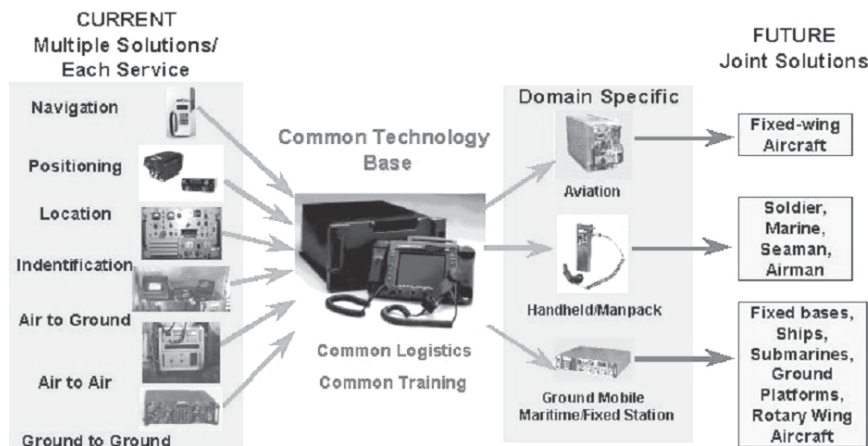


## ARMY PROGRAMS

# Joint Tactical Radio System (JTRS) Waveforms, Cluster 1 and 5 and Airborne and Maritime/Fixed Stations (AMF)

### SUMMARY

- The Joint Tactical Radio System (JTRS) is the Department of Defense family of common software-defined radios which will replace all existing tactical radios.
- JTRS is built around a common, open Software Communications Architecture (SCA), which allows common software waveform applications to be implemented across the family of radios.
- JTRS waveform will define, develop, and evolve the JTRS SCA. There are 32 waveforms identified in the Operational Requirements Document (ORD).
- Milestone B decision review in June 2002 granted approval for JTRS Cluster 1 to proceed into the System Development and Demonstration phase and it established the JTRS waveform program.
- The Milestone B decision review in May 2004 granted approval for JTRS Cluster 5 to proceed into the System Development and Demonstration phase.
- Milestone B for Airborne and Maritime/Fixed Station (AMF) is scheduled for 4QFY05.



*The JTRS program will eventually replace various versions of single-channel tactical radios with modular, programmable multi-channel JTRS radios.*

### SYSTEM DESCRIPTION AND MISSION

JTRS is a family of 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 warfighter. The JTRS program will eventually replace various versions of single-channel tactical radios with modular, programmable multi-channel JTRS radios. JTRS uses software-defined radio technology to achieve flexibility, interoperability, and ease of upgrade. The Joint Requirements Oversight Council validated the JTRS ORD Version 3.2 in March 2003. The Army is updating the ORD to a Capabilities Development Document.

The SCA non-proprietary, open-systems architecture is an essential component of the JTRS strategy. This architecture consists of five components:

- SCA Hardware Framework.
- SCA Rule Set.
- JTR Operating Environment.
- Resources and Network.
- Applications Programming Interface (API) Objects.

The SCA hardware framework supports hardware-independent platforms by binding software attributes to hardware. The SCA rule provides general guidance to support the open architecture. The operating environment is organized in to three layers; a processor layer, middle layer, and core layer. The resource and API is where the code is applied providing standardized interfaces to allow interoperability.

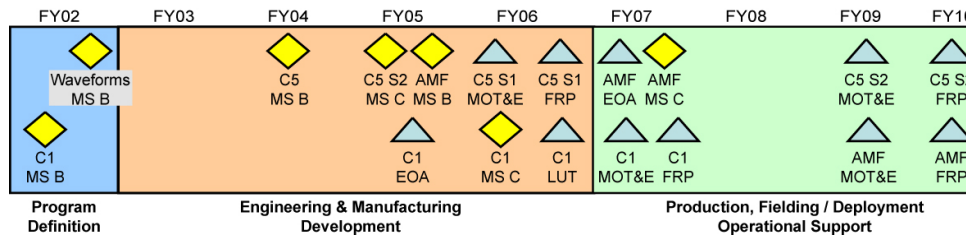
# ARMY PROGRAMS

The JTRS Joint Program Office is the lead for the software communications architecture and software waveforms. The Services will develop the Joint Tactical Radio sets in Service-led joint acquisition programs called clusters. JTRS Cluster 1, is an Army-led Acquisition Category ID program. Cluster 1 development is the Army and Marine Corps ground vehicular, Air Force Tactical Air Control Party ground vehicular, and Army rotary-wing applications. JTRS Cluster 5 is an Army-led Acquisition Category IC program. Cluster 5 development is handheld, manpack, and small form-fit sets suitable for embedding in the Army's Future Combat Systems and other platforms requiring a small special purpose radio.

In June 2004, Clusters 3 and 4 merged to form JTRS Airborne, Maritime, and Fixed Station (AMF). JTRS AMF's lead operational test agency is the Commander, Operational Test and Evaluation Force. AMF development will operate with legacy equipment and waveforms currently used by civilian and military airborne, surface, subsurface, and fix-station platforms.

The JTRS Software Communications Architecture originally applied to waveforms operating at frequencies between 2 megahertz to 2 gigahertz. In June 2003, the Assistant Secretary of Defense, Network and Information Integration, expanded the scope of the JTRS SCA to include waveforms operating at frequencies above 2 gigahertz.

## TEST AND EVALUATION ACTIVITY



The overall JTRS Cluster 1 schedule was identified as high risk at Milestone B. Current planning for JTRS Cluster 1 requires 186 engineering development Joint Tactical Radio model sets for all test activities, including both contractor and government testing. Contractor developmental testing begins in October 2004 using pre-Engineering Development Model radios.

The Army conducted a JTRS Cluster 5 Milestone B review in May 2004 without an approved TEMP.

## TEST AND EVALUATION ASSESSMENT

The Army plans an early operational assessment for JTRS Cluster 1, ground and rotary-wing, in March 2005. Test plan is expected to be submitted to DOT&E in December 2004.

The Cluster 5 contract protest was denied in October 2004. Primary issues with the test strategy include the ability to support the proposed acquisition strategy of a single full-rate decision for multiple products, applicability of existing instrumentation, and the coordination with other programs of record that will integrate the Cluster 5 sets.