

# Joint Tactical Radio System Network Enterprise Domain

## Statement Of Work for SwISS JBW IA Task



**30 June 2010**

*Prepared for*

**Joint Program Executive Office (JPEO) Joint Tactical Radio System (JTRS)**

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# 1 Scope

## 1.1 Purpose

The purpose of this Statement of Work (SOW) is to support the Joint Program Executive Office (JPEO) Joint Tactical Radio System (JTRS) Network Enterprise Domain (NED) program manager by providing for Software In-Service Support (SwISS) for JTRS JBW waveform Information Assurance (IA) activities

## 1.2 Background

This SOW identifies the requirements for preparing the JTRS JBW waveform for achieving NSA IA software certification.

## 1.3 Period of Performance

The period of performance is not to exceed 12 months.

## 1.4 Place of Performance

The primary place of performance shall be the contractor's site. The contractor also shall perform work at Government sites when necessary and/or directed by the Government. Contractor work at Government sites may include, but shall not be limited to short-term overnight trips as well as temporary or extended performance of work as necessary.

## 1.5 Security

All work shall be performed in accordance with DoD and Navy Operations Security (OPSEC) requirements in accordance with the DD254.

# 2 Applicable Documents

Title	Reference
Software Communications Architecture Specification	Version 2.2, 17 November 2001
Software Communications Architecture Specification	Version 2.2.2, 15 May 2006
Software Communications Architecture Extensions	Version 2.2.2, 22 December 2006
JPEO JTRS Standards Standardization Plan	Version 2.0.1, 04 May 2010
JTRS Test and Evaluation Laboratory SCA Test and Evaluation Plan	Version 1.1, 6 January 2009
JTRS Test and Evaluation Laboratory Standard API Verification Plan	Version 1.0, 04 April 2008
JPEO JTRS Software Standards	Version 1.2.2, 01 October 2007
IEEE Std 12207-2008, Systems and Software Engineering — Software Life Cycle Processes	Std 12207-2008 Published 31 January 2008
JTRS Unified INFOSEC Criteria	Revision 2, 02 December 2005 (SECRET//NOFORN)
NSA Memo - Information Assurance Software Categorization Guidance	September 2009

Title	Reference
NSA Memo – NSA Guidance for UIC SWD Requirements Within the Joint Tactical Radio System	March 2007
NSA Memo - Joint Tactical Radio System Unused Code Guidance	June 2006
NSA Memo – NSA Position on the Use of Isolation Methods to Mitigate the Risk of non-UIC Compliant Software Within the JTRS Waveform Application	March 2009
NSA Memo - NSA Position on Cyclomatic Complexity for JTRS Software Development Efforts	November 2008
Network Enterprise Domain Software In-Service Support (SwISS) Plan	Version 1.1, 06 August 2008
JTRS NED T&E Waveform Portability Guidelines	Version 1.1, 26 June 2008
JPEO JTRS Enterprise Information Support Plan (E-ISP)	Version 1.1, 30 September 2008 (UNCLASSIFIED//FOR OFFICIAL USE ONLY)
Joint Tactical Radio System (JTRS) Information Repository (IR) User Registration Guide	Version 1.6, 07 May 2007
Enterprise Configuration Management Plan Version 1.3	Version 1.3 February 2010

## 3 Requirements

### 3.1 General

#### 3.1.1 Overview

The contractor shall execute structured software engineering and program management processes that facilitate effective and high-quality software development. The contractor shall ensure that waveform specifications are met and that any addition or changes are properly documented. The contractor shall ensure that all changes to the JTRS JBW software waveform adhere to the JTRS Application Programming Interfaces (APIs) standards, JTRS Unified INFOSEC Criteria (UIC-SWD) requirements, JBW Waveform Software Security Report (WSSR), JTRS NED Waveform Portability Guidelines, JTRS Software Standards and JTRS Software Communications Architecture (SCA) requirements.

The contractor shall coordinate with the NED program office regarding the NSA review of the JTRS JBW baseline software waveform. The contractor shall support the NSA delta IA assessment(s) of the JTRS JBW baseline software waveform. The contractor shall support associated IA TIM(s), and coordinate with the NED program office regarding any deficiencies identified in the IA assessment to resolve any issues. The contractor shall address all IA deficiencies by making code corrections and/or documentation changes as agreed to by the Government.

### 3.1.2 Acceptance Criteria

Successful completion of this effort is defined as when no further baseline software changes are needed to meet the requirements of the JTRS UIC. Given that NED program office requests NSA's acceptance of all software and software documentation, the contractor shall develop all software and software documentation to NSA's requirements.

The Quality Assurance Method that will be utilized under this Delivery order is below:

JBW IA Task Quality Assurance Surveillance Plan (QASP) Metrics

ID	Performance Objectives	Performance Standards	Acceptable Quality Level (AQL)	Monitoring Method
1	Deliver high quality documents per CDRL and SOW requirements	Deliverables meet Govt. Standards.	All documents have been accepted by the Govt.	100% inspection
2	Deliver high quality software product	JBW product meets SCA and API requirements.	Successful completion of delta FQT	Test Witnessing
3	Deliver product that meets UIC requirements	JBW product meets applicable UIC requirements	Successful completion of Information Assurance Assessment after FQT.	Verification & Validation (V&V)

## 3.2 Specific

### 3.2.1 Analysis

The IA scripts will be provided as GFI for this delivery order. The contractor shall document all prior agreements regarding clarification of software security requirements with the NSA in the GFI Limitations and Exceptions report. The contractor shall perform analysis of the JTRS Bowman Waveform and perform an IA self-assessment by running the IA scripts provided as GFI. The contractor shall provide rationale for all findings in the GFI IA Self-Assessment Report that documents true positive (the contractor agrees the NSA finding should be fixed) and false positive (the contractor explains why they believe the finding is a false positive) findings. The contractor shall provide security categorization by file name. The contractor shall consolidate the analysis into a report for the Government (CDRL B022).

#### 3.2.1.1 IA Technical Report (CDRL B0022)

The contractor shall provide the status of the product's compliance with the IA software security requirements by the following categories based on the output from the IA scripts:

- Memory Management Issues:
  - Buffer over and under flows
  - Memory leaks
  - Null pointers
- Exception Handling Issues:
  - Empty braces
  - If-then with no else
  - Ignored return
  - Non-conforming switch statement
- Complexity Issues (as per sample template in Table 1 below):

- Cyclomatic complexity number and test path coverage
- Multiple return statements
- Unused and/or Unreachable Code Issues (excluding uninitialized variables):
  - Commented out code
  - Pre-processor directives
  - Unfinished code
  - Unused functions
  - Uncalled variables

For each major category (memory management, exception handling, complexity and unused/unreachable code) the contractor shall report:

- Total quantity of findings resulting from running software security assessment tools
- Quantity of valid findings identified after analysis

The contractor shall report complexity findings using the following table.

CCN Range	Number of Software Units		Comments
	Within Stated CCN Range	With 100% Path Coverage	
1-10			
11-20			
21-50			
>50			

Table 1 – Cyclomatic Complexity Reporting Format

- Total number of IA script findings; total number of IA findings fixed.

Cyclomatic complexity is used by the Government as an indicator of how effectively the contractor will be able to comply with UIC SWD-19 (security software shall be tested for all possible decision outcomes). The contractor shall conduct software unit tests and document the results. These results shall be available to the Government to indicate the degree of code test path coverage (coverage target = 100%).

### 3.2.2 IA fixes and Delta IA Assessment Remediation

After completion of the analysis in section 3.2.1 the contractor shall address how each of their proposed fixes will be implemented. The contractor shall implement all of the fixes as agreed-to by the Government and as documented in the final WSSR. Prior to submitting to the NSA for a delta-assessment, the contractor shall perform a new IA self-assessment report listing the rationale for all false positive findings from the GFI IA scripts. The contractor shall address and remediate any Government concerns resulting from the review of the new self-assessment report. The contractor shall deliver the remediated code to the Government. The contractor shall provide support for the NSA delta assessment. The contractor shall address and remediate any NSA concerns resulting from the review of the code until the NSA and the NED agree that no further software changes are needed to meet the requirements of the JTRS UIC.

### **3.2.3 Test Environment Support**

The contractor shall provide and/or maintain a test environment suitable for JBW software testing, demonstrations and experiments. The contractor shall provide ten (10) JTRS Soldier Radios (part number 8242937G1) with battery, antenna, handset and pouch to support testing and experiments.

### **3.2.4 SCA and API Compliance**

The contractor shall review the JBW software for compliance to the JTRS SCA 2.2.2 and JTRS API standards, support JTEL delta SCA and API testing and fix any deficiencies. The Contractor shall implement all software corrective actions (including requests for SCA deviations and/or waivers) required to make the JBW SCA 2.2.2 and API compliant to support portability to JTRS radio platforms.

### **3.2.5 Software Documentation (CDRL B006, B007, B008, B009, B010, B011, B012, B013, B015, B022, B030)**

The contractor shall update and deliver all software application releases and all necessary supporting documentation to the NED Program Office. The following documentation is required for submission to NSA:

- Software Requirements Specification (SRS)
- Software Design Description (SDD)
- Interface Design Description (IDD)
- Software Test Plan (STP)
- Software Test Description (STD)
- Software Test Report (STR)
- Software Version Description (SVD)
- Software Product Specification (SPS)
- Theory Of Compliance (TOC) info in the Waveform Software Security Report (WSSR).
- NATO Standardization Agreements (STANAGs)
- Military Standards (MIL-STD)
- Developer's applied coding standards
- Source code:
  - Field Programmable Gate Array (FPGA), Very High Speed Integrated Circuit (VHSIC), Hardware Description Language (VHDL).
  - Application software (e.g. C / C++).
- Build files, configuration files, settings (e.g. pre-compiler tokens).
- Security file categorization, isolation strategy (included within the TOC info) in the WSSR
  - Security relevance of each file
  - Isolation strategy implementation
  - Developers shall not mix security relevant and general purpose code within memory partitions. All code categorization shall be kept within the respective boundaries.
- IA Self- Assessment Report
- Limitation and Exceptions Report

### **3.2.6 Program Management**

#### **3.2.6.1 Contract Funds Status Report (CFSR) (CDRL A001)**

In accordance with paragraph 3.2.6.1 of the basic contract SOW the contractor shall submit one CFSR (DD Form 1586) under the basic contract that covers all delivery orders. Information from this delivery order will be included in the CFSR submitted under the basic contract. The CFSR report will include funding requirements and time-phased detail at the CLIN level, broken out for each delivery order. The Contractor shall also submit an MS Excel file for delivery to the Joint Tactical Radio System (JTRS) Network Enterprise Domain (NED) as defined in CDRL A001.

#### **3.2.6.2 Contract Status Report (CSR) (CDRL A003)**

The contractor shall provide monthly CSRs. The CSR shall include at a minimum:

- Progress/status reporting for this delivery order and any deliverables identified in this SOW
- A running history of progress in meeting schedules, including a brief description of activities and accomplishments during each reporting period
- A Risk Matrix, maintained by the contractor that identifies design, schedule, technical, resources, and other program element risks. The Risk Matrix shall be updated with each CSR.
- The following software metrics: (1) Software size e.g. Source Lines of Code (SLOC), (2) Organization Staffing, (3) Cost/Schedule Percent Complete

The contractor shall use the CSR to propose updates and changes, and document slippages to the deliverables schedule. Government accepted receipt of the CSR does not indicate concurrence with the CSR content or proposed changes to schedule(s).

#### **3.2.6.3 Configuration Management**

The contractor shall implement configuration management (CM) processes and maintain an internal CM Plan in accordance with the basic contract SOW.

## **4 Government Furnished Property**

The Government shall provide the IA scripts as Government Furnished Information.

## **5 Travel and Other Direct Costs**

The contractor shall propose travel and other direct costs (ODCs) required for completion of this delivery order.

## **6 Data Deliverables**

- a. All data delivered and data made available during this delivery order shall be furnished electronically IAW DD Form 1423.
- b. All data ordered IAW DD Form 1423 shall be submitted with a Letter of Transmittal (LT) or provide Government notification via an E-mail to the Government Contracting Officer. Classified data shall be handled and delivered IAW the Department of Defense (DoD) 5220.22-M "National Industrial Security Program – Operating Manual, dated February 2006. The LT shall indicate the delivery order number, Contract Line Item, Sub-Line Item Number, Data Item Number, Title and Subtitle (when applicable) of the

data, SOW paragraph number reference which required the data to be prepared, and the date of transmittal.

c. DD Form 250s Material Receipt and Acceptance shall be submitted with final data deliveries only as specified on the individual data item (see Appendix A for the Contract Data Requirements List (CDRL) and applicable Data Item Descriptions (DID)).

d. The contractor shall provide a matrix, which states the delivery method for each CDRL deliverable (i.e. CD-ROM, Webpage).

## **7 Media and File Format**

The Microsoft (MS) Office 2003 suite of applications (MS Word, MS Excel, MS PowerPoint, and MS Project) is the preferred format for documents, reports, and information furnished under this delivery order unless defined otherwise. If the contractor's file format is not compatible with the formats specified, then the contractor shall provide a compatible format that will allow the Government to read and write to the files when necessary. Should MS issue a new MS Office suite that the Government adopts as a new standard; the Government will notify the contractor in writing of the change. Other formats for the transmittal of delivery order documentation and methods for electronically signing DD Form 250s Material Receipt and Acceptance shall be as set forth in the delivery order and as agreed to by the Government and contractor.