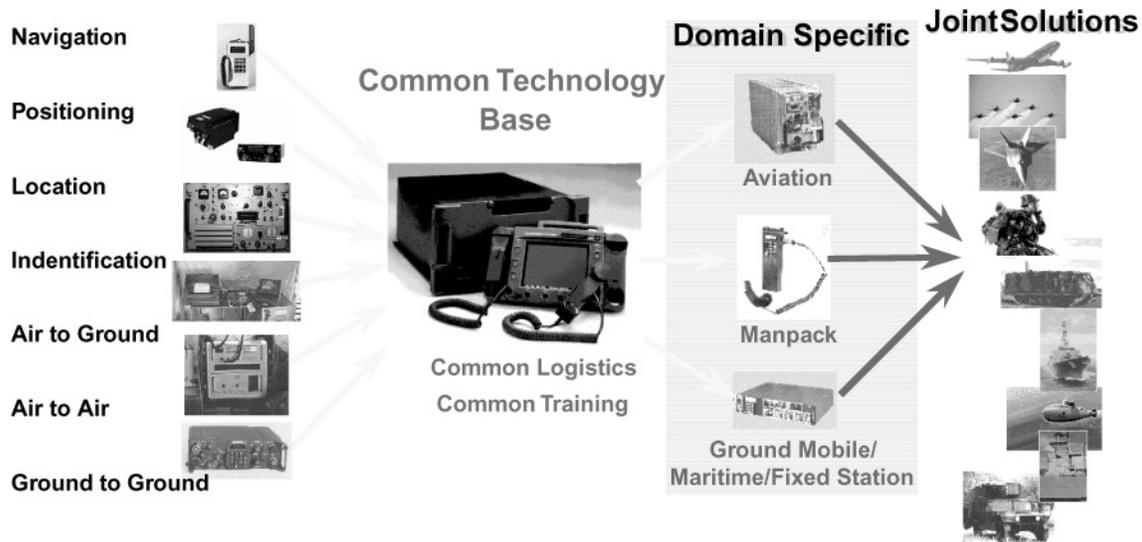


JOINT TACTICAL RADIO SYSTEM (JTRS)



Pre-MDAP Program (Army Lead)

Total Number of Systems:	TBD
Total Program Cost (TY\$):	TBD
Full-rate production:	Army: FY06 Navy: TBD Air Force: TBD

Prime Contractors

Modular Software Radio Consortium
(Raytheon, ITT, Marconi, Rockwell-Collins,)

SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2010 AND 2020

The Joint Tactical Radio System (JTRS) is a family of affordable, high-capacity, programmable, multi-band/multi-mode tactical radios designed to provide both line-of-sight and beyond-line-of-sight communication capabilities to the warfighters. JTRS uses software-defined radio technology to achieve the needed flexibility, upgradeability, and interoperability. JTRS is a pre-Major Defense Acquisition Program that currently has no fieldable radios. The program is in the process of refining an open Software Communications Architecture (SCA) using prototype laboratory radios of the Modular Software Radio Consortium.

Information superiority underpins the operational concepts outlined in *Joint Vision 2010* and *Joint Vision 2020*. JTRS responds to the need for *information superiority* by providing seamless, high-speed communications for voice, data, and video exchange within the joint battlespace. JTRS is an enabler for *conducting joint operations* with *full spectrum dominance*.

BACKGROUND INFORMATION

The Quadrennial Defense Review in 1997 identified the need and benefits of combining various Service radio acquisition programs incorporating programmable software technology. The office of the ASD (C³I) conducted a Programmable Modular Communications System IPT from February-August

1997, to identify an architecture baseline and guidance document for the Department's future tactical radios. The Joint Requirements Oversight Council (JROC) and the Joint Staff (J-6) review of numerous radio programs identified the need for a consolidated program office. The JROC approved the JTRS Operational Requirements Document on March 23, 1998. Per direction of the Defense Planning Guidance, the ASD (C³I) forwarded a Joint Tactical Radio Plan that approved the Management Execution Plan forwarded by the Army Acquisition Executive. In April 1998, USD (A&T) requested that each Service Acquisition Executive aggressively pursue the necessary steps to achieve the goal of minimizing new programs and migrating existing development programs for software-based radio communication systems to a single acquisition program. The JTRS Joint Program Office (JPO) was established to coordinate the program. The importance of the JTRS effort was emphasized in an August 1998 ASD (C³I) memorandum directing that all Service efforts to independently develop and acquire any radio system be held in abeyance.

The JTRS program's approach is to define an open architecture for the Services to acquire software-based radios. The purpose of the architecture is to ensure acquisition efficiency across the Department, foster the use of commercial-off-the-shelf products, and promote interoperability. The JTRS program is being implemented in three steps. Step 1, completed in May 1999, defined the architecture through the SCA Specification. Step 2, to be completed in November 2000, further refines the SCA and develops prototype systems for validating the architecture. In Step 3, the validated SCA will be made available to the Services to develop and procure SCA compliant radios to satisfy Service requirements.

The JTRS JPO, in conjunction with the Service radio acquisitions, will acquire waveform software that can be ported to the SCA-compliant radios during their development. Depending on service requirements, the Services will procure SCA-compliant radios in clusters. An acquisition cluster is defined as a group of radios meeting similar requirements in a given timeframe. The original concept of grouping similar requirements into "domains" (i.e., fixed/seaborne, airborne, ground vehicular, manpack, and handheld domains) still exists, but it was determined this year that from an acquisition perspective not all of a domain's requirements could be satisfied economically near-term with a technology that is evolving. In recognizing this, the Joint Staff group that developed the JTRS Operational Requirements Document is revising the document to group the requirements into time-phased blocks (in addition to domains) to support either a pre-programmed product improvement or an evolutionary acquisition approach to address the requirements. The JTRS program is still defining the definitions and determining how to divide responsibility for development within the clusters.

TEST & EVALUATION ACTIVITY

The primary test and evaluation activity has been the definition of test and evaluation programs for the overall JTRS and the JTRS Army efforts via the IPT process. Test and Evaluation Master Plans for the overall JTRS and the Army's JTRS program are being written and coordinated using this process.

JTRS SCA validation testing began in August 2000.

TEST & EVALUATION ASSESSMENT

To date, the fundamental issue complicating the definition of the test and evaluation program for the JTRS program has been the lack of a definitive JTRS program structure due to evolution of the program throughout the year. The current concept is to have a joint capstone program to do waveform

development and manage the SCA, and to have individual Service-lead programs to acquire SCA-compliant radios in clusters. A capstone JTRS Test and Evaluation Master Plan addressing JPO efforts (architectural compliance, new waveform testing, and joint interoperability) has been drafted. Annexes for each specific JTRS cluster will be planned as needed. In the JTRS-Army program, which is the first cluster acquisition, program objectives are being refined and key acquisition decisions are being identified.

An appropriate test and evaluation strategy will require continued efforts to resolve fundamental concerns such as cluster definition, developing joint concept of operations, and precisely defining information exchange and interoperability requirements. Areas of particular interest for any test program include backward compatibility with existing radios, joint interoperability, and logistics supportability of hardware and software. Other issues requiring resolution are designating a joint combat developer to define Critical Operational Issues and a concept of operations, structuring the Operational Requirements Document to support an evolutionary acquisition approach, incorporating affordability as a Key Performance Parameter, and designating lead test agencies for testing JPO products and Service cluster radios.

CONCLUSIONS, RECOMMENDATIONS AND LESSONS LEARNED

Early tester involvement can enhance the integration of testing into the program and contribute to program success. Further, early involvement fosters the interpersonal communications needed among testers, material developers, and combat developers to develop the understanding necessary to design meaningful tests. However, while early involvement by the test community can identify acquisition strategy uncertainties and issues, it cannot resolve them.

