse and Component Support	5,702	7,728	0	0	0	0	0	0	0	13,455
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

FY03-FY07 budget numbers do not reflect the DoD strategic review results.

(U) **A. Mission Description**  
 The goal of this program is to dramatically reduce the development time, costs, and risks associated with the acquisition and development of warfighting command and control (C2) systems by using families of pre-defined product lines to enhance common application use and reuse. Project 2523 minimizes development cost and time by using pre-defined product line architectures, supporting Defense Information Infrastructure Common Operating Environment (DII COE) acceptance testing to insure compliance and interoperability, and tested, reusable software components from mature programs. The use of common product line designs during development can improve software quality and reliability while reducing fielding times and overall life cycle costs. Project 2524, Reuse and Component Support (RCS) identifies, tests, and provides reusable software components and products to the IC2A program. The RCS project developed a software reuse strategy for the DoD; and is developing a National Product Line Asset Center (NPLACE) Software Reuse Repository (a Congressional special interest item) to manage a command center product line based on primarily commercial off-the-shelf (COTS) products. The IC2A program has determined that over 80% of the functionality of any command center software is common to all command centers. For programs using product line concepts, average savings of 56% in development costs and 66% in development time can be realized.

(U) **B. Budget Activity Justification**  
 This program is in budget activity 5 - Engineering and Manufacturing Development, due to the nature of the effort.

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DATE

June 2001

BUDGET ACTIVITY

**05 - Engineering and Manufacturing Development**

PE NUMBER AND TITLE

**0604740F Integrated Command & Control Applications**

(U) **C. Program Change Summary (\$ in Thousands)**

	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Total Cost</u>
(U) Previous President's Budget (FY 2001 PBR)	6,055	214	233	TBD
(U) Appropriated Value	6,096	8,014		
(U) Adjustments to Appropriated Value				
a. Congressional/General Reductions				
b. Small Business Innovative Research	-183			
c. Omnibus or Other Above Threshold Reprogram	-8			
d. Below Threshold Reprogram	-10			
e. Rescissions	-24	-73		
(U) Adjustments to Budget Years Since FY 2001 PBR			-9	TBD
(U) Current Budget Submit/FY 2002 PBR	5,871	7,941	224	TBD

(U) **Significant Program Changes:**

Congress added \$5.9 million in FY00 for Asset Software Reuse Program (\$2.8 million), National Product Line Asset Center (NPLACE)(\$2.6 million), and Air Force Product Line Engineering (\$0.5 million).

Congress added \$7.8 million in FY01 for Reuse and Component Support.

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<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)</b>								DATE <b>June 2001</b>		
BUDGET ACTIVITY <b>05 - Engineering and Manufacturing Development</b>					PE NUMBER AND TITLE <b>0604740F Integrated Command &amp; Control Applications</b>				PROJECT <b>2523</b>	
COST (\$ in Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
2523    Product Lines	169	213	224	243	261	280	285	291	Continuing	TBD
<p>FY03-FY07 budget numbers do not reflect the DoD strategic review results. BPAC 2523 does not reflect PA01-144, 27 Apr 01, in the amount of \$101,171 for FY 2001.</p> <p>(U) <b><u>A. Mission Description</u></b>                      The Product Lines Project forms a vital component of the Integrated Command and Control Applications (IC2A) program by providing pre-defined product line architectures with tested, reusable software components to build Command and Control (C2) systems. Using rapid prototyping techniques, a Product Line contractor can quickly tailor a product line to the warfighter's needs and deliver an integrated, combat-ready system. All product lines and components are based on Defense Information Infrastructure Common Operating Environment (DII COE) principles to ensure compliance and interoperability; make maximum use of open system architectures, industry standards, Commercial Off-the Shelf (COTS) products, and government furnished equipment; and incorporate multilevel security (MLS) features. This effort minimizes development risks by reusing proven software components from mature programs and by continuously testing new products and technologies against the product line designs to ensure integration and interoperability. The Product Line contractors develop and maintain the product line infrastructure in a collaborative, synergistic environment using validated, mature software engineering processes to help ensure the quality of the designs and components. Proven product line designs and tested software components reduce development costs, risks, and time for the user. New technologies, capabilities, and incremental developments are assessed and integrated into the designs as part of the product line development process to minimize any impact to the user.</p> <p>(U) <b><u>FY 2000 (\$ in Thousands)</u></b>                      (U) \$169                      Qualify components for product lines.                      (U) \$169                      Total</p> <p>(U) <b><u>FY 2001 (\$ in Thousands)</u></b>                      (U) \$213                      Qualify components for product lines.                      (U) \$213                      Total</p> <p>(U) <b><u>FY 2002 (\$ in Thousands)</u></b>                      (U) \$224                      Quality components for product lines.                      (U) \$224                      Total</p> <p>(U) <b><u>B. Project Change Summary</u></b></p>										
Project 2523			Page 3 of 10 Pages				Exhibit R-2A (PE 0604740F)			

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)</b>								DATE <b>June 2001</b>			
BUDGET ACTIVITY <b>05 - Engineering and Manufacturing Development</b>					PE NUMBER AND TITLE <b>0604740F Integrated Command &amp; Control Applications</b>			PROJECT <b>2523</b>			
<b>(U) C. Other Program Funding Summary (\$ in Thousands)</b>											
	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>Cost to</u>	<u>Total Cost</u>	
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>		
<b>(U)</b> Not applicable											
<b>(U) D. Acquisition Strategy</b>											
All major contracts within this Program Element were awarded after full and open competition.											
<b>(U) E. Schedule Profile</b>											
				<u>FY 2000</u>			<u>FY 2001</u>		<u>FY 2002</u>		
				1	2	3	4	1	2	3	4
<b>(U)</b>	Product Line Component Qualification (Ongoing)			*	*	*	*	X	X	X	X
	* - Completed Event										
	X - Planned Event										
	This is a support and management level of effort program. All activities are ongoing.										
Project 2523			Page 4 of 10 Pages				Exhibit R-2A (PE 0604740F)				

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE June 2001			
BUDGET ACTIVITY 05 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604740F Integrated Command & Control Applications			PROJECT 2523		
(U) <b>A. Project Cost Breakdown (\$ in Thousands)</b>										
						FY 2000		FY 2001		FY 2002
(U)	Product Line Component Qualification					169		213		224
(U)	Total					169		213		224
(U) <b>B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>										
(U) <b>Performing Organizations:</b>										
<u>Contractor or Government Performing Activity</u>	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Performing Activity EAC</u>	<u>Project Office EAC</u>	<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Product Development Organizations</u>										
Hughes	CPFF	19 Dec 92	N/A	N/A	453	0	0	0	0	453
Raytheon	CPFF	19 Dec 92	N/A	N/A	1,000	0	0	0	0	1,000
AGCS	CPFF	Dec 94	N/A	N/A	50	0	0	0	0	50
TRW	CPFF	12 Feb 97	N/A	N/A	0	0	0	0	0	0
Unisys	CPFF	29 Sep 93	N/A	N/A	30	0	0	0	0	30
Contractor Support	ITSP	Various	N/A	N/A	0	0	0	0	Continuing	TBD
<u>Support and Management Organizations</u>										
Program Office Support	Various	Various	N/A	N/A	874	169	213	224	0	1,480
<u>Test and Evaluation Organizations</u>										
Not applicable.										
(U) <b>Government Furnished Property:</b>										
<u>Item Description</u>	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Delivery Date</u>		<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Product Development Property</u>										
Not applicable.										

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)		DATE				
05 - Engineering and Manufacturing Development		June 2001				
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT
05 - Engineering and Manufacturing Development		0604740F Integrated Command & Control Applications				2523
<b>(U) Government Furnished Property Continued:</b>						
<u>Support and Management Property</u>						
<u>Test and Evaluation Property</u>						
		<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>
		<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>
						<u>Total</u>
<u>Subtotals</u>						
Subtotal Product Development		1,533	0	0	0	TBD
Subtotal Support and Management		874	169	213	224	0
Subtotal Test and Evaluation						
Total Project		2,407	169	213	224	TBD

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<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2A Exhibit)</b>									DATE <b>June 2001</b>			
BUDGET ACTIVITY <b>05 - Engineering and Manufacturing Development</b>					PE NUMBER AND TITLE <b>0604740F Integrated Command &amp; Control Applications</b>					PROJECT <b>2524</b>		
COST (\$ in Thousands)			FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
2524	Reuse and Component Support		5,702	7,728	0	0	0	0	0	0	0	13,455
<p>FY03-FY07 budget numbers do not reflect the DoD strategic review results.</p> <p>(U) <b><u>A. Mission Description</u></b>                      The Reuse and Component Support Project identifies, tests, and provides reusable software components and products for use by Air Force and Department of Defense program offices. Software reuse requires industry involvement for technology development and knowledge of direct and indirect impact to DoD missions in order to provide a skillful technical transition to fully state-of-the-art warfare utilization. Reuse and Component architecture structuring builds on the Air Force technical architecture and provides those pre-defined Product Line architectures with tested, reusable software components from mature programs. A software reuse strategy for DoD was developed as part of this effort. Efforts are continuing with development of a Product Line Asset Center Software Reuse Repository to manage a command center product line based primarily on commercial off-the-shelf (COTS) products through the National Product Line Asset Center (NPLACE) contract vehicle. NPLACE functions include the application of standards compliance testing to ensure greatest interoperability among C2 systems.</p> <p>(U) <b><u>FY 2000 (\$ in Thousands)</u></b>                      (U) \$2,722            Asset Software Reuse Program (ASSET)                      (U) \$2,530            National Product Line Asset Center (NPLACE)                      (U) \$450                Air Force Product Line Engineering                      (U) \$5,702                Total</p> <p>(U) <b><u>FY 2001 (\$ in Thousands)</u></b>                      (U) \$4,760                ASSET                      (U) \$1,973                NPLACE                      (U) \$995                 AF Product Line Engineering                      (U) \$7,728                Total</p> <p>The following net transaction is not reflected in the FY01 program total: SBIR--277K. This transaction is not reflected in other sections of the R-DOCS where an FY01 total is shown.</p>												
Project 2524			Page 7 of 10 Pages					Exhibit R-2A (PE 0604740F)				

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<p>(U) <b><u>A. Mission Description Continued</u></b></p> <p>(U) <u>FY 2002 (\$ in Thousands)</u></p> <p>(U) \$0 No Activity</p> <p>(U) \$0 Total</p> <p>(U) <b><u>B. Project Change Summary</u></b></p> <p>Congress added \$5.9 million in FY00 for Asset Software Reuse Program (\$2.8 million), National Product Line Asset Center (NPLACE)(\$2.6 million), and Air Force Product Line Engineering (\$0.5 million).</p> <p>Congress added \$7.8 in FY01 for Reuse and Component Support.</p> <p>(U) <b><u>C. Other Program Funding Summary (\$ in Thousands)</u></b></p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:15%;"></th> <th style="width:10%;"><u>FY 2000</u></th> <th style="width:10%;"><u>FY 2001</u></th> <th style="width:10%;"><u>FY 2002</u></th> <th style="width:10%;"><u>FY 2003</u></th> <th style="width:10%;"><u>FY 2004</u></th> <th style="width:10%;"><u>FY 2005</u></th> <th style="width:10%;"><u>FY 2006</u></th> <th style="width:10%;"><u>FY 2007</u></th> <th style="width:10%;"><u>Cost to</u></th> <th style="width:10%;"><u>Total Cost</u></th> </tr> <tr> <td></td> <td align="center"><u>Actual</u></td> <td align="center"><u>Estimate</u></td> <td align="center"><u>Complete</u></td> <td></td> </tr> </thead> <tbody> <tr> <td>(U) Not applicable</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table> <p>(U) <b><u>D. Acquisition Strategy</u></b> Not applicable.</p> <p>(U) <b><u>E. Schedule Profile</u></b></p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:15%;"></th> <th colspan="4" style="width:40%;"><u>FY 2000</u></th> <th colspan="4" style="width:40%;"><u>FY 2001</u></th> <th colspan="3" style="width:5%;"></th> <th colspan="3" style="width:40%;"><u>FY 2002</u></th> </tr> <tr> <td></td> <td></td><td></td><td></td><td></td> <td></td><td></td><td></td><td></td> <td></td><td></td><td></td> <td></td><td></td><td></td> <td></td><td></td><td></td> </tr> </thead> <tbody> <tr> <td>(U) Not applicable.</td> <td align="center">1</td><td align="center">2</td><td align="center">3</td><td align="center">4</td> <td align="center">1</td><td align="center">2</td><td align="center">3</td><td align="center">4</td> <td align="center">1</td><td align="center">2</td><td align="center">3</td> <td align="center">4</td><td align="center">2</td><td align="center">3</td><td align="center">4</td><td></td><td></td> </tr> </tbody> </table>											<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>Cost to</u>	<u>Total Cost</u>		<u>Actual</u>	<u>Estimate</u>	<u>Complete</u>		(U) Not applicable												<u>FY 2000</u>				<u>FY 2001</u>							<u>FY 2002</u>																					(U) Not applicable.	1	2	3	4	1	2	3	4	1	2	3	4	2	3	4								
	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>Cost to</u>	<u>Total Cost</u>																																																																																			
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BUDGET ACTIVITY 05 - Engineering and Manufacturing Development					PE NUMBER AND TITLE 0604740F Integrated Command & Control Applications			PROJECT 2524		
<b>(U) A. Project Cost Breakdown (\$ in Thousands)</b>										
						<u>FY 2000</u>		<u>FY 2001</u>		<u>FY 2002</u>
(U)	Enterprise-wide Asset Identification (ASSET)					2,722		4,760		
(U)	Product Line Suitability Testing (NPLACE)					2,530		1,973		
(U)	Product Line Engineering					450		995		
(U)	Total					5,702		7,728		
Congress added \$5.9 million in FY00 for Asset Software Reuse Program \$2.8 million), National Product Line Asset Center (NPLACE)(\$2.6 million), and Air Force Product Line Engineering (\$0.5 million).										
Congress added \$7.8 million in FY01 for Reuse and Component Support.										
<b>(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>										
<b>(U) Performing Organizations:</b>										
<u>Contractor or Government Performing Activity</u>	<u>Contract Method/Type or Funding Vehicle</u>	<u>Award or Obligation Date</u>	<u>Performing Activity EAC</u>	<u>Project Office EAC</u>	<u>Total Prior to FY 2000</u>	<u>Budget FY 2000</u>	<u>Budget FY 2001</u>	<u>Budget FY 2002</u>	<u>Budget to Complete</u>	<u>Total Program</u>
<u>Product Development Organizations</u>										
West Virginia High Technology Center	FFP	18 Nov 96	N/A	N/A	0	2,288	1,730	0	0	4,018
Raytheon/Hughes/TRW	CPFF	20 Feb 97	N/A	N/A	0	0	0	0	0	0
SAIC	ITSP	Various	N/A	N/A		2,352	2,179			4,531
ProLogic	FFP	Various	N/A	N/A		439	855			1,294
Contractor Support	ITSP	Various	N/A	N/A	0	175	2,322	0	0	2,497
<u>Support and Management Organizations</u>										
Horizons Tech, Inc.						456	642			1,098
<u>Test and Evaluation Organizations</u>										
Not applicable.										

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RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)				DATE					
BUDGET ACTIVITY				PROJECT					
05 - Engineering and Manufacturing Development				2524					
PE NUMBER AND TITLE									
0604740F Integrated Command & Control Applications									
(U) <b>Government Furnished Property:</b>									
<u>Item</u>	<u>Contract</u>	<u>Award or</u>	<u>Delivery</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Description</u>	<u>Method/Type</u>	<u>Obligation</u>	<u>Date</u>	<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>	<u>Program</u>
<u>Vehicle</u>		<u>Date</u>	<u>Date</u>						
<u>Product Development Property</u>									
Not applicable.									
<u>Support and Management Property</u>									
<u>Test and Evaluation Property</u>									
<u>Subtotals</u>				<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
				<u>to FY 2000</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>Complete</u>	<u>Program</u>
Not applicable.									
Subtotal Product Development				0	5,254	7,086	0	0	12,340
Subtotal Support and Management					456	642			1,098
Subtotal Test and Evaluation									
Total Project				0	5,710	7,728	0	0	13,438