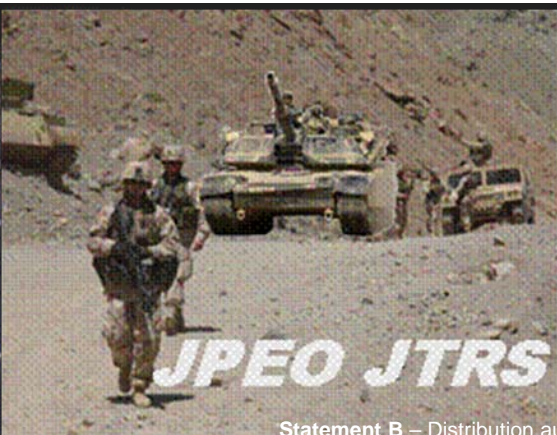




Joint Program Executive Office Joint Tactical Radio System

JTRS and COALWNW Overview for MILCIS 2008





Outline

- ▶ JTRS Background
- ▶ JTRS Enterprise Business Model
- ▶ JTRS Products
- ▶ International Strategy
 - Coalition Wideband Networking Waveform (COALWNW)
- ▶ Summary



JTRS Background

- ▶ Program purpose: develop, produce, integrate and field a family of interoperable, digital, modular, software defined radios (SDR) that operate as nodes in a network to ensure secure wireless communications and networking services for mobile and fixed forces
 - JTRS products are envisioned to receive, transmit, route and relay voice, data and video
- ▶ JTRS program was initially established to:
 - Replace legacy radios with newer open architecture technology that supports flexibility and portability
 - Address key shortfalls in battlefield communications capabilities
 - Enhance joint and coalition interoperability and reduce life cycle costs

JTRS is based on SDR technology providing capability through reusable waveform applications



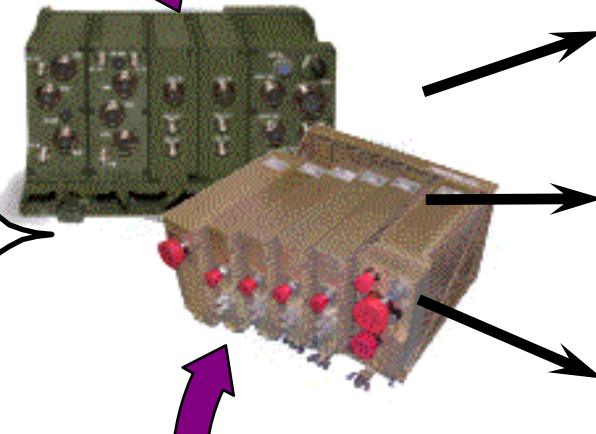
JTRS – The Vision

Current Systems
(25-30 Families)
(1,200,000 Radios)

- Navigation
- Positioning
- Location
- Identification
- Air to Ground
- Air to Air
- Ground to Ground
- SATCOM

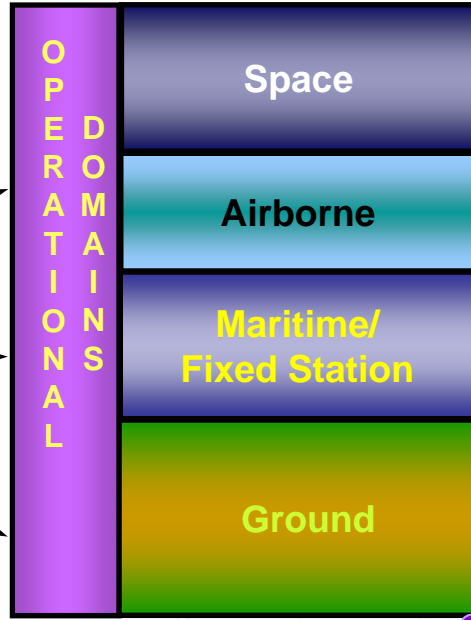


Common Open Standards Architecture & Technology Base



**Legacy Waveforms
Commercial Waveforms
New Military Waveforms**

Joint Solution
(1 Family)



replaces



JTRS – A family of common Radios and Waveforms built around a standard open architecture



JTRS Strategic Approach

Mission

Develop and produce a family of interoperable, affordable software defined radios at moderate risk which provide secure, wireless networking communications capabilities for Joint forces

Goals

MANAGE RISKS
Understand and manage Enterprise, Domain, and Program risks

DEVELOP and PRODUCE
Effectively manage program cost, schedule, and performance

INTEROPERABLE and SECURE
Institute an Enterprise approach to developing a secure interoperable JTRS capability

Enterprise Business Model

Institutionalize an Enterprise Execution and Governance model

Enhance portability and reusability while ensuring security

Maximize competition and hold Industry accountable



JPEO JTRS Enterprise Business Model (EBM) Creates the “Win-Win” for All!

Secure & Interoperable Open Standards

- Based on Software Communications Architecture (SCA)
- Standardized Application Program Interfaces (APIs)

Re-use JTRS Software Products

- Government Purpose Rights (GPR) for all software
- Place all software in the JTRS Information Repository (IR)
- Establish ground rules for IR entry
- Lower barriers of entry for industry

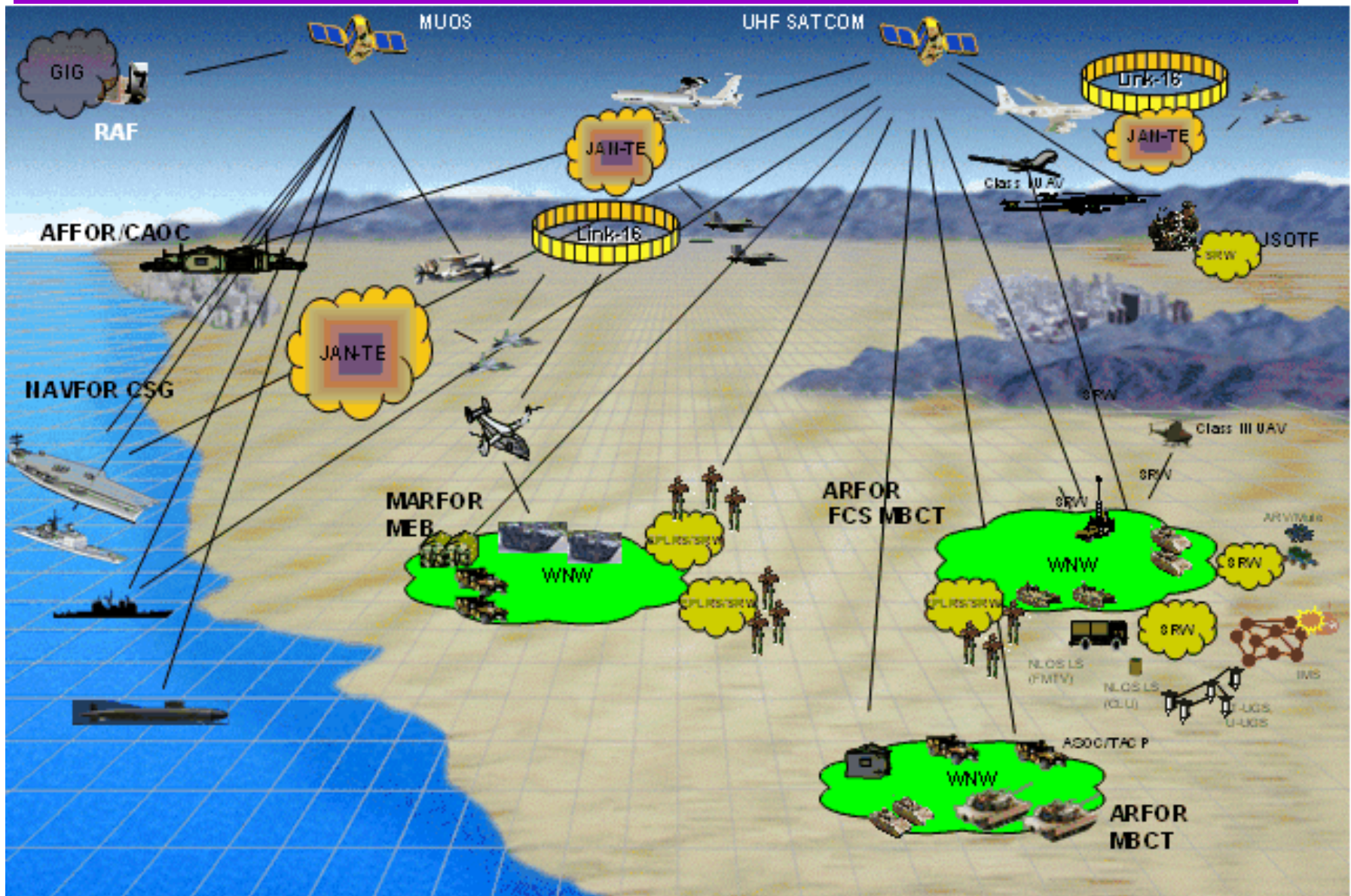
Affordable & Supportable Competition in Production

- Full and open SDD phase
- Qualify at least two sources for all production
- Compete in lots based on consolidated requirements from all Services and Customers

- ✓ Allows Industry to bring alternative JTRS solutions to the table
- ✓ Increases competition and innovation in development and production
- ✓ Reduces reliance on proprietary and restricted data rights



The JTRRS Vision – Increment 1

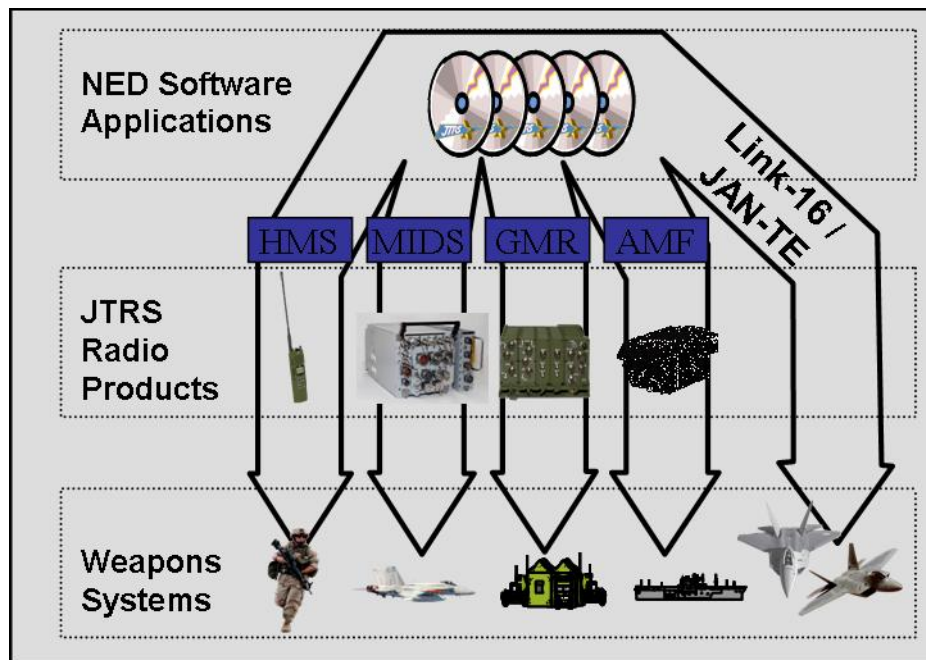




JTRS Product Lines

Network Enterprise Domain (NED)

- ▶ Develops portable, interoperable, and networking waveforms
- ▶ Develops software to manage network services needed to fully enable JTRS mobile, ad hoc networking capability
- ▶ Produces the networking capability to allow the warfighters to access and share relevant and timely information
- ▶ NED products are the core of the interoperable networking capability of JTRS



Deliveries:

- ✓ Legacy waveforms completed FQT, in JTRS IR (VHF LOS, UHF LOS, HQ II, COBRA, SATCOM 181, 182, 183, 184, SINGGARS, EPLRS, JTRS Bowman)
- ✓ Networking waveforms interim versions in JTRS IR (WNW v3.1, SRW v1.0c, TTNT v6.0)
- ✓ Networking management JWNM v3.0 in JTRS IR



JTRS Product Lines

Consolidated, Interim, Single-Channel Handheld Radios (CISCHR)

- ▶ Developed for use by U.S. Special Operations Command, U.S. Services, and NATO Special Forces
- ▶ Interoperable with other military radios and commercial systems through the instantiation of legacy waveforms
- ▶ NSA certified and considered “JTRS Approved”
- ▶ Presently deployed in combat, aiding U.S. Warfighters in Iraq and Afghanistan
- ▶ CISCHR uses a competitive acquisition strategy that consolidates and competes quantities between qualified vendors
 - Effective in driving down prices
 - Responsive to Services’ particular needs
 - Procured over 75,000 radios in FY08
- ▶ New FY09 follow-on contract planned for award in early 2009



AN/PRC-152



AN/PRC-148

**CISCHR RETURNED
OVER \$280M TO THE
SERVICES IN 2008!**



JTRS Product Lines

Ground Domain

Ground Mobile Radios (GMR): 4-channel, software-defined, multimode communications system

- ▶ Provides communication backbone for Army's Future Combat System (FCS)
- ▶ Improves communications and information sharing among warfighters through cross-banding and new networking capability
- ▶ Supports Warfighters in ground vehicles such as the Bradley and M-1 Abrams



Deliveries:

- ✓ Delivered 71 pre-EDMs to support FCS SO 1
- ✓ Delivered 50 pre-EDMs for GMR development and test
- ✓ Delivered 12 Open chassis EDM variants; EDM deliveries begin in Jan 09
- ✓ Integration, Lab Testing and Field Experimentation ongoing



JTRS Product Lines

Ground Domain

Handheld, Manpack, and Small Form Fit (HMS): 1-channel handheld and 2-channel manpack secure, software defined radios

- ▶ Meets tactical radio communications need for smaller, lightweight, more powerful devices
- ▶ Provides tactical networking in a small form factor
- ▶ Enables cost-effective net-centric warfare to move to battlefield locations previously unreachable by legacy technologies



Deliveries:

- ✓ 137 pre-EDM Small Form Factor (SFF) radios (107 SFF A, 28 SFF C & 2 SFF D)
- ✓ Delivered 75 EDM SFF A
- ✓ Delivered 22 Manpack Tech Demos (MPTD)
- ✓ Integration, Lab Testing and Field Experimentation ongoing



JTRS Product Lines

Airborne, Maritime, Fixed Site Domain

Airborne, Maritime, and Fixed Site (AMF): 4-channel, full duplex, secure software defined radios

- ▶ Provides data, voice and networking capabilities for multiple classes of aircraft, ships, and fixed-station platforms
- ▶ Enables seamless communication and improved efficiency
- ▶ Implements five initial waveforms (UHF SATCOM, MUOS, WNW, SRW, and Link-16)



Program Status:

- ✓ Completed initial designs and prototypes through PDR
- ✓ SDD contract awarded 28 Mar 08
- ✓ Program fully funded to CAIG estimate



JTRS Product Lines

Airborne, Maritime, Fixed Site Domain

Multifunctional Information Distribution System (MIDS) – JTRS:

Modular 4-channel wireless, jam-resistant, secure information system

- ▶ Evolutionary development from MIDS Low Volume Terminal (LVT)
 - Provides Link-16 and three additional reprogrammable channels
 - Network waveform capable
 - Provides real-time information and situational awareness via digital and voice communications

Deliveries:

- ✓ Provided 4 terminals to F/A-18 for DT; 5 TACAN flights completed
- ✓ Provided 6 T&I terminals to support F/A-18, B-1/JSTARS and OA
- ✓ 20 terminals supporting FAQT
- ✓ 18 additional terminals on contract to support F/A-18 DT/OT and IOC; deliveries start 2/09
- ✓ Integration, lab testing and F/A-18 DT ongoing





What JTRS Increment 1 is Delivering

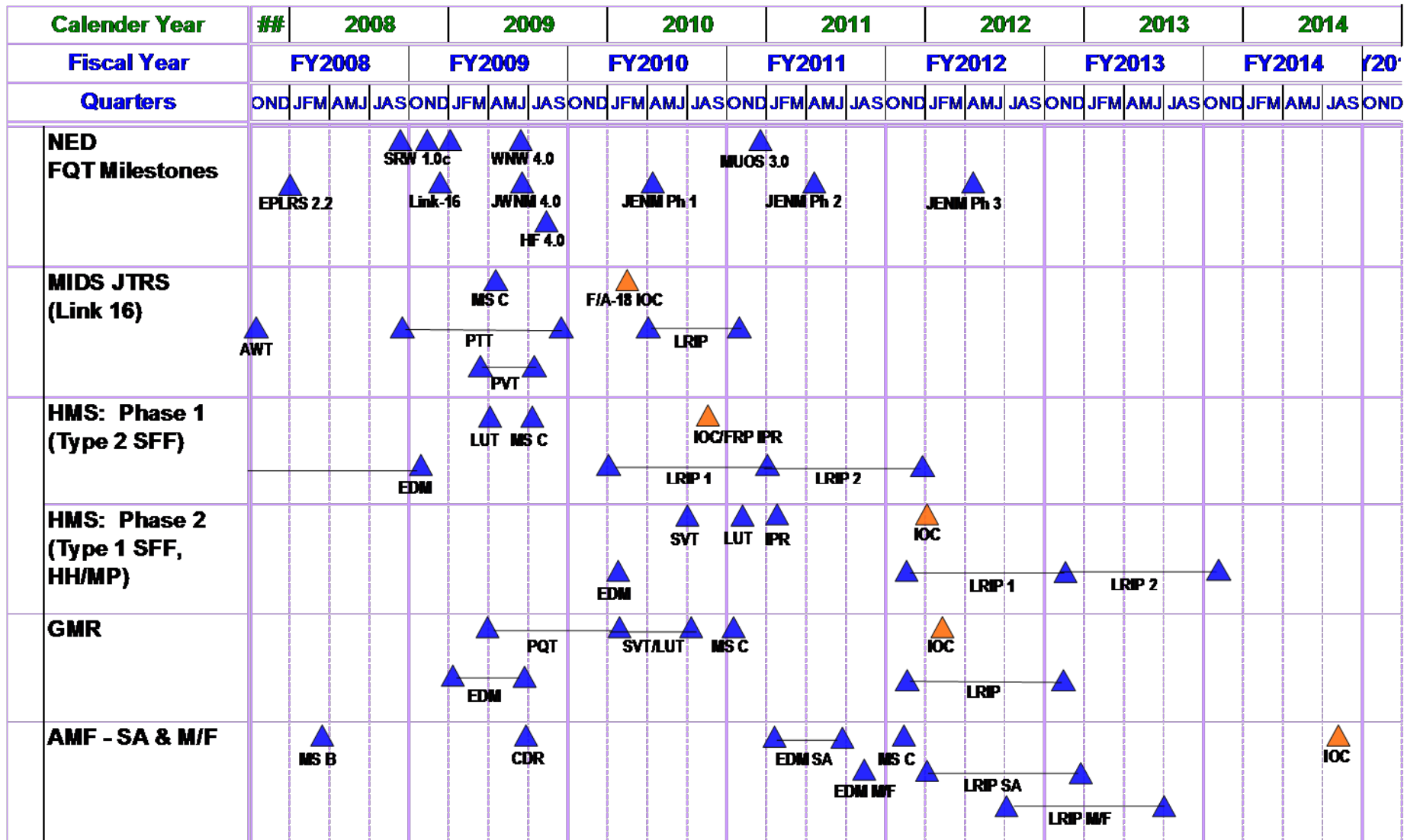
		CISCHR		Ground Domain				Airborne/Maritime/Fixed			
		MBITR /JEM	(FALCON)	(HMS)		(GMR)	(MIDS)	(AMF)			
22-Apr-08											
Version 11.1											
Joint Capability		1 CH Handheld	1Ch Handheld	Type 2 1-2 CH SFF	Type 1 1-2 CH SFF	2 CH Handheld	2 CH Manpack	4 CH Vehicle	4 CH MIDS-J	2 CH AMF-SA	4 CH AMF-M
Transformational	Joint Networking	-	-	-	-	-	-	WNW	-	WNW	-
		-	-	SRW	SRW	SRW	SRW	SRW	-	SRW	-
		-	-	-	-	-	-	-	JAN-TE	-	-
		-	-	-	-	-	MUOS-A	-	-	MUOS	MUOS
	Enterprise MGR Enterprise Svcs (R&R)	-	-	ENM	ENM	ENM	ENM	ENM	-	ENM	-
	-	-	-	ENS	ENS	ENS	ENS	-	ENS	-	
Legacy	Ground Manuver	SINC	SINC	-	SINC	SINC	SINC	SINC	-	-	-
	Ground Data	-	-	-	EPLRS	EPLRS	EPLRS	EPLRS	-	-	-
	SAT Current	-	-	-	-	-	DAMA	DAMA	-	-	DAMA
	SAT - Special Com Mode	-	SCM	-	-	-	-	-	-	-	-
	SAT - IBS	-	-	-	-	-	-	-	-	-	-
	BLOS HF	-	-	-	-	-	HF	HF	-	-	-
	Air Data	-	-	-	-	-	-	-	L-16	L-16	-
	ATC	-	-	-	-	-	-	-	-	-	-
	ATC Extended	-	-	-	-	-	-	-	-	-	-
	LOS Voice VHF and UHF	V/UHF	V/UHF	-	-	-	-	-	-	-	-
	CAS	HQ II	HQ II	-	-	-	-	-	-	-	-
	Coalition Inter	-	-	-	-	-	-	-	-	-	-
	Homeland Defense	-	-	-	-	-	-	-	-	-	-
Enhancements	-	-	-	-	-	-	-	-	-	-	

Transformational
Ground
Air
Ground to Air
Other

Notes 1. MUOS Includes Red Side Processing; MUOS-A = applique' approach



JTRS Increment 1 Schedule Overview



As of: November 2008



JTRS International Strategic Approach

Mission

Enable interoperable, secure communications with coalition allies through cooperative efforts while sharing a common software defined radio (SDR) architecture

Goals

INTEROPERABLE AND SECURE
Promote policy to enable allied access to secure communications networks

COOPERATIVE
Enable common and allied-national development of SDR technologies

COMMON ARCHITECTURE
Promote SCA and API standards for ease of portability and reuse

Objectives

Promote interoperability through FMS sales, cooperative programs, and Direct Commercial Sales

Maximize information sharing to encourage common, cooperative developments and enhance allied sovereign capability

Share knowledge and tools to support common development and interoperability goals



The Problem

▶ The Coalition Challenge:

- Exchange of voice, video, and data with coalition partners is critical to future operations; however, there are no releasable waveforms available to meet this purpose
 - Wideband Networking Waveform (WNW), Soldier Radio Waveform (SRW), and Tactical Targeting Network Technology (TTNT) are classified by NSA as “US ONLY”

▶ Proposed Solution:

- Work with coalition partners to build a networking waveform specification that will allow all participants to code their own software

▶ Cost Benefit to all:

- Share resources with Coalition Partners to develop a mutually-acceptable secure, networking waveform



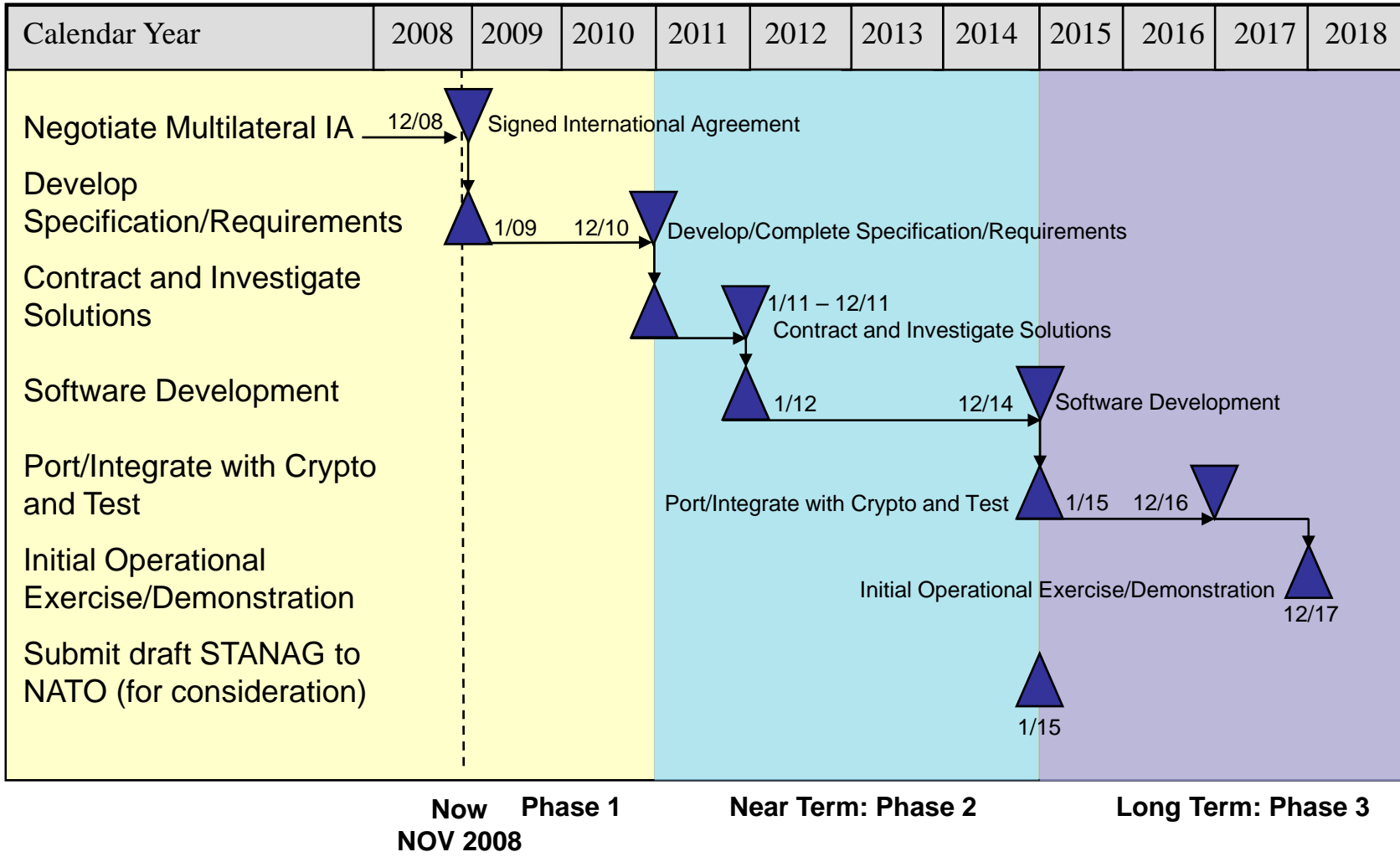
What is COALWNW?

- ▶ COALWNW is a multinational, cooperative effort to realize a wideband, networking waveform to pass secure voice, video and data among coalition partners
 - Phase 1
 - Define common operational requirements, develop COALWNW Operational Requirements Document, and draft functional and allocated baseline specifications
 - Phase 2
 - Apply Phase 1 specifications to develop waveforms to port to national radios
 - Demonstrate secure interoperability
 - Phase 3
 - Port COALWNW and conduct interoperability testing between national radios
 - Explore training, joint experimentation, concepts of operations
 - Ensure waveform interoperability
 - Validate COALWNW security architecture





COALWNW Notional Schedule





U.S. Phase 1 Draft Operational Inputs

► Thresholds

- SCA 2.2.2 compliant software defined radio system
- Use of JTRS open standards
- Spectrum flexibility
- Self-organizing, self-healing ad hoc networking capability
- IPv6 traffic for voice, video, and data
- Graceful degradation of services
- Minimum hardware impact to existing radios

► Objectives

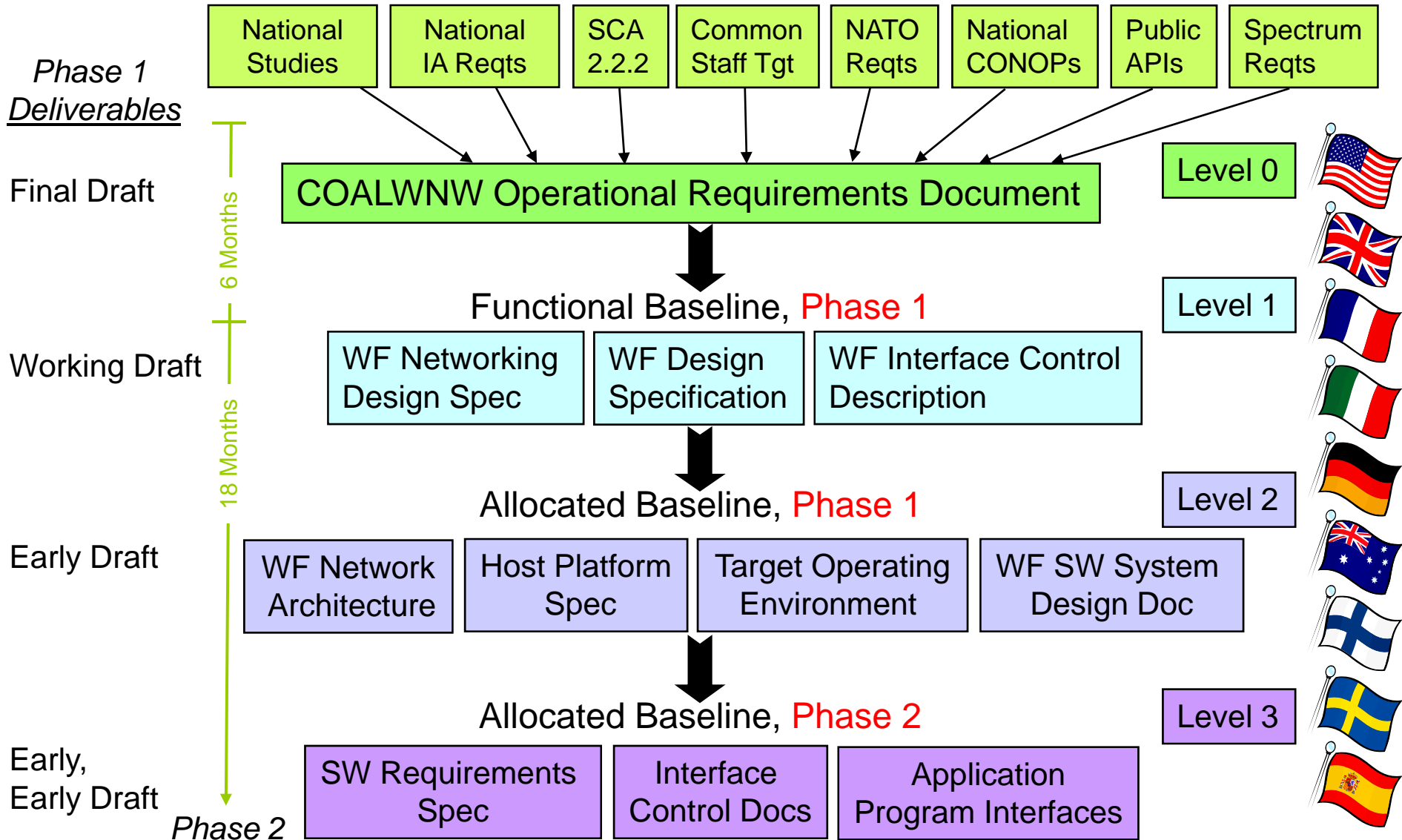
- Embedded network management
- Embedded performance management, including QoS
- Ability to accommodate external and embedded cryptography



Each Participant given “homework assignment” to identify their coalition operation inputs prior to start of Project



Draft COALWNW Spec Tree





Summary

- ▶ The JTRS/SDR journey is a challenging but necessary transition to next generation communications technology
 - JTRS Increment 1 progressing well with integration, certification testing, and lab and field demonstrations
- ▶ COALWNW builds in security and releasability from day one with full security agency participation from all the Partner Nations
 - All Participants are eager and we anticipate majority signature of the MOU and PA by 15 Dec 08
 - Formal activity begins Jan 09 with the initial Steering Committee scheduled for 2-6 Feb 09 in Sydney, Australia