

Joint Tactical Radio System (JTRS)

The Joint Tactical Radio System (JTRS) is a family of high-capacity, programmable, multi-band/multi-mode tactical radios to provide both line-of-sight and beyond-line-of-sight communication capabilities to the warfighter. The JTRS program will eventually replace the DoD's current inventory of some 750,000 "hardwired" tactical radios of various independently developed families and versions with some 250,000 modular, programmable JTRS radios. The JTRS uses software defined radio technology to achieve flexibility, interoperability, and ease of upgrade. The Joint Requirements Council validated the updated JTRS Operational Requirements Document in April 2002.

The Software Communications Architecture (SCA), a non-proprietary open systems architecture, is an essential component of the JTRS strategy and is the basis for software waveforms. The JTRS Joint Program Office maintains the SCA and software waveforms, while the Services develop the Joint Tactical Radio (JTR) sets in Service-led acquisition efforts called clusters. The first cluster, the Army-led Cluster 1, is developing JTR sets for Army and Marine Corps ground vehicular, Air Force Tactical Air Control Party ground vehicular, and Army rotary wing applications. Although not yet fully established, the following future clusters are envisioned: Cluster 2-handheld/manpack, Cluster 3-fixed/maritime, and Cluster 4-airborne (fast mover). A cluster for space applications is also being considered.

The Joint Program Office approach to defining the SCA involved multiple steps. The final step, Step 2C, involved the production of a small number (on the order of 200) of two-channel, SCA Version 2.0-compliant radios, called JTRS Step 2C radios. The Army plans to issue the Step 2C radios to operational units as an interim solution for critical inter-Tactical Operations Center communications requirements until Cluster 1 radios are ready. This issue will depend upon the results of an operational assessment in early 2003.

TEST & EVALUATION ACTIVITIES

Defense Acquisition Board Milestone B approved the Joint Program Office's plan to acquire software waveforms and approved the initiation of the Army-led Cluster 1 development.

OSD approved the Annex for the JTRS Joint Test and Evaluation Master Plan (TEMP) for the Cluster 1 System in May 2002. The Joint TEMP remains in Service coordination. However, prior coordination with OSD identified no significant issues.

Army awarded the Cluster 1 contract to Boeing in June 2002. Major test events planned are Early Operational Assessment in FY04 using pre-Engineering Development Model (EDM) radios, Government Developmental Test and Limited User Test in FY05 using EDM radios, and Multi-Service Operational Test and Evaluation in FY06 using Low-Rate Initial Production radios.

The Army decided in September 2002 to not field the prototype JTRS Step 2C radios as an interim solution. Instead the Army will procure additional Near Term Digital Radios. The Step 2C radio development experienced significant cost and schedule growth, while the users expressed the desire for a single "interim" tactical operations center radio solution to



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ensure interoperability without establishment of gateways and a single logistics infrastructure for “interim” radios. However, the JTRS Step 2C went through developmental testing in the November 2002 at Fort Huachuca, Arizona. Results were not available prior to publication of this report.

TEST & EVALUATION ASSESSMENT

The JTRS completed a Milestone B acquisition review in June 2002 for the overall JTRS program under the auspices of the JTRS Joint Program Office and the Army-led Cluster 1 development effort. The test strategies laid out in the two TEMPs should provide the data necessary to make informed acquisition decisions at subsequent milestones. However, several areas require continued monitoring and further attention:

- **Schedule Risk:** The Cluster 1 testing schedule, directed by the program’s General Officers Steering Group, is too compressed and success-driven for the program to meet. The program manager acknowledges the risk and has prepared contingencies.
- **Operational Concept and Requirements Uncertainty:** The concepts of operations and the requirements for the JTRS continue to evolve. These changes affect operational test considerations such as test concept, scope, platforms, and missions.
- **Number of Radios:** The Multi-Service Operational Test and Evaluation planning uses 160 JTR sets as the required number. However, changes in force structure, operational concepts, scenarios, and capability of the new, undeveloped Wideband Networking Waveform could require a larger number.
- **Testability of Measures and Requirements:** Many of the measures and associated requirements, as currently stated, are vague and neither measurable nor testable. The Cluster 1 Program acknowledges this shortcoming and is proceeding to develop better definitions.

Early and active tester involvement enhanced the integration of testing into the JTRS program. This access provided to OSD throughout the Integrated Product Team process significantly facilitated developing an acceptable test program and gaining rapid approval of documentation for the milestone review.