

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

February 2002

BUDGET ACTIVITY 5 - Engineering and manufacturing development	PE NUMBER AND TITLE 0604280A - Joint Tactical Radio System						PROJECT 162		
COST (In Thousands)	FY 2001 Actual	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
162 JOINT TACTICAL RADIO SYSTEM	59814	74814	65818	50909	40053	63489	47106	0	460440

A. Mission Description and Budget Item Justification: The mission of the Joint Tactical Radio System (JTRS) program is to provide software programmable, reconfigurable digital radio systems to meet Joint Vision 2020 requirements for interoperability, flexibility, adaptability, and information exchange. The program will acquire a family of affordable, scaleable, high-capacity, interoperable Line of Sight (LOS) and Beyond Line of Sight (BLOS) radios to support simultaneous networked voice, data, and video transmissions with low probability of intercept within the frequency band of 2Mhz to 2GHz. The program will provide operational forces with an upgraded interoperable communications capability for improved battlespace management and increased warfighter effectiveness. Additionally, JTRS will contribute to Homeland Security and Defense, providing communications interoperability among civil and local agencies, particularly First Response units.

The JTRS program is a distributed acquisition effort, with acquisition responsibilities provided by Service acquisition agencies. The JPO is responsible for (1) the overall management and oversight of the JTRS program, (2) development, validation, and evolution of a common JTRS Software Communications Architecture (SCA), (3) development and maintenance of waveform software applications, (4) development of software cryptographic algorithms, and (5) testing and certification of JTRS hardware and software products. Service acquisition agencies are responsible for acquiring and fielding particular systems to meet specific warfighter needs, including hardware development, integration of software, and platform integration efforts. This approach promotes commonality, jointness and interoperability, providing cost savings through maximization of software code porting and reuse, technology insertion, and common solutions, while allowing flexibility to meet unique requirements. The Army is the Executive Service for the joint program.

This system supports the Legacy to Objective Transition path of the Transformation Campaign Plan (TCP).

FY 2001 Accomplishments:

- 19722 Maintained and evolved the SCA.
- 18047 Began acquisition of waveforms and crypto algorithm software listed in JTRS ORD (Operational Requirements Document).
- 7460 Provided for technology advancement and problem resolution, to include areas such as multiple independent levels of security (MILS), multilevel security (MLS), and network security.
- 7278 Began implementation of hardware and software waveform certification process (SCA compliance testing).

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- 4427 Continued Joint Program Office (JPO) technical support, including the definition and specification of a new wideband networking waveform, systems engineering, spectrum allocation and approval for use, systems security engineering and problem resolution and support of Software Communications Architecture (SCA) activities. Provided technical guidance to Service program management offices (PMOs). Provided oversight for all DoD radio acquisitions to ensure JTRS interoperability.
- 2880 Continued JPO program support, including administration, program management, international cooperative efforts, legal, contracting, budget execution and cost estimating activities.

Total 59814

FY 2002 Planned Program

- 3000 Maintain and evolve the SCA.
- 49164 Continue acquisition of waveforms listed in JTRS Operational Requirements Document (ORD), including significant activities associated with development of complex waveforms. Continue development of crypto algorithm software.
- 7500 Continue technology advancement and problem resolution, to include areas such as multiple independent levels of security (MILS), multilevel security (MLS), network security, and network modeling.
- 5001 Continue hardware and software waveform certification process (SCA compliance testing) to meet program requirements.
- 6350 Continue JPO technical support, including waveform development, systems engineering, spectrum allocation and approval for use, systems security engineering and problem resolution and support of SCA activities. Provide technical guidance to Service PMOs. Provide oversight for all DoD radio acquisitions to ensure JTRS interoperability.
- 3799 Continue JPO program support, including administration, program management, international cooperative efforts, legal, contracting, budget execution, and cost estimating activities.

Total 74814

FY 2003 Planned Program

- 1500 Maintain and evolve the SCA.
- 47421 Continue acquisition of waveforms listed in JTRS ORD, including significant efforts associated with development of complex waveforms initiated in FY02. Continue development of crypto algorithm software.
- 2500 Continue technology advancement and problem resolution, to include areas such as multiple independent levels of security (MILS), multilevel security (MLS), and network security.

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FY 2003 Planned Program (Continued)

- 5352 Continue hardware and software waveform certification process (SCA compliance testing).
- 5725 Continue Joint Program Office (JPO) technical support, including waveform development, system engineering, spectrum allocation and approval for use, systems security engineering and problem resolution and support of Software Communication Architecture (SCA) activities. Provide technical guidance to Service Program Management Offices (PMOs). Provide oversight for all DoD radio acquisitions to ensure JTRS interoperability.
- 3320 Continue JPO program support, including administration, program management, international cooperative efforts, legal, contracting, budget execution and cost estimating activities.

Total 65818

<u>B. Program Change Summary</u>	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2002 PB)	61648	80449	65973
Appropriated Value	62218	75449	0
Adjustments to Appropriated Value	0	0	0
a. Congressional General Reductions	0	-635	0
b. SBIR / STTR	-1833	0	0
c. Omnibus or Other Above Threshold Reductions	0	0	0
d. Below Threshold Reprogramming	0	0	0
e. Rescissions	-571	0	0
Adjustments to Budget Years Since FY2002 PB	0	0	-155
Current Budget Submit (FY 2003 PB)	59814	74814	65818

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<u>C. Other Program Funding Summary</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>To Compl</u>	<u>Total Cost</u>
RDTE, 0604805A C3 Systems - Eng Dev; project 615, JTRS Ground Domain Integration	27447	93238	63551	61136	46335	28797	4882	Continue	Continue
RDTE, 0603713A Army Data DIA System; project 370, JTRS Army Data Distribution System	17	0	0	0	0	0	0	0	3741
OPA, Army Data Distribution System, BU1400 (EPLRS/JTRS; shared funding in FY05/06)	0	0	0	0	117812	199562	120017	Continue	Continue
RDTE, 0604201A Aircraft Avionics	40527	50838	40308	59535	31645	30893	6327	Continue	Continue
APA, JTRS A-Kit Procurement AA0702	0	0	0	1941	2155	21604	131329	Continue	Continue

D. Acquisition Strategy: The JTRS acquisition strategy consists of a three-step process:

Step 1 ? Baseline definition of the software architecture. This step was completed in FY99.

Step 2 ? Development and validation of the SCA. Step 2 is further divided into three parts. In Step 2A, a four-company Consortium (Raytheon, ITT, Rockwell-Collins, and BAE) developed the architecture and validated it as the Software Communications Architecture (SCA). The SCA is currently at Version 2.2, which was published in December 2001. In Step 2B, other companies are providing additional third-party validation. The validation process uses hardware prototypes and an initial set of software-based waveforms. Step 2C, which is managed and partially funded by PM Tactical Radio Communications (TRCS), is another prototyping activity. It will demonstrate that the SCA supports the security enhancements now in the SCA and JTRS networking requirements.

Step 3 ? In Step 3, the JPO will develop waveform software applications and certify JTRS products. This step will be on-going. The JPO will develop waveforms as identified in the JTRS Operational Requirements Document (ORD). To reduce cost and ensure ?best value? for waveform development, the JPO will group similar waveforms in consolidated acquisition efforts. The JPO will also develop certification tools and procedures for the testing of JTRS products. Also in Step 3, the Services will acquire and field JTRS radios. The Defense Acquisition Executive (DAE) Review on October 30, 2000, approved the basic acquisition approach and the first Joint Cluster procurement. Cluster 1 is a joint acquisition led by the Army (PM TRCS).

A Defense Acquisition Board (DAB) Program Review was held on July 19, 2001. On August 2, 2001, the Defense Acquisition Executive (DAE) signed a memorandum that approved the JTRS acquisition strategy. This memorandum also designated the JTRS SCA and waveform program an ACAT 1D program, to be managed by the JTRS JPO. The Cluster 1 acquisition was also designated an ACAT 1D program, to be managed by the Army?s Program Executive Officer,

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Command, Control, and Communication Systems (PEO C3S).

The SCA has been established as the standard for future DoD radio procurements. The JPO is also advocating the SCA as a commercial and international industry standard. This approach will enable DoD to leverage off the substantially larger research and development budgets and volume productions of the commercial marketplace. The JPO is working with standards bodies (such as the Object Management Group) and forums (such as the Software Defined Radio Forum) to transition the SCA to commercial industry, and will represent DoD interests in those groups when the transition is made. As an international standard, the SCA will also meet the Joint Vision 2020 goal of United States communications interoperability with allied and coalition partners.

<u>E. Schedule Profile</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>
Complete Step 2A Consortium SCA Validation with Waveforms and Prototypes	1Q						
Deliver Version 2.0 of SCA	1Q						
DAE Review	1Q						
Maintain and Evolve SCA	1-4Q						
Address Technology Advancement Issues and Problem Resolution	3-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
DAB Program Review	4Q						
Deliver Version 2.2 of SCA		1Q					
Acquire ORD Waveforms		3-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q
Provide Certification of JTRS SCA Compliance for Acquired Systems and Waveforms		1-4Q	1-4Q	1-4Q	1-4Q	1-4Q	1-4Q

NOTE: All milestones scheduled through 1QFY2002 have been accomplished.

ARMY RDT&E COST ANALYSIS(R-3)

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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Architecture Development and Validation; Maintain & Evolve SCA*	Various	Various	42367	19722	1-4Q	3000	2-3Q	1500	2Q	Continue	Continue	Continue
b . Waveform Development; Crypto S/W; Waveform Sustainment Engineering	Various	Various	815	18047	2-4Q	49164	2-3Q	47421	1-3Q	Continue	Continue	Continue
c . Certification (SCA Compliance Testing)	Various	Various	30	7278	2-4Q	5001	1-3Q	5352	1-3Q	Continue	Continue	Continue
d . Technology Advancement/Problem Resolution	Various	Various	0	7460	3-4Q	7500	2-3Q	2500	1-2Q	Continue	Continue	Continue
Subtotal:			43212	52507		64665		56773		Continue	Continue	Continue

Remarks: * Step 2C activities partially funded in Army Program Element 0604805A; Managed by PM TRCS.

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II. Support Cost	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . FFRDC - MITRE and Other contracted Technical Support	FFP	Various	11208	4427	1-4Q	6350	1-3Q	5725	1-3Q	Continue	Continue	Continue
Subtotal:			11208	4427		6350		5725		Continue	Continue	Continue

III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . N/A*	N/A	N/A	0	0		0		0		0	0	0
Subtotal:			0	0		0		0		0	0	0

Remarks: *System and operational testing performed by the Services; funded in Service appropriations.

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IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2001 Cost	FY 2001 Award Date	FY 2002 Cost	FY 2002 Award Date	FY 2003 Cost	FY 2003 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a . Program Support	Various	Various	5522	2880	1-4Q	3799	1-4Q	3320	1-4Q	Continue	Continue	Continue
Subtotal:			5522	2880		3799		3320		Continue	Continue	Continue
Project Total Cost:			59942	59814		74814		65818		Continue	Continue	Continue