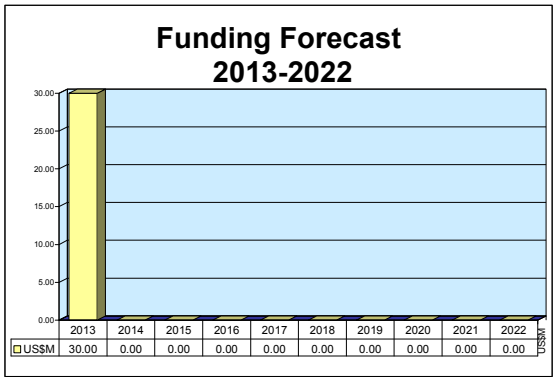
Joint Tactical Radio System (JTRS)

Outlook

- On September 30, 2012, the Joint Tactical Radio System program was officially closed
- Forecast International expects "residual" funding of the Joint Tactical Radio System program to end in FY13
- Barring further activity, the Joint Tactical Radio System report will be archived in June 2014



Orientation

Description. The Joint Tactical Radio System (JTRS) program was a United States Department of Defense (DoD) undertaking to develop and produce a single standard software-operated radio system for the United States armed services.

Sponsor
U.S. Department of Defense
Washington, DC

Status. The Joint Tactical Radio System program has been disbanded.

Application. Communications

Contractors

Prime

Boeing	http://www.boeing.com, 100 N Riverside, Chicago, IL 60606 United States, Tel: + 1 (312) 544-2000, Fax: + 1 (312) 544-2082, Prime (RDT&E)
Data Link Solutions LLC	http://www.datalinksolutions.net/dls, 350 Collins Rd NE, Cedar Rapids, IA 52498 United States, Tel: + 1 (319) 295-4357, Email: dls@datalinksolutions.net, Prime (RDT&E)
General Dynamics C4 Systems	http://www.gdc4s.com, 8201 E McDowell Rd, Scottsdale, AZ 85252-3812 United States, Tel: + 1 (480) 441-3033, Email: info@gdc4s.com, Prime (RDT&E)
ITT Exelis Inc	http://www.exelisinc.com, 1650 Tysons Blvd, Suite 1700, McLean, VA 22102 United States, Tel: + 1 (703) 790-6300, Fax: + 1 (703) 790-6360, Prime (RDT&E)
Lockheed Martin Corp	http://www.lockheedmartin.com, 6801 Rockledge Dr, Bethesda, MD 20817 United States, Tel: + 1 (301) 897-6000, Fax: + 1 (301) 897-6704, Prime (RDT&E)
Rockwell Collins Inc	http://www.rockwellcollins.com, 400 Collins Rd NE, Cedar Rapids, IA 52498-0001 United States, Tel: + 1 (319) 295-1000, Fax: + 1 (319) 295-5429, Prime (RDT&E)
ViaSat Inc	http://www.viasat.com, 6155 El Camino Real, Carlsbad, CA 92009-1699 United States, Tel: + 1 (760) 476-2200, Fax: + 1 (760) 929-3941, Prime (RDT&E)
BAE Systems Inc	http://www.baesystems.com, 1101 Wilson Blvd, Suite 2000, Arlington, MD 22209 United States, Tel: + 1 (703) 312-6100, Program Participant (RDT&E)

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Cubic Corp	http://www.cubic.com, 9333 Balboa Ave, PO Box 85587, San Diego, CA 92186 United States, Tel: + 1 (858) 277-6780, Fax: + 1 (858) 277-1878, Email: cubicinfo@cubic.com, Program Participant (RDT&E)
Harris RF Communications Division	http://rf.harris.com, 1680 University Ave, Rochester, NY 14610 United States, Tel: + 1 (585) 244-5830, Fax: + 1 (585) 242-4755, Email: RFComm@harris.com, Program Participant (RDT&E)
MD Helicopters Inc (MDHI)	http://www.mdhelicopters.com, 4555 E McDowell Rd, Mesa, AZ 85215 United States, Tel: + 1 (480) 346-6344, Fax: + 1 (480) 346-6818, Program Participant (RDT&E)
Northrop Grumman Corp	http://www.northropgrumman.com, 2980 Fairview Park Dr, Falls Church, VA 22042 United States, Tel: + 1 (703) 280-2900, Email: onewebmaster@ngc.com, Program Participant (RDT&E)
Raytheon Co	http://www.raytheon.com, 870 Winter St, Waltham, MA 02451-1449 United States, Tel: + 1 (781) 522-3000, Fax: + 1 (781) 860-2520, Program Participant (RDT&E)
SRA International Inc	http://www.sra.com, 4300 Fair Lakes Ct, Fairfax, VA 22033 United States, Tel: + 1 (703) 803-1500, Fax: + 1 (703) 803-1509, Program Participant (RDT&E)
Science Applications International Corp (SAIC)	http://www.saic.com, 10260 Campus Point Dr, San Diego, CA 92121 United States, Tel: + 1 (858) 826-6000, Fax: + 1 (858) 826-6634, Program Participant (RDT&E)
Thales Communications Inc	http://www.thalescomminc.com, 22605 Gateway Center Dr, Clarksburg, MD 20871 United States, Tel: + 1 (240) 864-7000, Fax: + 1 (240) 864-7920, Email: Product.Support@thalescomminc.com, Program Participant (RDT&E)

Comprehensive information on Contractors can be found in Forecast International's "International Contractors" series. For a detailed description, go to www.forecastinternational.com (see Products & Services/Governments & Industries) or call + 1 (203) 426-0800.

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Technical Data

The Joint Tactical Radio System (JTRS) program developed parts or all of the following items.

Joint Tactical Radio Set. The Joint Tactical Radio (JTR) Set is a completely functional configuration of radio communications hardware and software that provides the full range of JTRS services. A JTR Set includes, but is not limited to, receiver-transmitters, microphones, speakers, antennas, power amplifiers, batteries (for dismounted sets), interconnecting cables, platform installation kits, routers, and other networking components.

Software Communications Architecture. The functionality of the Joint Tactical Radio System is built upon the Software Communications Architecture (SCA), a software program that enables the JTR Set to operate other software programs designed for communications. The SCA is likened to a PC operating system (such as Microsoft Windows).

Software-Based Waveforms. A waveform is the shape and form of a communications signal. Interoperability within JTRS will be supported using software-based waveforms. The waveform software developed for JTRS includes not only the actual radio frequency signal in space, but also the entire set of radio functions that occur from the user input to the RF output and vice versa.

A JTRS waveform is implemented as a reusable, executable software application independent of the JTRS operating system, middleware, and hardware. JTRS waveforms will be "portable" between hardware platforms, meaning that the basic waveform software will be developed in such a way that it may be "ported" to multiple hardware platforms and operating systems.

Variants/Upgrades

Under the Joint Tactical Radio System program, the U.S. Department of Defense developed parts or all of the following Joint Tactical Radio Sets:

Handheld/Manpack/Small Form Fit. The Handheld/Manpack/Small Form Fit (HMS) radio program will provide a software-reprogrammable,

networkable, multiband, multimode radio system capable of simultaneous voice/data/video communications. HMS Increment 1 consists of two-channel handheld and two-channel manpack (including vehicular mounted) applications and a family of small form fit (SFF) embedded applications (SFF-A, B, C, D, H, I, and J).

Airborne/Maritime/Fixed-Station (AMF) JTRS. The AMF JTRS program will develop and procure a software-programmable radio system that will be used by U.S. civilian and military airborne, maritime (surface and subsurface), and fixed-station platforms. AMF JTRS capabilities will be developed using an incremental approach, with each increment building on the technological achievements of its predecessor while providing expanded capabilities.

MIDS JTRS. The Multifunction Information Distribution System (MIDS)-Low Volume Terminal (LVT) enables integrated communications, navigation, and identification for military operations. The objective of the MIDS JTRS program is to transform the current MIDS-LVT into a four-channel, SCA-compliant JTRS while maintaining current Link 16 and tactical air navigation system (TACAN) functionality.

For detailed information on MIDS JTRS procurements, see the Forecast International report titled "USQ-140."

Program Review

JTRS Program Established, Restructured

In September 1997, the United States Under Secretary of Defense signed a Decision Memorandum officially creating the JTRS program. The memorandum established a U.S. Joint Program Executive Office (JPEO) to lead the JTRS effort.

In June 1999, the JPEO JTRS selected the baseline SCA definition developed by a consortium led by Raytheon Company. In October 1999, the JPEO JTRS chose the Raytheon consortium to create the SCA and validate that the software program actually worked – efforts that were completed in November 2001.

In November 2005, the U.S. DoD Defense Acquisition Executive and senior JTRS program leadership selected a "replan" option that restructured the JTRS program to emphasize cost and schedule performance while executing a moderate technical risk plan. This new JTRS development and acquisition strategy was formalized and approved by an Acquisition Decision Memorandum signed in March 2006 by the Under Secretary of Defense for Acquisition, Technology, and Logistics.

JTRS Program Formally Closed

In July 2012, the U.S. DoD's Under Secretary of Defense for Acquisition, Technology, and Logistics approved a move to disband the Joint Tactical Radio System program office and transition oversight of all radio acquisition programs once under the management of the JTRS Joint Program Executive Office to the individual services (Army, Navy, and Air Force). On September 30, 2012, the Joint Tactical Radio System program was officially closed.

Funding

U.S. RDT&E FUNDING

	FY13 (Est) QTY	FY13 (Est) AMT	FY14 (Req) QTY	FY14 (Req) AMT	FY15 (Req) QTY	FY15 (Req) AMT
RDT&E (U.S. Army)						
PE#0604280A	-	0.00	-	31.83	-	0.65

	FY13 (Est) QTY	FY13 (Est) AMT	FY14 (Req) QTY	FY14 (Req) AMT	FY15 (Req) QTY	FY15 (Req) AMT
RDT&E (U.S. Air Force)						
PE#0604280F						
Project 5068	-	2.59	-	0.00	-	0.00

All $ are in millions.

Source: U.S. Department of Defense FY14 RDT&E budget documents.

Joint Tactical Radio System (JTRS)

Contracts/Orders & Options

Contractor	Award ($ millions)	Date/Description
The Boeing Company	856.5	Jun 2002 – Contract from the U.S. Army for the development, demonstration, and low-rate initial production (LRIP) of 10,000 JTRS Cluster 1 JTR Sets. Work was to be completed by Jan 31, 2008. The U.S. Army Communications-Electronics Acquisition Center, Fort Monmouth, NJ, was the contracting activity. (DAAB07-02-C-C403)
SRA International	41.0	Jul 2003 – Competitive task order to provide systems engineering and program support services to the U.S. DoD JTRS JPO. Under the task order, SRA provides communications systems engineering, program support services, and full life-cycle acquisition support to the JPO for the oversight of the development and fielding of JTRS.
General Dynamics	295.0	Jul 2004 – A $10 million increment as part of a $295,625,001 cost-plus-award-fee, time and materials, firm-fixed-price and fixed-price-incentive-successive target contract for Cluster 5 of the JTRS program. Work was to be completed by Dec 30, 2011. The U.S. Army Communications-Electronics Command, Fort Monmouth, NJ, was the contracting activity. (W15P7T-04-C-E405)
Lockheed Martin	766.00	Mar 2008 – SDD contract from the Electronic Systems Command, Hanscom Air Force Base, for the AMF JTRS program. The contract encompasses critical design, prototype and EDM fabrication, initial testing and certification, and options for LRIP. In keeping with the JPEO JTRS Enterprise Business Model for competition in production, Lockheed Martin will be responsible for qualifying a minimum of two sources for each form factor and ensuring their JTRS compliance.
Science Applications International Corporation	42.00	Apr 2008 – Task order from the Space and Naval Warfare Systems Command to provide program management and engineering support services to the military in developing, producing, and fielding radios for the JTRS GMR and HMS programs. This single-award contract has a one-year base period of performance, four one-year options, and a total value of more than $42 million if all options are exercised.
General Dynamics	140.00	Apr 2008 – Contract worth up to $140 million to develop and integrate the maritime and fixed-site JTR capabilities and provide information assurance services for the Lockheed Martin AMF JTRS team. Under the contract, General Dynamics will develop and provide qualification testing for the JTRs for maritime and fixed sites, including radio set certification, waveform integration, and deployment of fixed-site communications equipment. Also, the company is developing the Type 1 INFOSEC modules for the AMF radios and obtaining certification and accreditation for the AMF JTRS. Work is being performed specifically by General Dynamics C4 Systems.
SRA International	108.00	Apr 2008 – A five-year contract to provide a full range of program management, acquisition, and financial support; information assurance; and logistics and technical management services. SRA will also provide software and systems engineering, as well as test and evaluation services to support the development and deployment of its radio transmission and network services products.
Northrop Grumman	240.00	Jul 2008 – A 56-month contract from Lockheed Martin worth up to $240 million, if all options are exercised, to provide critical technologies for the AMF JTRS. To date, $186.7 million has been awarded for software-defined radio development.

Joint Tactical Radio System (JTRS)

Contractor	Award ($ millions)	Date/Description
Lockheed Martin	98.64	Dec 2008 – A CPIF not-to-exceed contract modification from the U.S. Navy to develop, integrate, and test components of the Mobile User Objective System (MUOS) Common Air Interface to form a fully functional JTRS-compliant waveform application, version 3.x. This effort was to be completed in 2011. The Space and Naval Warfare Systems Command, San Diego, CA, was the contracting activity. (N00039-04-C-2009)
Rockwell Collins	31.41	Jun 2009 – An ID/IQ contract from the U.S. Navy for ultra-high-frequency satellite communications and high-frequency communications waveform software support for the Network Enterprise Domain under the JPEO JTRS. This contract includes options which, if exercised, would bring the cumulative value to $45,401,519. Work was to be completed by Jun 2011. If all options are exercised, work could continue to Jun 2014. The Space and Naval Warfare Systems Command, San Diego, is the contracting activity. (N00039-09-D-0021)
The Boeing Company	32.99	April 2010 – ID/IQ contract from the U.S. Navy for software support for the Network Enterprise Domain under the JPEO JTRS. This two-year contract includes three one-year options which, if exercised, would bring the potential value to $54,880,000. Work was to be completed Apr 15, 2012. The Space and Naval Warfare Systems Center Pacific, San Diego, was the contracting activity. (N66001-10-D-0069)
ITT Exelis	49.53	Sep 2010 – ID/IQ contract from the U.S. Navy for in-service and technical support, maintenance/upgrades, and enhancements to the baseline JTRS Bowman waveform. Work is expected to be completed by Sep 2015. The Space and Naval Warfare Systems Command, San Diego, is the contracting activity. (N00039-10-D-0047)
BAE Systems	9.39	Feb 2011 – ID/IQ, cost-plus-fixed-fee, cost-plus-incentive-fee contract from the U.S. Navy for Link 16 software in-service support for the JPEO JTRS Network Enterprise Domain. Support efforts include technical support, software maintenance/upgrades, and enhancements to baseline JTRS Link 16 software. This two-year contract includes three one-year options which, if exercised, would bring the cumulative value of the contract to $24,119,798. Work was expected to be completed Feb 6, 2013. The Space and Naval Warfare Systems Center Pacific, San Diego, is the contracting activity. (N66001-11-D-0057)
ViaSat	14.13	Sep 2011 – Cost-plus-fixed-fee delivery order from the U.S. Navy for the development, qualification, and delivery of the Multifunction Information Distribution System JTRS Block Cycle One cryptographic modernization update. Work was expected to be completed by May 6, 2013. The Space and Naval Warfare Systems Command, San Diego, is the contracting activity. (N00039-10-D-0032)
Data Link Solutions	8.04	Sep 2011 – Cost-plus-fixed-fee delivery order from the U.S. Navy for the development, qualification, and delivery of the MIDS JTRS Block Cycle One cryptographic modernization update. Work was expected to be completed by May 6, 2013. The Space and Naval Warfare Systems Command in San Diego is the contracting activity. (N00039-10-D-0031)

Joint Tactical Radio System (JTRS)

Contractor	Award ($ millions)	Date/Description
The Boeing Company	20.00	Apr 2012 – Modification to a previously awarded two-year ID/IQ contract (N66001-10-D-0069) from the U.S. Navy that included three one-year options for the JTRS Enterprise Network Manager software support for the Network Enterprise Domain under the JPEO JTRS. As a result of this modification, the cumulative value of this contract is being increased to an estimated $75,382,000. There is no change to the period of performance as a result of this modification, which ended on Apr 15, 2013. The Space and Naval Warfare Systems Center Pacific is the contracting activity.

Timetable

Month	Year	Major Development
Sep	1997	U.S. Under Secretary of Defense creates JTRS program
Jun	1999	JTRS JPO selects baseline SCA definition developed by a four-company consortium led by Raytheon
Oct	1999	Raytheon consortium chosen by JTRS JPO to create the SCA and confirm that it works
Dec	2000	Raytheon consortium finishes development and validation of Version 2.0 of SCA
Nov	2001	Raytheon consortium finishes development and validation of Version 2.2 of SCA
Jun	2002	U.S. Army Communications-Electronics Acquisition Center awards Boeing contract for development, demonstration, and LRIP of 10,000 JTRS Cluster 1 sets
Jul	2004	U.S. Army awards General Dynamics contract for Cluster 5 of the JTRS program
Jan	2005	U.S. Army directs Boeing-led team to stop work on all JTRS Cluster 1 hardware development
May	2005	U.S. Army Acquisition executive Claude Bolton announces U.S. DoD is restructuring JTRS program
Nov	2005	U.S. DoD Defense Acquisition Executive and senior JTRS program leadership select a replan option that restructures the JTRS program to emphasize cost and schedule performance while executing a moderate technical risk plan
Mar	2006	New JTRS development and acquisition strategy is formalized and approved in an Acquisition Decision Memorandum signed by Under Secretary of Defense for Acquisition, Technology, and Logistics
Mar	2007	General Dynamics C4 Systems delivers pre-EDMs and two-channel manpack technology demonstrators of the JTRS HMS radio sets to the U.S. government for evaluation
Nov	2007	The JTRS GMR program manager advises the Under Secretary of Defense for AT&L that both the acquisition unit cost and the procurement unit cost for the JTRS GMR program have increased by at least 15 percent over the baseline estimate of Apr 2002
Jan	2008	Boeing begins production of EDMs of its JTRS GMRs
Mar	2008	Lockheed Martin awarded a $766 million SDD contract for the AMF JTRS program
Feb	2009	Boeing delivers the first two GMR EDMs to the U.S. Army's FCS program
Jan	2010	U.S. Navy awards ViaSat an order for limited production of MIDS JTRS terminals
Sep	2010	U.S. Navy awards ITT Exelis a contract for in-service and technical support, maintenance/upgrades, and enhancements to the baseline JTRS Bowman waveform
	FY11	The MIDS JTRS program begins development and implementation of a Crypto Modernization capability for MIDS JTRS
Apr	2012	The U.S. Navy awards Boeing a modification to a previously awarded contract for the JTRS Enterprise Network Manager software support for the Network Enterprise Domain under the JPEO JTRS
Jul	2012	The U.S. DoD's Under Secretary of Defense for Acquisition, Technology, and Logistics approves a move to disband the Joint Tactical Radio System program office and transition oversight of all radio acquisition programs once under the management of the JTRS Joint Program Executive Office to the individual services (Army, Navy, and Air Force)
Sep	2012	The Joint Tactical Radio System program is officially closed

Worldwide Distribution/Inventories

The Joint Tactical Radio System (JTRS) is a **U.S. Department of Defense** program.

Forecast Rationale

The Joint Tactical Radio System (JTRS) was a U.S. Department of Defense program to develop and produce a single, standard software-operated radio system for the United States armed services.

In July 2012, the U.S. DoD's Under Secretary of Defense for Acquisition, Technology, and Logistics approved a move to disband the Joint Tactical Radio System program office and transition oversight of all radio acquisition programs once under the management of the JTRS Joint Program Executive Office to the individual services (Army, Navy, and Air Force). On September 30, 2012, the Joint Tactical Radio System program was officially closed.

The JTRS Joint Program Executive Office is being replaced by the Joint Tactical Networking Center (JTNC) and is responsible for development and sustainment of JTRS software-based communications waveforms and network management. The JTNC will develop and/or modernize software-based radio waveforms and test and certify industry partner tactical networking devices to ensure interoperability across the U.S. military services. The U.S. Army will be responsible for managing the JTNC. Forecast International will issue a report on the Joint Tactical Networking Center in the future.

Forecast International expects "residual" funding of the Joint Tactical Radio System program to end in FY13. Barring further activity, the Joint Tactical Radio System report will be archived in June 2014.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR RDT&E FUNDING (in millions $)

Designation or Program	High Confidence				Good Confidence			Speculative			
	Thru 2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
MFR Varies												
JOINT TACTICAL RADIO SYSTEM Military <> United States <> Department of Defense												
	5,642.99	30.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	30.00
Total	5,642.99	30.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	30.00