ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604805A - Command, Control, Communications Systems - Eng Dev

COST (In Thousands)		FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
Total Program Element (PE) Cost		112970	89546	219088	162970	107046	72227	32546	14430	0	868279
097	INTEROP & STANDARDS COMPLIANCE EXPERIMENT & TEST	1866	1649	2052	2240	2044	2367	943	963	0	15967
485	INFO STANDARDS INTEROP ENG/JOINT INTEROP CERT	3851	3635	4957	5142	5210	5259	2926	3205	0	38051
589	ARMY SYS ENGINEERING & WARFIGHTING TECH SUP	8159	8037	2964	3030	3178	3102	3050	3173	0	42830
591	WPN SYS TECH ARCH (WSTA)	2322	2268	590	590	588	588	589	588	0	10484
615	JTRS-GROUND DOMAIN INTEGRATION	88208	60688	206137	149510	93403	58143	25038	6501	0	715075
629	TACTICAL COMMUNICATIONS SYSTEM - ENGINEERING DEVEL	8564	13269	2388	2458	2623	2768	0	0	0	45872

A. Mission Description and Budget Item Justification: This Program Element (PE) supports efforts to develop interoperability of Army programs and products, horizontally and vertically for the digitized battlefield. Project D097 supports development of the C4I Interoperability Network. Project D485 supports Information Standards Interoperability Engineering and Joint Interoperability certification. It provides the critical elements of the Army/Joint Technical Architecture, the mandated standards and communication protocols for Army/Joint ground and air operations, and crucial certification test tools to evaluate systems' interoperability for the Warfighter in support of the Vice Chief of Staff of the Army (VCSA) and Army Acquisition Executive (AAE). It also provides Joint certification testing and certification recommendations to the Joint Chiefs of Staff (JCS) for Army systems. This Army-wide effort directly supports the management, oversight, development, maintenance, and interoperability at the Army enterprise level C4I/IT (Command, Control, Communications, Computers, and Intelligence/Information Technology) architecture efforts required to implement the Army Transformation Campaign Plan (TCP), Unit Set Fielding (USF), Software Blocking (SWB) Policy and Army Knowledge Management. Project D589 Army Systems Engineering (ASE) & Warfighter Technical Support provides essential technology expertise on all Systems Engineering and Technical Architecture (SE/TA) matters critical to gain Information Dominance and foster interoperability among all Army systems. The Weapons Systems Technical Architecture, Project D591, supports development of the Joint Technical Architecture-Army (JTA-A) which provides the 'building code" foundation for designing, building, fielding, and supporting interoperable systems in an expedient and cost-effective manner. In FY03, Project D615 supports the Army Joint Tactical Radio System (JTRS) Cluster 1 and the Near Term Digital Radio System (NTDRS). In FY04, Project D615 will support the JTRS Cluster 1 and Cluster X Programs. Project D629, Tactical Communications System - Demonstration Validation, provides for insertion of selected proven communications technology from program elements 0602782A, Project AH92 applied research and 0603008A, advanced technology development, into the next phase of development. The Protocol Investigation for the Next Generation (PING) program evaluates and assesses emerging network protocols,

concentrating on the assessment and evaluation of the next generation of Internet Protocol (IPv6) and its protocol dependencies affecting the Army Enterprise Architecture. The Applied Communications and Information Networking (ACIN) project provides for the evaluation and capitalization of emerging commercial communications and networking technologies by leveraging advances, influencing development efforts, influencing standards and delivering technical solutions in support of emerging architectures (JTA-A). This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

B. Program Change Summary	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 2003)	118643	82238	76918	62100
Current Budget (FY 2004/2005 PB)	112970	89546	219088	162970
Total Adjustments	-5673	7308	142170	100870
Congressional program reductions				
Congressional rescissions		-1810		
Congressional increases		12000		
Reprogrammings	-2519	-513		
SBIR/STTR Transfer	-3154	-2369		
Adjustments to Budget Years			142170	100870

Proj 097: Funding increases of $612K in FY04 and $799K in FY05 are for continued emerging Future Combat Systems architecture assessment.
Proj 485: The funding increases of $1,091K in FY 2004 and $1,176K in FY 2005 are direct results of the Command and Control Basic Organization Structure (C2 BOS) and Army Knowledge Enterprise Architecture (AKEA)General Officers Steering Committee (GOSC) budget prioritization and realignment of efforts between projects 097 and 485. Several critical unfunded requirements (UFRs), which directly impact the warfighter and the Army Transformation Campaign Plan, were funded. In addition, a new requirement was added to project D485 to perform the Software Blocking (SWB) Configuration Management (CM) function. This Army Wide function will perform the CM on SWB specific products and configuration items (CI) that include requirements, architectures, plans, test threads and procedures, and software and messaging baselines.

Proj 589: Decrement in FY04 of $4129K and in FY05 of $3936K due to reprioritization of tasks.
Proj 615: FY 2002 funds realigned ($2400K) to higher priority requirements.

FY 2004 increase of $111800K to Project D615 for JTRS Cluster 1 Product Development, and $33201K for Cluster X. FY 2005 funding reflects increase of $50600K to Project D615 in order to accelerate JTRS product development and $52575 for continuation of Cluster X development.
Proj 629: FY02 one year Congressional add of $6100K demonstrated specific exploitation of commercial technologies in networking and communications for rapid insertion to PM MILSATCOM, PM TRACS and SOCOM. Technologies included: broadband wideband gap amplifier, Ka band transmit antennas and technologies to enhance communications security.
Proj 629: FY04 and FY05 increases of $1058K and $1113K will support the steeply increased effort to develop the Army's IPv6 implementation plan as well as increased support to WIN-T and JTRS transition plans.

Proj D591: FY2004 decrease of $1390K and FY2005 decrease of $1359K reflected in current BES since previous budget submission.

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2003

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604805A - Command, Control, Communications Systems - Eng Dev**	**097**

COST (In Thousands)		FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
097	INTEROP & STANDARDS COMPLIANCE EXPERIMENT & TEST	1866	1649	2052	2240	2044	2367	943	963	0	15967

A. Mission Description and Budget Item Justification: Interoperability and Standards Compliance Experimentation & Testing: The increased combat power of the Objective Force, as defined by the Chief of Staff of the Army's Transformation Campaign Plan (TCP), will derive directly from the information superiority of network/ knowledge centric warfare and the ability to be fully "interoperable as a member of the joint, multinational, interagency team." In addition, attaining full interoperability will be critical to meet the Army's Division XXI, Corps XXI, Army XXI, Army 2010 and JV 2020 plans. To attain this significantly increased combat power, it is essential that interoperability issues be identified early in the life cycle of emerging C4ISRsystems, through the conduct of Army interoperability assessments and JTA standards compliance testing. This project, in accordance with the TCP, "establishes a mechanism to ensure all digitally capable material, including the Objective Force, is fully operational, compatible and interoperable" before fielding. In particular, it provides the resources for a virtual command, control, communications, computer, intelligence, electronic warfare and sensor (C4IEWS) Digital Integration Lab (DIL) which is utilized to integrate/assess the Army's programs and products, horizontally and vertically for the digitized battlefield, by replicating current and future tactical battlefield environments (including Army, Joint and Allied interoperability environments). To attain this goal, it utilizes on-site and electronically interconnected remote C4IEWS systems, labs/ test beds, field/integration sites, developers facilities, test tools and Battle Labs to enable/facilitate comprehensive evaluations of new prototypes, evolutionary system developments, new technologies, commercial products, software and systems interoperability. This program supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP) and towards the Future Combat System (FCS).

Accomplishments/Planned Program	FY 2002	FY 2003	FY 2004	FY 2005
Provide external DIL connectivity to remote battlefield digitization sites for digitization experimentation and tests.	0	350	350	350
Provide external DIL connectivity to remote battlefield digitization sites for digitization experimentation, and tests.	380	0	0	0
Upgrade, operate and support DIL Evaluation & Certification Testbed and other facilities supporting experiments/certifications needed for battlefield digitization efforts, including Joint, Allied as well as STO/ACTD/ATD experimentation and evaluations related to Objective Force development. Support interoperability testing between emerging FCS C4ISR Systems and the SDD, FCD, IBCD systems.	668	0	750	750
Upgrade, operate and support secure DIL Evaluation & Certification Testbed and other facilities supporting experiments/certifications needed for battlefield digitization for Army SDD & FDC, as well as STO/ACTD/ATD experimentation and evaluations related to Objective Force development.	0	600	0	0
Acquire/update DIL hardware and software interfacing systems, test tools, and supporting C4ISR systems for SDD, FDC, and Objective Forces.	100	0	150	150

Accomplishments/Planned Program (continued)	FY 2002	FY 2003	FY 2004	FY 2005
Acquire/update DIL hardware and software interfacing systems, test tools, and supporting systems for SDD,FDC and Objective forces TA/SA evaluations.	0	100	0	100
Acquire DIL automated scenario drivers and test analysis tools for SDD,FDC and OF evaluations and TA/SA evaluations.	127	0	0	100
Acquire DIL automated scenario drivers and test analysis tools for SDD, FDC and Objective Force evaluations TA/SA evaluations.	0	100	112	100
Combat Net Radio (CNR) Protocol Test Tool (Monitor/Decoder) development to support Sync Mode, common PTT components.	137	114	0	0
CNR Protocol Test Tool (Conformance Tester V4) development; develop version 220D.	100	0	0	0
CNR Protocol Test Tool (Conformance Tester V5) development; develop latest approved version of CNR standard.	0	55	0	0
CNR Protocol Test Tool (Network Analyzer V3) development; supports Net troubleshooting & Net performance.	50	0	0	0
CNR Protocol Test Tool (Network Analyzer V4) development; supports Net troubleshooting & Net performance.	0	52	0	0
VMF Test Tool development and On site support	0	92	0	0
VMF Test Tool development and On-site support	94	0	0	0
Develop/Field VMF Reissue 5 VMF tool database	70	0	0	0
Develop/Field VMF Reissue 6 VMF tool database	0	70	0	0
VTT Message Generation Scripting	140	116	0	0
Provide DIL System Engineering and Integration support for conducting experiments and evaluations to support FDD, Joint Tests, and testing related to development of ATD's and STO's related to the development of the Objective Force.	0	0	220	220
Evaluate and certify IT/C4ISR systems interoperability for FDD, Objective Force, Joint experiments to assure compliance with the Technical and System Architectures.	0	0	360	360
Provide systems engineering, integrated support & field support for identification and resolution of systems' discrepancies and inconsistencies identified during evaluations.	0	0	110	110
Totals	1866	1649	2052	2240

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

C. Acquisition Strategy: The efforts funded in this project are non-system specific, supporting interoperability across multiple systems. The contractual efforts/services are obtained from existing competitive omnibus support services contracts.

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604805A - Command, Control, Communications Systems - Eng Dev

PROJECT
097

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Labor (internal Govt)	In House	USACECOM, Fort Monmouth, NJ	3366	897	1-4Q	400		472		Continue	5135	0
b . Travel	In House	USACECOM, Fort Monmouth, NJ	79	15	1-4Q	30		50		Continue	174	0
Subtotal:			3445	912		430		522		Continue	5309	0

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . System Engineering	C/CPFF	Arinc, Fort Monmouth, NJ	3061	297	1-2Q	1200		1300		Continue	5858	0
b . Development Support	C/CPFF	BAE, Fort Monmouth, NJ	80	0		0		0		Continue	Continue	0
c . Development Support	C/CPFF	CSC, Fort Monmouth, NJ	607	129	1-4Q	100		100		Continue	936	0
d . Development Support	C/CPFF	C3I, Fort Monmouth, NJ	908	141	1-2Q	200		221		Continue	1470	0
e . Security Engineering	C/CPFF	Nations, Fort Monmouth, NJ	111	30	1Q	0		0		Continue	Continue	0

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604805A - Command, Control, Communications Systems - Eng Dev

PROJECT
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II. Support Cost (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
f . Equipment	FFP	USA CECOM, NJ	753	100	1-4Q	122		97		Continue	1072	0
g . Development Support	C/CPFF	BAH, Fort Monmouth, NJ	40	40	1-4Q	0		0		Continue	Continue	0
Subtotal:			5560	737		1622		1718		Continue	Continue	0

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0

ARMY RDT&E COST ANALYSIS(R-3)

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BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604805A - Command, Control, Communications Systems - Eng Dev

PROJECT
097

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0
Project Total Cost:			9005	1649		2052		2240		Continue	Continue	0

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2003

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604805A - Command, Control, Communications Systems - Eng Dev**	**485**

COST (In Thousands)		FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
485	INFO STANDARDS INTEROP ENG/JOINT INTEROP CERT	3851	3635	4957	5142	5210	5259	2926	3205	0	38051

A. Mission Description and Budget Item Justification: Evaluate systems' interoperability, in support of the Vice Chief of Staff Army (VCSA) and the Office of the Chief Information Officer (CIO/G-6), Army Enterprise Architecture (AEA) Program, as cited in the AEA Master Plan, fulfilling the Clinger-Cohen Act's mandate of developing sound integrated Information Technology (IT) architectures and the Army's Software Blocking Policy. The increased combat power of the Objective Force, as defined by the Chief of Staff of the Army (CSA) Transformation Campaign Plan (TCP), will be dependent on the information superiority of network & knowledge centric warfare and the ability of systems to be fully "interoperable as a member of the joint, multinational, interagency team as well as emerging Objective Force (OF) C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance) Systems." It identifies and reduces interoperability issues earlier in the life cycle by intra-Army/OF/Joint/combined experiments, certifications, and assessments and through the establishment & sustainment of common standards. This Army wide effort directly supports the management, oversight, development, maintenance, and interoperability of the Army enterprise level C4I/IT architecture efforts required to implement the Army Transformation Campaign Plan, Unit Set Fielding, Software Blocking and Army Knowledge Enterprise Architecture (AKEA). Specifically, this project resources the Army's messaging standards conformance authority in assessing compliance with the Joint Technical Architecture - Army (JTA-A), in meeting the war fighter information exchange requirements and in facilitating their interoperability. Also it resources, in accordance with the JTA-A, the development and maintenance of the following information standards: Variable Message Format (VMF) & Combat Net Radio (CNR) protocol, which support Army/Joint ground operations; Tactical Digital Information Links (TADILs), which support Air Defense operations; and US Message Text Format (USMTF), which support Intel and Commanders operations. It provides the Army's lead for configuration management functions of these standards and test tools at both Army and Joint levels. This project resources the Army participation in joint/allied messaging certification testing & configuration management processes. This project also resources the development and fielding of a suite of four (4) crucial tools which are used throughout the entire Army. These tools which are currently under development will provide the ideal means to: a) validate JTA-A critical messaging and protocol standards; b) improve systems interoperability; c) verify/certify correct system implementations and interpretation to JTA-A; d) sustain/support digitization and transition of fielded systems; e) support Software Blocking and interoperability testing; f) provide Legacy AEA interoperability with Future Combat System (FCS) command and control systems. These crucial tools are critical to the JTA-A Compliance, Certification Testing mission & Interoperability programs. The task also supports the Army's transformation campaign while mitigating interoperability issues resulting in reducing cost & program slippages. This project also provides the Configuration Management & Control for the Software Blocking (SWB)/USF (Unit Set Fielding). This program supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

Accomplishments/Planned Program	FY 2002	FY 2003	FY 2004	FY 2005
Evaluate and certify IT/C4ISR systems interoperability for DCX (Division Capstone Exercise), Joint experiments to assure compliance with the Technical and System Architectures	0	332	0	0
Evaluate and certify IT/C4ISR systems interoperability for FDD (First Digitized Division), Joint experiments to assure compliance with the Technical and System Architectures	458	0	0	0
Provide DIL (Digital Integration Laboratory) System Engineering and Integration support for conduct of experiments and evaluations to support FDD, Joint Tests, and testing related to development of ATDs (Advanced Technology Demonstrations) and STOs (Science and Technology Objectives) related to the development of the Objective Force.	460	323	0	0
Provide systems engineering, integrated support & field support for identification and resolution of systems' discrepancies and inconsistencies identified during evaluations	178	23	0	0
Develop and publish Army wide Combat Net Radio (CNR) and Variable Message Format (VMF)/USMTF (United States Message Text Format) application header standards and updates that support warfighting interoperability requirements during the Legacy, interim to Objective Force Transformation.	281	303	350	405
Develop/Joint approved new Variable Message Format (VMF) messages to support interoperability during the Legacy, interim to Objective Force Transformation.	325	403	480	490
Joint approval of 50-200 Variable Message Format (VMF) change proposals to support warfighting interoperability during the Legacy to Objective Force Transformation. Change proposal also includes requirements for Homeland Defense (i.e. Nuclear/Biological & Chemical, security, etc) Interoperability and Software Blocking/Unit Set Fielding.	332	400	508	535
Maintain Army wide common Variable Message Format (VMF) Data Base (VID) and provide multiple versions that supports interoperability during the system development, testing and fielding. Ensure the warfighter requirements(Army-Wide & Joint) in the VMF Integrated Database are validated.	81	77	150	199
Chair the VMF Integrated database IPT. Including the development and maintenance of the VID QA consistency tool & automated distribution mechanism.	0	0	110	115
Conduct, chair & manage at multiple Army CCBs (Configuration Control Boards) and represent the Army at multiple Army/Joint CCBs to support existing and evolving warfighter interoperability.	310	310	318	323
Evaluate, process and obtain approval of 1100-1200 Air defense TADILs & ground operation USMTF change proposals incorporating crucial Ground, Air Defense, Intel & Commander requirements.	549	574	605	625
Prepare for and Conduct 10 Joint certification testings to include 30 operational systems, and develop over 500 interoperability problem reports for analysis by Joint services	710	725	725	725
Army lead in over 24 Joint Air Defense (i.e.TADILS), Ground Operations (i.e.USMTF), OSD Tactical Data Link Management plans (TDLMP), and Joint Interface Requirements.	167	165	180	185

Accomplishments/Planned Program (continued)	FY 2002	FY 2003	FY 2004	FY 2005
Engineer, develop & publish Warfighter Information Standards (i.e. XML-USMTF/VMF,Wireless XML, database exchange, etc...) Incorporating the Army's requirements into the standards IAW Army guidance, policy and warfighter needs.	0	0	275	295
Develop, field and provide SME (subject matter expert) support for Combat Net Radio (CNR) Protocol Test tool (Monitor/Decoder) for the design & implementation of the operational Sync Mode, common PTT components and capabilities.	0	0	150	150
Develop, field and provide SME support for the CNR Protocol Test Tool (PTT) mandated version of CNR standards and ensure Army-Wide requirements (i.e. Mobility,Security,Robustness, etc) are met in accordance with crucial Army guidance & policy.	0	0	115	115
Develop, field and provide SME support for CNR PTT (Network Analyzer) design/implement net troubleshooting & net performance limited bandwidth systems to meet time sensitive information exchanges. Conduct PTT Conformance to standard test to the CNR standards to obtain Army wide & joint approval.	0	0	85	100
Develop and field the Army's VMF Test Tool (VTT) to current reissue baseline for the VMF standard and provide SME Support. Conduct VTT Conformance to standard test to the VMF standards to obtain Army wide & Joint approval.	0	0	135	160
Develop, field and support VTT Message Generation Scripting to include all Army-Wide requirements (i.e. Homeland Security, SWB/USF, etc...) and ensure compatibility with Army mandates.	0	0	130	125
Develop, field and support the US Message Text Tool (MTT) to support XML-USMTF support to evolving warfighter requirements and Architectural guidance. Conduct MTT Conformance to standard test to the US MTF standards to obtain Army wide & Joint approval.	0	0	330	250
Develop, publish and execute the SWB CM (Software Blocking Configuration Management) function to include all the configuration items developed by the Requirements WG (Working Group), Architecture WG, Block Execution Management WG and the IPT/SUB-IPTs for all SW Blocks.	0	0	311	345
Totals	3851	3635	4957	5142

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

C. Acquisition Strategy: The efforts funded in this project are non-system specific, interoperability experimentation, evaluation and

certification across multiple systems. The contractual efforts/services are obtained from existing competitive omnibus support service contracts.

ARMY RDT&E COST ANALYSIS(R-3)

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BUDGET ACTIVITY
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0604805A - Command, Control, Communications Systems - Eng Dev

PROJECT
485

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Labor (internal Govt)	In House	USACECOM , Fort Monmouth, NJ	7692	1623	1-4Q	1800	1-4Q	1900	1-4Q	Continue	13015	0
b . Travel	In House	USACECOM, Fort Monmouth, NJ	226	60	1-4Q	70	1-4Q	75	1-4Q	Continue	431	0
Subtotal:			7918	1683		1870		1975		Continue	13446	0

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Development Support	C/CPFF	Arinc, Fort Monmouth, NJ	5289	123	1-4Q	0		0		0	5412	0
b . Development Support	C/CPAF	Telos, Fort Monmouth, NJ	4581	120	1-4Q	0		0		Continue	4701	0
c . Development Support	C/CPFF	CSC, Fort Monmouth, NJ	1963	100	1-3Q	0		0		Continue	2063	0
d . Development Support	C/CPFF	C3I, Fort Monmouth, NJ	1374	112	2-3Q	0		0		0	1486	0
e . Development Support	SS/CPFF	Mitre, Fort Monmouth, NJ	280	0		0		0		0	280	0
f . Development Support	T&M	ITEL, Ft Monmouth, NJ	0	0		1705	1-4Q	1790	1-4Q	Continue	3495	0

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5 - System Development and Demonstration

PE NUMBER AND TITLE
0604805A - Command, Control, Communications Systems - Eng Dev

PROJECT
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II. Support Cost (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
g . Development Support	T&M	ITEL/Northrop Grumman (SEC SSES), Ft Monmouth, NJ	0	1200	2Q	1280	2Q	1269	2Q	Continue	3749	0
h . Technical Support	C/CPFF	Marconi, Fort Monmouth, NJ	183	38	2-3Q	0		0		0	221	0
i . Equipment	In House	USACECOM, NJ	375	94	1Q	0		0		Continue	469	0
j . Equipment (Development Support)	FFP	GTE, Tauton, MA	106	0		0		0		0	106	0
k . Telecommunications	MIPR	USASC, Fort Huachuca, AZ	985	165	2Q	102	2Q	108	2Q	Continue	1360	0
Subtotal:			15136	1952		3087		3167		Continue	23342	0

Remarks: *Contracts/awards cited are 5 year (1 base + 4 option years). Future award dates imply future competitive award, contractor TBD.

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III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0
Project Total Cost:			23054	3635		4957		5142		Continue	36788	0

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2003

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604805A - Command, Control, Communications Systems - Eng Dev**	**589**

COST (In Thousands)		FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
589	ARMY SYS ENGINEERING & WARFIGHTING TECH SUP	8159	8037	2964	3030	3178	3102	3050	3173	0	42830

A. Mission Description and Budget Item Justification: Army Systems Engineering & Warfighter Technical Support (WTS): The Army Systems Engineer (ASE) provides essential technology expertise on all Systems Engineering and Technical Architecture (SE/TA) matters critical to gain Information Dominance and foster interoperability among all Army systems. The Joint Technical Architecture-Army (JTA-A) provides the "building code" foundation for designing, building, fielding, and supporting interoperable systems in an expedient and cost-effective manner. ASE supports CIO/G6 in defining and maintaining the JTA-A and technically influences development and implementation of the JTA. ASE identifies new and emerging standards for integration of new technologies into existing Army Systems and Advanced Technology Demonstrations/Advanced Concept Technology Demonstrations (ATD/ACTDs) to support Army transformation to the Objective Force. The ASE's work efforts associated with the development and implementation of the JTA-A are critical path elements to achieve the Army's digitization mission, Army's Transformation to the Objective Force, to provide the ability to fight and win on tomorrow's battlefield, and assure compatibility with both Joint and Coalition Warfighters. WTS provides essential technical field expertise, on-site architectural/system analysis and execution planning to integrate emerging technologies and support the next generation of digitization across all 21st Century Battlefield Operating Systems. Promotes joint experiments in conjunction with Joint C4ISR Battle Center (JBC) to foster interoperability between Army Systems and those of other services both joint and coalition and including Homeland Security (HLS) Issues. WTS conducts interservice and Civil Agency coordination to identify candidate systems, provides expert analysis to define appropriate architecture, evaluates notional designs and conducts performance/cost benefit analysis to recommend viable tradeoffs. Performs technical coordination/integration activities to accelerate system enhancements providing solutions to current user problems in the field capturing soldier and first responder ingenuity through on-the-spot input/feedback. Supports development of the operational architecture and implementation of new warfighter information technologies throughout the force structure. This program supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP) to include HLS.

Accomplishments/Planned Program	FY 2002	FY 2003	FY 2004	FY 2005
Conduct Major design evaluations for Joint Technical Architecture-Army (JTA-A) Interoperability. System Implementations: WIN-T, THAAD, JTRS, Future Combat Systems (FCS), ACS, BCT-IAV, Land Warrior Redesign, MOSAIC, Agile Commander.	1350	1350	0	0
Ensure JTA-A Interop Implementation and Assess JTA-A compatibility for Army and S&T Programs.SSEBS/RFPs: WIN-T, TACSAT T4H, Joint Tactical Radio System (JTRS), Future Combat System (FCS).	1321	1321	0	0

Accomplishments/Planned Program (continued)	FY 2002	FY 2003	FY 2004	FY 2005
Assess JTA-A interop for Army Systems. AD Hoc Assessments.	800	800	0	0
Technically influence the development/implementation of Joint Technical Architecture (JTA). JTA Version 5.0, JTA-A Version 7.0	811	815	0	0
Maintain existing JTA-A Information Technical Standards.	623	695	1104	1142
Investigate information technical standards for inclusion in JTA-A/JTA. Global Information Grid (GIG) Technologies (XML, JPEG 2000, MPEG 4, IPV6)	640	690	736	762
Technically influence commercial and international standards forums. MANET (TBRPF), IPV6	375	0	0	0
Technically influence integration of ABCS architectural components.	839	1030	361	424
Establish Army focus for Commercial product integration into the Joint Architecture (e.g. DCTS)	830	817	361	300
Assess C4ISR architectural performance in Joint Experimentation.	570	519	402	402
Totals	8159	8037	2964	3030

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

C. Acquisition Strategy: The efforts funded in the project are non-system specific, therefore no acquisition strategy is provided.

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BUDGET ACTIVITY
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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Government Systems Engineering Support	In House	ASEO, Fort Monmouth, NJ	7895	1723	1-4Q	1646	1-4Q	1728	1-4Q	Continue	12992	0
b . Engineering Support	MIPR	ISEC, Fort Huachuca, AZ	1357	200	1Q	0		0		Continue	Continue	0
c . Contract Systems Engineering Support	C & FPI	CSC, Eatontown, NJ	7002	1397	1-3Q	114	1Q	91	1Q	0	8604	0
d . Contract Systems Engineering Support	SS & FP	MITRE, Tinton Falls, NJ	5552	2220	1Q	0		0		0	7772	0
e . Contract Systems Engineering Support	C & FP	GTE/BBN, Cambridge, MA	960	0		0		0		0	960	0
f . Contract Systems Engineering Support	C & FP	Litton, Reading, MA	245	0		0		0		0	245	0
g . Contract Systems Engineering Support	C & FP	Battelle, Alexandria, VA	354	0		0		0		0	354	0
h . Contract Systems Engineering Support	C & FP	SRI, Menlo Park, CA	0	200	1-3Q	0		0		0	200	0
i . Contract Systems Engineering Support	C & FP	SRC, Atlanta, GA	612	165	2Q	0		0		0	777	0

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5 - System Development and Demonstration

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I. Product Development (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
j . Contract Systems Engineering Support	C & FP	HTPi, Shrewsbury, NJ	145	0		0		0		0	145	0
k . Contract Systems Engineering Support	C & FP	Gemini, Billerica, MA	137	0		0		0		0	137	0
l . Systems Engineering and Integration	MIPR	WTS - ISIO CECOM, Fort Monmouth, NJ	2341	560	1-4Q	86	1-4Q	90	1-4Q	Continue	3077	0
m . Contract Support	C & T&M -R	C3ISGI, Tinton Falls, NJ	2830	512	1-3Q	471	1-3Q	432	1-3Q	0	4245	0
n . Contract Support	C & T&M	BAE, Tinton Falls, NJ	139	55	1Q	60	1Q	63	1Q	0	317	0
o . Contract Support	C & T&M	SAIC, Falls Church, VA	1511	173	2Q	240	2Q	256	2Q	0	2180	0
p . Contract Support	IPA Agreement	Rutgers University, New Brunswick, NJ	378	200	2Q	165	2Q	174	2Q	0	917	0
q . Contract Support	C & T&M	Datron, Simi Valley, CA	305	0		0		0		0	305	0
r . System Development and Integration	MIPR	PEO C3S, PM TOCS, Fort Monmouth, NJ	25	0		0		0		0	25	0
s . Contract Support	C & FP	CSC, Eatontown, NJ	1746	0		0		0		0	1746	0
t . Contract Support	C & FP	TRW, Domingues Hills, CA	1281	0		0		0		0	1281	0

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I. Product Development (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
u . Contract Support	C & FP	Lockheed Martin, Eatontown, NJ	545	0		0		0		0	545	0
v . Travel	In House	ASEO/ISIO CECOM, Fort Monmouth, NJ	1096	200	1-4Q	106	1-4Q	116	1-4Q	Continue	1518	0
w . Overhead	In House	ASEO/ISIO CECOM, Fort Monmouth, NJ	1422	432	1-4Q	76	1-2Q	80	1-2Q	0	2010	0
Subtotal:			37878	8037		2964		3030		Continue	Continue	0

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0

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III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0
Project Total Cost:			37878	8037		2964		3030		Continue	Continue	0

Schedule Profile Detail (R-4a Exhibit)

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BUDGET ACTIVITY
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Schedule Detail	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
TA - JTA-A 7.5			2-4Q					
TA - JTA-A 7.0		2-4Q						
TA - JTA 5.0	4Q	1-2Q						
TA - JTA 6.0		4Q	1-2Q					
SA - 2DFSA (3BDE/1CAV)		1Q						
BCT 3 - (172nd Inf Bde) S=STRYKER		2Q						
Corps Warfighter		1Q						
75 Ranger Reg		1Q						
AECP/Homeland Security Support		2Q						
Joint /HLS Architecture Development		2Q						
04 Joint/HLS Architecture Support		2Q						
Juice 03		4Q						

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

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BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604805A - Command, Control, Communications Systems - Eng Dev**	**591**

COST (In Thousands)		FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
591	WPN SYS TECH ARCH (WSTA)	2322	2268	590	590	588	588	589	588	0	10484

A. Mission Description and Budget Item Justification: Weapons Systems Technical Architecture (WSTA): The Joint Technical Architecture (JTA) and JTA-Army (JTA-A) provides the "building code" foundation for designing, building, fielding, and supporting interoperable systems in an expedient and cost-effective manner. The WSTA identifies new and emerging standards for integration of new technologies into new and existing Army Weapons Systems in support of Army transformation efforts. WSTA defines JTA and JTA-A Weapon Systems domain specific mandatory and emerging standards which are required for these embedded, real-time computing systems use of electronic data and information. It has and will continue to refine the Common Operation Environment (COE) concept insuring that the Army's hard-real-time and embedded requirements for systems are acknowledged. These endeavors enable the realization of the Transformation Campaign Plan (TCP) goals by providing the means by which all three axes of the TCP can be achieved.

Accomplishments/Planned Program	FY 2002	FY 2003	FY 2004	FY 2005
Update the WSTA Framework	233	0	0	0
Interface Standards Analysis for WS Core Operating Environment (COE)	300	0	0	0
Define DII COE to WS COE Interfaces	275	0	0	0
Develop and Test Real-Time Computing WS COE API	603	1410	0	0
Develop and Test Real-Time WS COE Mapping Services API	300	89	0	0
Modify and Test Embedded Battle Command (EBC) Software in WS COE	0	0	0	0
Develop, Test, and Certify a WSTA Security Architecture for WS COE	0	0	0	0
Support WS COE Family of API's Transistion to Industry and COTS	0	258	247	244
Develop updates to MIL-STD-2525B (Symbology)	80	89	0	0
Research, Define, and Input Unmanned WS Standards in JTA/JTA-A	214	89	0	0
Maintain and support update of WS Domain of the JTA/JTA-A	156	164	171	170
Engineering and Program Development Infrastructure	161	169	172	176
Totals	2322	2268	590	590

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

This activity receives an intermediate level of support from participation by Program Executive Offices, Program Managers, Commodity Commands, Academia and Industry. This support significantly supplements the overall WSTA activity at an estimated level of three for one in the near term and five or more to one in the out years.

C. Acquisition Strategy: The efforts funded in this project are non-system specific, interoperability experimentation, evaluation and certification across multiple systems. The contractual efforts/services are obtained from existing competitive Omnibus support services contracts.

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BUDGET ACTIVITY
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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . USAISSC	MIPR	Fort Belvoir, VA	128	67	2Q	69	2Q	70	2Q	Continue	334	0
b . TACOM-ARDEC	MIPR	Picatinny Arsenal, NJ	1598	755	1-4Q	163	1-4Q	162	1-4Q	Continue	2678	0
c . TACOM-TARDEC	MIPR	Warren, MI	2754	646	1-4Q	144	1-4Q	143	1-4Q	Continue	3687	0
d . GSA	MIPR	Huntsville, AL	1479	89	1-4Q	0		0		0	1568	0
e . AMCOM-AMRDEC	MIPR	Redstone Arsenal, AL	207	523	1-4Q	167	1-4Q	169	1-4Q	Continue	1066	0
f . CSC (Nichols Research Corp)	C/CPFF	Huntsville, AL	171	0		0		0		0	171	0
Subtotal:			6337	2080		543		544		Continue	9504	0

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II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . AMCOM -AMRDEC	In House	Redstone Arsenal, AL	683	292	1-4Q	57	1-4Q	56	1-4Q	Continue	1088	Continue
Subtotal:			683	292		57		56		Continue	1088	Continue
Project Total Cost:			7020	2372		600		600		Continue	10592	Continue

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2003

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604805A - Command, Control, Communications Systems - Eng Dev**	**615**

COST (In Thousands)		FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
615	JTRS-GROUND DOMAIN INTEGRATION	88208	60688	206137	149510	93403	58143	25038	6501	0	715075

A. Mission Description and Budget Item Justification: Project D615 supports the Joint Tactical Radio System (JTRS)- Cluster 1 RDTE development effort. The Cluster 1 JTRS-Army RDTE program will enable the Army to acquire and field a family of affordable, scaleable, high capacity, interoperable radio sets based on a common JTRS Software Communications Architecture (SCA). The JTRS is a key enabler of the Army Transformation and will provide critical communications capabilities across the spectrum of operations in a Joint environment. The Cluster 1 JTRS is a Joint program encompassing the specific requirements of the JTRS Joint Program Office (JPO), US Army Ground Vehicular and Rotary Wing Aircraft, US Air Force Tactical Control Party (TACP), and US Marine Corps applications. This project supports RDT&E efforts for the JTRS Cluster 1 program while the Services provide funding for their unique requirements. The Army will initiate the development and design of an embedded, dismounted form factor to support Future Combat System and Operation Enduring Freedom requirements. This cluster is currently identified as Cluster X. These systems support the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

Accomplishments/Planned Program	FY 2002	FY 2003	FY 2004	FY 2005
JTRS Product Development (JTRS Step 2C Contract)	1813	0	0	0
JTRS Product Development (JTRS Cluster 1 Vehicular and Airborne Hardware Design and Development of Prototypes and technical engineering support)	67650	34484	140009	57485
JTRS Product Development (JTRS Cluster procurement of up to 10 Vehicular and up to 14 Airborne pre-engineering models for Early Operational Assessment testing)	0	9999	0	0
JTRS Product Development (Cluster 1 Platform Installation Kit Development)	0	0	5653	5748
JTRS Test and Evaluation (JTRS EPG Testbed and Test Planning/Test Support/Electronic and Information Warfare Test and Evaluation/Labor)	1303	2328	8053	19721
JTRS Management Services (JTRS Program Management Office Support)	9047	9083	15900	10568
JTRS Support Costs (Systems Engineering and Technical Support)	3854	4194	3321	3413
NTDRS Support Costs (NTDRS Testbed and Technical Support)	4541	600	0	0
Initiate the development and design of an embeddable, dismountable form factor currently identified as Cluster X	0	0	33201	0
Continue the development and design of an embeddable, dismountable form factor currently identified as Cluster X.	0	0	0	52575
Totals	88208	60688	206137	149510

B. Other Program Funding Summary	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Compl	Total Cost
OPA, Army, ADDS, BU1400/EPLRS/JTRS*	0	0	0	136552	119146	132272	124542	123782	Continuing	Continuing
RDTE, JTRS, 0604280A/D162**	72742	62921	134693	91583	62826	55945	28849	27347	Continuing	Continuing
RDTE, PEO AVN, JTRS A-Kit PE 64201/C97***	7040	30483	60650	41615	29052	23491	31348	24374	Continuing	Continuing
APA, PEO AVN, JTRS A-Kit Procurement AA0702***	0	0	1906	22674	46498	62121	60544	66014	Continuing	Continuing

Note: *The BU1400 SSN is a shared program line. Above reflects JTRS Cluster 1 portion of funding only. ** Funding represents all Clusters. ***Other Army Program funding is JTRS Cluster 1 only.

C. Acquisition Strategy: Joint Tactical Radio System (JTRS): Project D615 supports JTRS Cluster 1 Army Software Development and Demonstration efforts and JTRS Step 2C. In FY03, development and testing efforts for the Step 2C program will be completed upon final delivery of 40 JTRS Step 2C Engineering Development Models. The JTRS Cluster 1 supports an evolutionary acquisition strategy. The JTRS Joint Program Office (JPO) is responsible for common core activities including developing, maintaining, and evolving the JTRS open standards architecture, providing re-coded versions of legacy waveforms to operate on JTRS architecture compliant hardware, and provides a certifying infrastructure for hardware/software compliance. After a successful Milestone B Decision in 3QFY02, the Cluster 1 development effort was awarded to develop multi-channel ground and airborne configurations. Cluster 1 is the first group of requirements to be developed and procured under the JTRS domain concept. The Army PM TRCS is the lead for the Cluster 1 effort. Under Cluster 1, a software reprogrammable radio providing the warfighter with a multi-band and multi-mode capability, networkable radio system which provides simultaneious voice, data and video communications to increase interoperability, flexibility and adaptability in support of varied mission requirements will be developed. In June 2002, a cost plus award fee contract was competitively awarded to a Prime Systems Engineering Contractor (The Boeing Company) who is responsible for developing and/or acquiring numerous Sofware Communications Architecture compliant waveforms, defining common form-fit-function configurations for vehicular and aviation versions of the JTRS hardware, and successfully porting the waveforms to JTRS hardware produced by two different developers. The FY04-05 budget supports continued development and support of the development of Cluster 1 Ground and Airborne sets, design of ground vehicular A-kits (installation kits) for platforms required for testing, Early Operational Assessment and Development Test (DT)/Operational Test (OT) and Multi-Service Operational Test and Evaluation (MOT&E) testing for Cluster 1. The Army will initiate another cluster currently identified as Cluster X in FY04. Preliminary plans indicate an ACAT 1D Milestone review in 2QFY04 and a System Design and Development award in 2/3Q FY04. Cluster X will support emerging Future Combat System and Operation Enduring Freedom requirements.

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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . NTDRS CPIF/T&M/FFP Efforts*	C/T&M/CPIF/FFP	ITT, Fort. Wayne, IN	9715	0		0		0		0	9715	8968
b . NTDRS (Ancillary Equip, NMT, & Misc)	Misc	Misc	430	0		0		0		0	430	325
c . JTRS Army Step 2C Hardware Development and Cost of Prototypes	C/OTA/T&M	BAE Systems, Wayne, NJ	6876	0		0		0		0	6876	0
d . JTRS Step 2C Anc Equip/Log & Engrg	Various	Various	616	0		0		0		0	616	0
e . JTRS Cluster 1 GFE	Various	Various	22	0		0		0		0	22	0
f . JTRS Cluster 1 (EPLRS Data Rights)	FFP	Raytheon, Fullerton, CA	5000	0		0		0		0	5000	0
g . JTRS Cluster 1 Development	CPAF	BOEING, Annaheim, CA	62086	43459	1-3Q	138709	1-3Q	56335	1-3Q	Continue	Continue	0
h . JTRS Cluster 1 (Installation Kit)	TBD	TBD	0	0		5653	1-3Q	5748	1-3Q	Continue	Continue	0
i . Tactical Internet Integration	T&M	ITT, Ft. Wayne,IN	1792	0		0		0		0	1792	0

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I. Product Development (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
j . JTRS Development - System Engrg Spt	various	MISC	1596	1024	1-4Q	1300	1-4Q	1150	1-4Q	Continue	Continue	0
k . ABCS System Engineering and Integration Efforts	Various	MISC	1227	0		0		0		0	1227	0
l . Cluster X Design and Development	Various	TBD	0	0		33201	2-3Q	52575	1-4Q	Continue	Continue	0
Subtotal:			89360	44483		178863		115808		Continue	Continue	9293

Remarks: *NTDRS efforts prior to FY 2000 were funded in PE 0603713A, Proj D370

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . *NTDRS Test/Training/Logistics/Technical /Exercise Support	Various	Various	7154	600	1-2Q	0		0		0	7754	0
b . JTRS Antenna Studies	PWD	ARINC, Annapolis, MD	504	0		0		0		0	504	0
c . JTRS Technical Support	Various	Miscellaneous	4204	2879	1-2Q	3321	1-4Q	3413	1-4Q	Continue	Continue	0
d . ABCS SE&I Effort			1633	1315	1-3Q	0		0		0	2948	0

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BUDGET ACTIVITY
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II. Support Cost (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			13495	4794		3321		3413		Continue	Continue	0

Remarks: *NTDRS efforts prior to FY 2000 were funded in PE 0603713A, Proj D370

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . *NTDRS Field Testing	MIPR	EPG, Fort Huachuca, AZ	95	0		0		0		0	95	0
b . JTRS Step 2C EPG Qual Testing/Customer Testing	MIPR	EPG, Fort Huachuca, AZ	2450	0		0		0		0	2450	0
c . JTRS EPG Testbed and Test Planning	MIPR	EPG, Fort Huachuca, AZ	1484	800	1Q	1200	1Q	1200	1Q	Continue	Continue	0
d . JTRS Modeling & Simulation	MIPR	USAIC	350	556	1-2Q	350	1-2Q	350	1-2Q	Continue	Continue	0
e . JTRS Test Inhouse Spt & Govt Activities	Various	Various	747	556	1-3Q	1521	1-3Q	1232	1-3Q	Continue	Continue	0
f . JTRS EOA/DTOT Test Activity			0	416	1-3Q	4982	1-3Q	16939	1-3Q	Continue	Continue	0

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III. Test and Evaluation (continued)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			5126	2328		8053		19721		Continue	Continue	0

Remarks: *NTDRS efforts prior to FY 2000 were funded in PE 0603713A, Proj D370

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . *NTDRS Program Support	MIPR	Fort Monmouth, NJ	655	0		0		0		0	655	0
b . JTRS Business/Engineering Management	Various	Various	8180	4727	1-2Q	3569	1-4Q	3163	1-4Q	Continue	Continue	0
c . Project Management Office Support	Various	Various	3729	3646	1-3Q	11356	1-3Q	6410	1-3Q	Continue	Continue	0
d . JTRS MITRE Support	PWD	MITRE Corp., Mclean, VA	1407	710	1Q	975	1Q	995	1Q	Continue	Continue	0
Subtotal:			13971	9083		15900		10568		Continue	Continue	0

Remarks: *NTDRS efforts prior to FY 2000 were funded in PE 0603713A, Proj D370

Project Total Cost:			121952	60688		206137		149510		Continue	Continue	9293

Schedule Profile Detail (R-4a Exhibit)

February 2003

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604805A - Command, Control, Communications Systems - Eng Dev**	**615**

Schedule Detail	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
NTDRS CTSF ABCS Software Updates	1-4Q							
NTDRS Participation in Millennium Challenge 02	4Q							
NTDRS Deployment to Brigade Combat Team 2	3-4Q							
NTDRS Participation NTC/01-06/02-05/02-08/03-03/03-05/03-08	2-4Q	1-4Q						
NTDRS Participation FBCB2 Field Test IV and V	1-4Q							
NTDRS Participation in FBCB2 IOT&E	2Q							
JTRS-Army Milestone B	3Q							
JTRS-Army Cluster 1 Ground & Airborne SDD Award	3Q							
JTRS-Army Step 2C EPG Testing/Validation	4Q	1Q						
JTRS-Early Operational Assessment			4Q	1Q				
JTRS Cluster 1 OIPT Approval to Exercise Option 1				2Q				
JTRS-Army Cluster 1 LRIP Option 1 Contract Award				2Q				
JTRS-Army Cluster 1 Ground & Airborne DT/OT				3-4Q	1Q			
JTRS Cluster 1 Milestone C					2Q			
JTRS-Army Cluster 1 Ground & Airborne MOT&E					4Q			
JTRS-Army Cluster 1 LRIP Option 2 Award					2Q			
LRIP Option 1 Deliveries Begin					3-4Q	1-2Q		
Full Rate Production In Process Review						2Q		
Full Rate Production Contract Award						2Q		
LRIP Option 2 Deliveries Begin						3-4Q	1-2Q	
Full Rate Production Deliveries							1-4Q	1-4Q
Product Improvements							1-4Q	1-4Q
Cluster X Milestone B			2Q					
Cluster X Contract Award			2-3Q					

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

February 2003

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604805A - Command, Control, Communications Systems - Eng Dev**	**629**

COST (In Thousands)		FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
629	TACTICAL COMMUNICATIONS SYSTEM - ENGINEERING DEVEL	8564	13269	2388	2458	2623	2768	0	0	0	45872

A. Mission Description and Budget Item Justification: The Army Transformation and the goals of the Objective Force will be met by introducing the latest in information and network protocol technologies within current and future combat systems.

The Protocol for Investigation Next Generation (PING) Program's objectives are to identify network and communication architecture gaps, validate emerging network technologies, assess proposed network solutions, ensure system of systems network communications interoperability among tactical and sustaining Army assets, as well as, with Joint, Interagency, and Multinational systems, and verify compliance to Army Knowledge Enterprise Architecture (AKEA) System and Technical Views that will make possible the Army's Objective Force. The PING analyze emerging commercial network communication protocols assessing their benefits and suitability to satisfy Army requirements, mitigate risks associated with implementing them across the AKEA and future combat systems, and to assist system developers in incorporating emerging technologies across Army communication systems accelerating Army Transformation goals.

The PING Program is the Army's principal organization evaluating and testing the Next Generation of Internet Protocol, Version 6, or IPv6. While IPv6 is being implemented globally, the PING will determine a coordinated approach for Army adaptation of IPv6 that will meet current network communication requirements, maintain interoperability across Army, Joint, Interagency, and Multinational systems, and provide the enhancements necessary to make the Objective Force possible.

The PING program supports the Army Chief Information Office (CIO/G6), the Objective Force Task Force (OFTF), and maintain close cooperation with the Army System Engineering Office (ASEO); helping identify technologies suitable for consideration in future versions of the Joint Technical Architecture - Army (JTA-A), and various PEOs/PMs by participating at Working Groups involved with System Views (SVs) and Technical Views (TVs). The PING will analyze or develop SVs and TVs.

The PING Program's mission is critical for mitigating risks associated in the evolution and maturation of communications networks within the AKEA and for ensuring a cost effective Legacy to Objective transition path of the Transformation Campaign Plan.

Accomplishments/Planned Program	FY 2002	FY 2003	FY 2004	FY 2005
-Support the Army's Chief Information Office (CIO/G6) Interface Control Working Group (ICWG) determining proper network interfaces that reflect latest technology advances and meet current Army requirements. - Participate at Future Combat Systems (FCS), Wideband Networking Waveform, and WIN-T Working Groups defining network interfaces and connectivity within Unit of Actions (UA) and Units of Equipment (UE). - Support the Army's CIO/G6 by preparing and coordinating an Army IPv6 Implementation Plan that will minimize risks to system developers as they incorporate IPv6 based solutions for war fighter requirements. - Participate in the OSD CIO WG identifying IPv6 Army requirements and delineating a DoD IPv6 Implementation Plan. - Participate in the Defense Information Systems Agency (DISA) WG identifying and coordinating Joint solutions to IPv6 implementation issues such as the Common Operating Environment (COE), STEP sites, Addressing schemes and address space management, Security, etc. - Establish and maintain an Army Center of Excellence providing technical assistance to all Army agencies with respect to IPv6 and other network protocol issues affecting the AKEA. Assess IPv6 protocol dependencies with respect to capabilities, maturity, and limitations. Dependencies critical to Army networks include: mobility, network management, bandwidth management, dynamic quality of services, multicast, hierarchical routing, etc. - Maintain a test bed capability to validate and verify proposed and emerging network technologies and protocols. Test bed resources will include hardware and software testing tools and Modeling and Simulation tools. - Maintain and operate a test bed capability to analyze IPv6 impacts on Army network architectures. Facilities will verify interoperability among Army, Joint, Interagency, and Multinational networks utilizing IPv4 and IPv6 coexistence mechanisms. - Analyze and evaluate network comm issues with WIN-T,JTRS,FCS as they relate to AKEA.	2619	1959	2388	2458
Applied Communications and Information Networking (ACIN)FY02: - Develop wireless identification tags that can identify friend or foe. - Develop and evaluate broadband wide bandgap 50 watt amplifier which addresses requirements of JTRS. - Demonstrate data rate and security enhancements, to include authentication, authorization, and encryption, with a 50 node ad-hoc networked battlefield sensor system. - Develop transmit Ka band antenna. Integrate and demonstrate with receive antenna developed in Phase 1. - Refine workshops toward customer specific concerns regarding the impact of technology on emerging architecture. - Evaluate new WLAN standards. Assess 802.11a 54 Mbps and HiperLAN. Conduct multipath fading testing on 802.11lb. -Develp software to allow Personal Digital Assistant (PDA) to communicate securely.	5945	0	0	0

Accomplishments/Planned Program (continued)	FY 2002	FY 2003	FY 2004	FY 2005
Applied Communications and Information Networking (ACIN) FY03: - Evaluate high-dynamic range low-noise amplifiers, mixers, and local oscillators for receiver applications in the 30Mhz to 2 Ghz frequency range. - Characterize the state-of-the-practice of the implementation of COTS Ultra-wideband (UWB) products and of UWB technologies, and evaluate the performance and the potential performance of UWB in DoD applications. - Prototype a Software Defined Radio from commercially available hardware and software components while meeting the key JTRS performance requirements. - Allow development of interoperable and secure mobile agents incorporated in PDA platfoms and suitable for DoD commercial applications. - Develop and demonstrate On-The-Move SATCOM ground terminal for PM MILSATCOM's Ka band Satellite (KaSAT) program. - Develop a prototype of an ad-hoc deployable communication system, based on small, low-cost voice and data communication relay nodes, to enable communications in critical situations in which there are particularly challenging non line of sight links. - Development of a unique Radio Frequency Identification (RFID) system that unambiguously identifies a user at a reasonable distance. This will be accomplished by integrating a high quality fingerprint imaging and authentication system with a wireless identification system.	0	11310	0	0
Totals	8564	13269	2388	2458

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

C. Acquisition Strategy: With this program the Army will benefit by achieving the following objectivess:

- Identify network and communication gaps among legacy, interim, and future Army network architectures before they are accepted and deployed.
- Ensure System of Systems network protocol interoperability prior to finalizing system developments.
- Utilize technology proficiency and lessons learned to mitigate risks associated with deploying emerging technologies across the AEA.
- Initiate a comprehensive standardized approach to transition Army systems and architectures from the current IPv4 based network environment to a modern and dynamic IPv6 version.
- Reduce system development costs by leveraging from a centralized and well-coordinated program while introducing emerging protocols, such as IPv6, within interim and future communication systems and architectures.

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604805A - Command, Control, Communications Systems - Eng Dev

PROJECT
629

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Systems Engineering	In House	CECOM RDEC, Fort Monmouth, NJ	5110	2186	1-4Q	2388		2458		Continue	12142	0
b . 1)	C-T&M	MITRE, Eatontown, NJ	1226	480	1-4Q	0		0		Continue	1706	0
c . 2)	C-T&M PSLA	SRI, Eatontown, NJ	840	420	1-4Q	0		0		Continue	1260	0
d . 3)	C-T&M	Janus Research Group, Abbling, GA	0	183	1-4Q	0		0		0	183	0
e . ACIN	OT (Other Transactions)	Drexel Univ, Philadelphia, Pa	17388	10000		0		0		0	27388	0
Subtotal:			24564	13269		2388		2458		Continue	42679	0

ARMY RDT&E COST ANALYSIS(R-3)

February 2003

BUDGET ACTIVITY
5 - System Development and Demonstration

PE NUMBER AND TITLE
0604805A - Command, Control, Communications Systems - Eng Dev

PROJECT
629

II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2003 Cost	FY 2003 Award Date	FY 2004 Cost	FY 2004 Award Date	FY 2005 Cost	FY 2005 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Subtotal:			0	0		0		0		0	0	0

Remarks: Not Applicable

Project Total Cost:			24564	13269		2388		2458		Continue	42679	0

Schedule Profile Detail (R-4a Exhibit)

February 2003

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - System Development and Demonstration	**0604805A - Command, Control, Communications Systems - Eng Dev**	**629**

Schedule Detail	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Evaluate Architecture Issues	1-4Q	1-4Q	1-4Q	1-4Q				
Assessment and Analysis of Technology Impacts	1-4Q	1-4Q	1-4Q	1-4Q				
Policy and Implementation Plan Development	1-4Q	1-4Q	1-4Q	1-4Q				