

FORCENet

Joint Service/Navy-Wide Systems

Advanced Tactical Data Link Systems (ATDLS)

Description

The ATDLS program develops, fields, and supports joint and coalition Tactical Data Link (TDL) capabilities. These joint TDLS include terminals, gateways, networks, and support initiatives that improve TDL connectivity, promote equipment commonality and interoperability, and provide training and fleet support. Link-11 is used by Navy, Air Force, Army, Marine Corps, and allied ships and aircraft, many of which are also equipped with Link-16. In accordance with the Joint Tactical Data Link Management Plan (JTDLMP), Link-11, which uses the M-series message standard, is scheduled to be shut down no later than 2015. Link-16, which uses the J-series message standard, has been designated as the DoD primary TDL. The Navy is implementing Link-16 in most of its link-capable platforms. The Joint Tactical Enterprise Services Migration Plan (JTMP) will replace the JTDLMP. The JTMP is a plan to migrate from numerous stovepipe non-interoperable tactical data links to a Net-Centric, Open Architecture, IP-based, low latency, joint family of TDL message standards providing access to Tactical Data Enterprise Services and the Global Information Grid. As the JTDLMP approved replacement for Link-11, Link-22 is a multi-national development effort that will use the J-Series message standard. Major supported efforts are:

- Terminals: Joint Tactical Information Distribution System (JTIDS), Multifunctional Information Distribution System (MIDS) Low Volume Terminal (LVT), MIDS Joint Tactical Radio System (JTRS), and the Common Shipboard Data Terminal Set (CSDTS)
- Gateways: Command and Control Processor (C2P), Common Data Link Management System (CDLMS), Next Generation C2P, and Common Link Integration Processing (CLIP)
- Support Initiatives: Joint Interface Control Officer (JICO) Support System (JSS), Dynamic Network Management (DNM).

These capabilities allow more effective employment of fleet units by improving timeliness, accuracy, and content of tactical data transfer.

Status

See following FORCENet program descriptions on pages 134-177.

Developers

Data Link Solutions (DLS); Cedar Rapids, Iowa
ViaSat Inc.; Carlsbad, California
Advanced Programming Concepts; Austin, Texas
BAE Systems; Wayne, New Jersey

Automatic Identification System (AIS)**Description**

The AIS is a commercially available shipboard broadcast Very High Frequency (VHF) maritime band transponder system capable of sending and receiving ship information, including Navigation Identification, and Cargo. AIS is mandated by the International Maritime Organization (IMO) for all merchant vessels over 300 tons. Warships are exempt from this requirement. AIS significantly increases the Navy's and allied nations ability to distinguish between normal and suspicious merchant ships headed towards U.S. and allied ports. Navy warships using AIS have observed dramatic increases in situational awareness, ship safety and intelligence gathering. In 2005, CNO and the Fleet Identified AIS as an urgent Global War on Terror/Maritime Domain Awareness capability and directed fielding of stand-alone AIS on all warships by FY 2006 and fielding integrated AIS in FY 2007-11. To date, 150 Phase 1 (Stand-alone AIS) and 8 Phase 2 (Machine-to-machine AIS data integration with GCCS-M) have been installed. Installations planned for FY 2007 include all surface units and deploying submarines. Navy is planning to install AIS aboard E-2C, P-3C and SH-60 aircraft.

Status

AIS received new start authorization in December 2005. ASNRDA designated AIS as a Rapid Deployment Capability on 24 January 2006. AIS will transition to a program of record in FY 2008.

Developers

L3 Communications; Orlando, Florida
Anteon; San Diego, California
Northrop Grumman; San Diego, California

Automated Digital Network System (ADNS)**Description**

The ADNS is the Tactical Internet Protocol (IP) Routing and Switching system for all Wide Area Network (WAN) IP services which connect afloat units to the various global shore sites. It provides ship and shore Internet Protocol (IP) connectivity and promotes the efficient use of available satellite and line of sight

communications bandwidth. ADNS is engaged in converging all voice, video, and data communications between ship and shore to an IP medium taking full advantage of all radio frequency means aboard ships to transmit data efficiently. Specifically, it automates the routing and switching of tactical and strategic C4I data via Transmission Control Protocol/Internet Protocol (TCP/IP) networks linking deployed expeditionary and strike group units with each other and with the Defense Information Systems Network (DISN) ashore. ADNS uses Commercial Off-the-Shelf (COTS) and Non-Developmental Item (NDI) Joint Tactical Architecture (JTA)-compliant hardware (routers, processors, and switches), and commercial-compliant software in a standardized, scalable, shock-qualified rack design.

Status

Current FYDP plans include replacing all currently deployed systems with ADNS Systems capable of meeting Net-Centric, FORCENet, and future DoD Initiatives. This will be accomplished in accordance with the fleet commanders' coordinated SHIPMAIN process. Fielding plans that began in FY 2005 include installation of ADNS Increment II. In FY 2006, ADNS Increment IIa was added to provide additional capability to Force level ships only. Increment III will be installed in FY 2008 with a planned IOC for late FY 2008 or early FY 2009. Increment III, in alignment with the Tactical Switching program, will field only two shore locations: NCTAMS lant and pac (RNOSC East and West). Increment II, IIa, and III will replace End of Life System Hardware, eliminate the current 2 Mbps IP Throughput bandwidth bottleneck, converge all ships voice, video, and data on a dual stack IPv4/IPv6, Cipher text, IP core network architecture.

Developers

SPAWAR Systems Center Code 2631; San Jose, California
 Science Applications International Corporation; Arlington, Virginia
 Cisco; San Jose, California

Base Level Information Infrastructure (BLII)

Description

BLII is the program of record that modernizes IT facilities at 16 OCONUS navy bases, stations, and headquarters. It installs new, or upgrades existing infrastructure to provide state-of-the-art IT capability. Further, the program installs the hardware, software, and enterprise management tools to enable a fully integrated, interoperable, and secure IT network for rapid and reliable transfer of data, voice, and video. The program also replaces or upgrades obsolete telephone switches at 145 CONUS and OCONUS locations. Major functional areas of BLII are:



OCONUS IT Infrastructure Modernization:

- Installs/modernizes base and building cable plants; WAN, BAN, and LAN electronics; information assurance; network management; configuration management; and asset management capabilities
- Provides engineering and operations expertise at the IT Service Centers and the IT Outreach Centers
- Installs and sustains system hardware, software, and related training

OCONUS Force Protection (IT):

- Installs/modernizes OCONUS pier IT infrastructure to ISNS standards (equal to or better capability pier-side as ships had at sea)
- Provides engineering, operations and maintenance support to the newly installed IT infrastructure
- Expands SIPRNET capability at OCONUS locations

Naval Network Warfare Command (NNWC) Telephone Switch Replacement/Modernization:

- Replaces obsolete telephone switches and upgrades firmware and software on a progressive schedule to ensure compliance with JCS directives and the recently enacted Public Law 107-314 at the 145 NNWC telephone switch locations that service our forward deployed OCONUS and CONUS support forces
- Modernizes telephone switch cable plants

Status

The backbone phase of the OCONUS IT infrastructure modernization is rapidly coming to conclusion at the 16 designated overseas fleet concentration centers. The next major phase of the OCONUS IT modernization is to bring users to the new physical infrastructure followed by the migration of these users to the new OCONUS enterprise network. Funding is in place to continue this evolution to include technical upgrades and technology insertion through FY 2013. The replacement and upgrade of the Navy's telephone switches is accomplished on a progressive schedule to meet the OSD/Joint Staff-mandated timeframe.

Developers

Navy policy is to procure only hardware and software from the DISAJITC tested/certified/interoperable "Approved Products List". All hardware and software procured and installed in conjunction with the BLII program of record is under the cognizance of PEO EIS. CNO N6F3, NETWARCOM, and the PMW maintain close synchronization in the requirements validation, acquisition, installation, and logistics process.

Command and Control Processor (C2P)

Description

The C2P serves as the interface and data translator between the surface platform's Combat Direction System (CDS) and the Tactical Data Links (TDL). It is considered a gateway as described in the ATDLs discussion above. It is the data forwarder between Links-11 and 16. In 1984, implementation of JTIDS/Link-16 based CDSs commenced with the Advanced Combat Direction System (ACDS) Model 5. The ACDS Model 5 contract had an option for development of a C2P to provide the functionality of the TDL Communication Processor. With this capability, C2P serves as a gateway to connect a Link-16 network to a legacy Link-11 network. C2P Model 4 successfully completed OPEVAL in a combined test with Link-16 in FY 1994. C2P Model 5 successfully completed OPEVAL in FY 2000. The approaching obsolescence of the C2P computer brought about the need to identify a suitable hardware set to re-host the functionality of the C2P. As a practical and cost-effective option, the C2P re-host initiative was joined with another initiative that encompassed the concept of co-locating multiple tactical link management, coordination, and monitoring in a single host.

Status

The C2P is fully fielded with the capability being re-hosted as software within the Common Data Link Management System and Next Generation C2P.

Developers

GSA/Anteon; Fairfax, Virginia
DRS Inc.; Wyndmoor, Pennsylvania



Combined Enterprise Regional Information Exchange System Maritime (CENTRIXS-M)

Description

The CENTRIXS-M is a web-centric GOTS and COTS based global network that permits multinational information sharing. CENTRIXS-M support coalition, Allied, and Joint interoperability and information exchange by providing email, web services, collaboration, and products such as Global Command and Control System Integrated Imagery and Intelligence (GCCS-I3), components for the Common Operational Picture (COP), and Common Intelligence Picture (CIP). In addition, it enables ship-to-ship and ship-to-shore Web replication, secure e-mail, chat communications over SATCOM with allied/coalition partners. CENTRIXS-M also provides a ship-to-shore SATCOM IP path to complement existing ship-to-ship HF e-mail capabilities. The network infrastruc-

ture is implemented by using a combination of network switches, routers, crypto, servers, PCs, and commercial networks technologies. CENTRIXS supports seven different enclaves available to the warfighter: CENTRIXS Four Eyes (AUSTRALIA/CANADA/U.K./U.S.); CENTRIXS Japan (J); CENTRIXS Korea (K); NATO Initial Data Transfer System (NIDTS); Global Counter Terrorism Task Force (GCTF); Combined Naval Forces CENTCOM (CNFC); and Multi Coalition Forces Iraq (MCFI). Currently, the Pacific Region Network Operations Center (PRNOC) is the only network hub for all CENTRIXS connectivity. CENTCOM has directed that all ships deploying to NAVCENT AOR have CENTRIXS capability.

Status

CENTRIXS-M became a program of record first quarter FY 2006. Milestone C for Inc 1 is scheduled for second quarter FY 2007. Milestone B for Inc 2 is scheduled for second quarter FY 2009. Currently, 143 out of 157 Navy ships have CENTRIXS-M connectivity. IOC for Inc 1 is fourth quarter FY 2007, Inc 2 to be determined. FOC for Inc 1 is fourth quarter FY 2018 if Inc 2 is not funded.

Developers

Hardware for procurement and development of ISNS is under the cognizance of PEO C4I/Space PMW 160 as well as OPNAV (N6). These organizations work together to identify and implement the latest technologies to ensure proper implementation into the program. Engineering, development, integration, installation, training, and life cycle support will be accomplished through Navy and DoD activities.



Common Data Link Management System (CDLMS)

Description

The CDLMS initiative extends the functionality of the Command and Control Processor by consolidating several functions previously performed by separate systems or subsystems, and providing improved Human Machine Interface (HMI) and Link maintenance. CDLMS also incorporates the Link Monitoring System (LMS) along with supporting the initial development phase of the Common Shipboard Data Terminal Set (CSDTS). The CSDTS initiative provides the next generation Link-11 data terminal replacing the legacy Link-11 terminal hardware while incorporating Multi-Frequency Link-11 (MFL), Satellite Link-11, and supporting the initial Dual Net Link-11. Re-hosting the C2P within CDLMS provides the same functionality in COTS hardware, namely the UYQ-70 console, which makes the system easier and less expensive to upgrade. The CDLMS integrates the CSDTS and C2P (Rehost) in a set of Versatile Module Eurocard (VME) cards to provide consolidated displays and controls to monitor multi-TDL networks simultaneously. The CDLMS/C2P(R) program

has fielded the USQ-86 (V), consisting primarily of an UYQ-70 EPS housing four VME chassis. Three of these are populated with VME card sets for the following: C2P(R), CSDTS, and the Link Management/Monitoring Component. This hardware configuration supports the transformation to Next Generation Command and Control Processor (NGC2P), which will introduce the Beyond Line of Sight Capabilities Joint Range Extension (JRE) and Link 22.

Status

CDLMS has successfully completed Aegis and SSDS Combat System Integration and Test (CSIT) and is currently being installed. CSDTS implementation is ongoing, enabled by, but separate from, CDLMS/C2P(R). NGC2P achieved IOC in FY 2005. It is currently scheduled to complete testing and be approved for full-rate production in early FY 2008.

Developers

GSA/Anteon; Fairfax, Virginia
DRS Inc.; Wyndmoor, Pennsylvania

Common Link Integration Processing (CLIP)

Description

The U.S. Navy and Air Force are collaborating on the CLIP initiative. CLIP is envisioned as an open architecture software-based common tactical message processing and integration capability with applications across various military platforms and installations, including air, surface, C2 shore sites, and ground-based tactical units. A chief objective is to provide greater interoperability and reduce implementation cost. CLIP will be an evolutionary spiral development process with functionality specified at each delivery point to match platform TDL requirements. It will provide the interface to all the various communication systems including current terminals and radios as well as those under development such as JTRS. It will act as a gateway providing translations and data forwarding to legacy systems and be the primary interface to any host system (i.e., combat). CLIP is envisioned to be primarily software that can reside on any operating system or hardware.

Status

A CLIP MOA between PEO-C4I and Space and Air Force Electronic Systems Center was signed in August 2003. All acquisition program documentation for Milestone B is complete and the program received Milestone B approval by ASN RD&A in May 2005. DDG 1000 is being targeted as Navy lead platform. Contract was awarded to Northrop Grumman in June 2005. A successful critical design review was completed October 2006.

Developers

Northrop Grumman; Reston, Virginia



Commercial Satellite Communications

Description

The Commercial Wideband Satellite Program (CWSP) formerly known as Challenge Athena includes a full duplex, high data-rate satellite terminal (AN/WSC-8) and architecture that operates in the C-band spectrum up to 2.048 Mbps. CWSP is a FORCENet enabler which provides for voice, video, data, and imagery circuit requirements. It supports Command Ships (LCC), Aircraft Carriers (CV/CVN), Amphibious Ships (LHA/LHD/LPD) and other selected ships, including hospital ships (T-AH) and submarine tenders (AS). Terminals are also installed at schoolhouse locations in San Diego and Norfolk. Examples of specific communications circuits that are provided include: Distributed Common Ground Surface System-Navy (DCGS-N), Video Tele-Conferencing (VTC), Video Information Exchange system (VIXS), Video Tele-Medicine (VTM), Video Tele-Training (VTT), Afloat Personal Telephone Service (APTS), Integrated Digital Switching Network (IDSN) for voice/telephone, Secret/Unclassified Internet Protocol Router Networks (SIPRNET/NIPRNET), and Joint Worldwide Intelligence Communications System (JWICS). The CWSP terminal uses commercial satellite connectivity and COTS/NDI Equipment. It has transitioned from augmentation to surge, and in recent years has become an integral part of Navy's SATCOM architecture because of the existing and extremely overburdened military satellite communications systems.

Status

The majority of CWSP terminals procured (40 total) are currently installed on 28 ships. Two additional terminals are to be installed on a new construction CVN 77 and LPD 18 and LPD 19. Currently there is no funding for CWSP after FY 2009 at which time the AN/WSC-8 terminals will be placed in inactive equipment maintenance (IEM) status. The Commercial Broadband Satellite Program (CBSP) is scheduled to replace CWSP.

Developers

Harris Corporation

Commercial Broadband Satellite Program (CBSP)

Description

CBSP is scheduled to replace both CWSP and INMARSAT B HSD in the fleet to augment bandwidth not otherwise available from MILSATCOM.

Status

The competitive acquisition process (PEO C4I PMW170) has begun with award date expected in the June 2007 timeframe. The Rapid Development Capability (RDC) process is being used to accelerate procurement and installation on 44 ships by the end of FY 2009. Current funding supports 104 ships across the FYDP (FY 2008-FY 2013). The ultimate objective requires a POM-10 decision for 195 ships (total) across the FYDP FY 2008-FY 2013.

Developer

To be determined.

Deployable Joint Command and Control Capability (DJC2)

Description

The DJC2 is an ACAT-1, joint DoD transformation initiative, with Navy as the lead component designed to provide a standardized deployable Command and Control (C2) capability for Combatant Commanders (COCOMs) and Joint Force Commanders. Fielding of DJC2 will greatly reduce the ad hoc nature of deploying Joint Task Force C2. Real world events such as the such as the Tsunami, Pakistan earthquake, Hurricane Katrina, and the Lebanon evacuation make apparent the need for a robust rapidly deployable Joint Task Force capability. DJC2 supports the Navy Strategic Plan by extending the Joint Sea Base ashore, and supporting rapid, dynamic joint operations. DJC2 will provide the deployable Joint Force Commanders with a level of C4I application integration that is not currently available, and provides the Joint Task Force Commander scalable configurations of Comms, C2, generators, shelter, HVAC, and collaboration tools across up to five security enclaves. DJC2 is built upon the Joint Global Command and Control System (GCCS-J), the Joint Forces Command developed Collaborative Information Environment (CIE) toolkit and existing joint and service C2 programs (especially the GCCS family of systems), and lessons learned from Operation Enduring Freedom and Operation Iraqi Freedom, to equip the Combatant Commanders and Joint Force Commanders with a tested C2 system that is:

- Horizontally and vertically integrated across all levels of command
- Interoperable across joint, coalition, interagency, Non-Governmental Organization/Private Volunteer Organization (NGO/PVO) realms
- Robust, scalable, and rapidly deployable, including an en-route capability
- Spiral development and fielding of evolving technology will help to meet Combatant Commanders and Joint Task Force requirements.

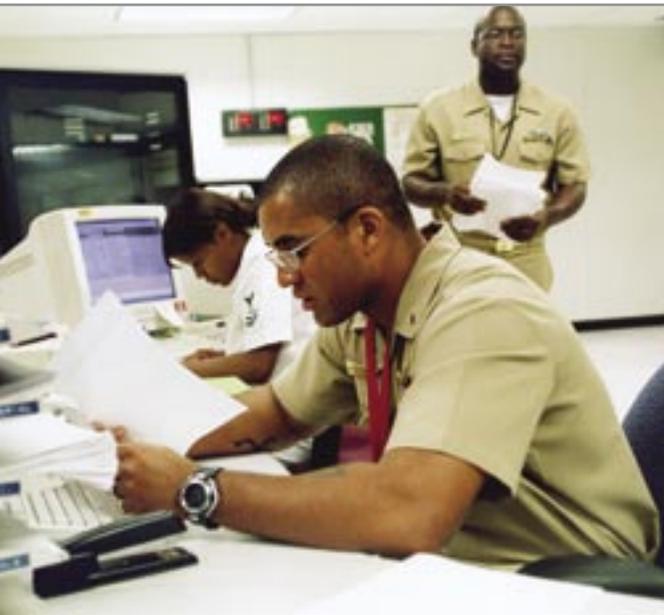


Status

The Capability Production Document was approved by the JROC in November 2004. The Navy acquired the developmental experimentation suite for Joint Forces Command in FY 2004. The initial DJC2 operational test unit was delivered to the U.S. Southern Command in September 2005. The second DJC2 operational test unit was used to support Hurricane Katrina disaster relief operations in New Orleans, Louisiana. The Multi-Service Operational Test and Evaluation (MOT&E) was completed in June 2006. Expect DJC2 to be approved to field a total of six operational DJC2 systems to Southern Command, European Command, Pacific Command and Joint Forces Command in CY 2007. DJC2 has been funded to procure and field Rapid Response Kits and everything over internet protocol in CY 2007-2008 as part of the DJC2 system which will insert new commercial technologies that will shrink the equipment footprint and make for a much more flexible system. The 2005 QDR changed the direction of the Deployable Joint Task Force HQ concept by assigning responsibility to man/train/equip deployable Joint Task Force HQs to Service 2-star/3-star Headquarters (vice Combatant Commanders Standing Joint Task Force HQs). DoD is working on details of how to implement this change. In 2006, based on the QDR, OSD decided to limit the DJC2 program to the fielding and sustainment of the six Incr 1 Systems.

Developers

L3; Panama City, Florida
 Lockheed Martin; Panama City, Florida
 Northrup Grumman; Arlington, Virginia
 BMP COE; College Park, Virginia

**Defense Messaging System (DMS)****Description**

The DMS initiative is an OSD-mandated program designed to eliminate the multitude of expensive “stovepipe” legacy record messaging systems that provide organizational and individual message traffic between operational units. The DMS architecture has been derived using the Multi-command Required Operational Capability (MROC) requirements and has been targeted to provide the armed services and agencies with a high assurance messaging capability. The DMS provides messaging, directory, and management services.

Status

Current DoD implementation of DMS closed the DMS Transitional Hubs (DTHs) for GENSER on 30 September 2003 and for Emergency Action Message (EAM) messaging on 22 February 2004. Navy is transitioning to a Web-based interface known as the DMS Expanded Boundry Solution (DEBS). This transition

eliminates costly client/server architecture and consolidates the DMS service providers from 21 sites down to two. The transition to DEBS will be completed in 2008 for DMS Ashore and 2011 for DMS Afloat. Funding is provided from the Tactical Messaging Program.

Developers

Lockheed Martin; Manassas, Virginia

Distributed Common Ground System-Navy (DCGS-N)

Description

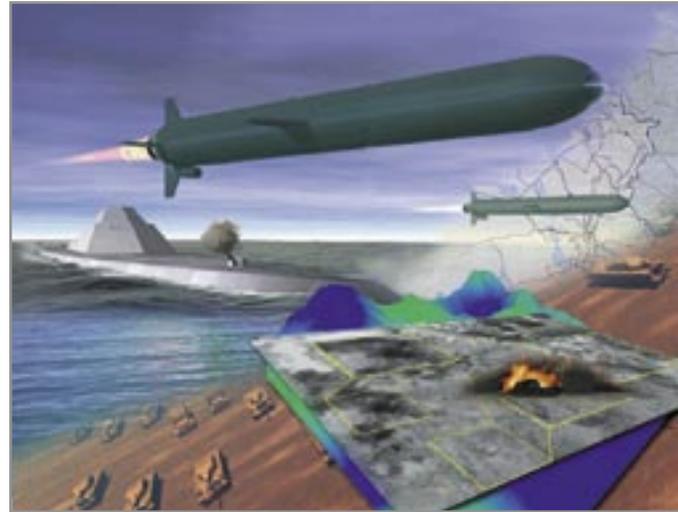
DCGS-N is the Navy's Intelligence, Surveillance, Reconnaissance, and Targeting (ISR&T) processing and exploitation program that will support all levels of the command and control decision process. It will merge ISR&T, mission planning, and situational awareness functions into a Web-enabled, network-centric, joint-interoperable architecture. DCGS-N will support the Navy's command and control tiers of numbered fleet command ships and ashore command centers (Tier 1); carrier strike groups/expeditionary strike groups (Tier 2); and unit level strike platforms (Tier 3). Each tier will have a scalable set of DCGS-N capabilities to support its assigned roles and missions. DCGS-N will utilize network-centric, multi-intelligence processing and exploitation to support the Task, Post, Process, Use (TPPU) process for the Commander Joint Task Force and the maritime warfighter. Leveraging existing GCCS-M, JSIPS-N, and TES-N programs, DCGS-N includes timely interfaces to national, joint, theater, and organic sensors. The aim points generated by DCGS-N will be provided to a variety of air, surface, and sub-surface launched precision guided weapons systems. DCGS-N will be interoperable with the DCGS elements of the other services through the use of the DCGS Integration Backbone (DIB) as the foundation of the DCGS-N architecture.

Status

Between FY 2008 and FY 2012, DCGS-N will be installed on aircraft carriers, large-deck amphibious ships, fleet command ships, and at designated shore-based reach-back support sites. U.S. Fleet Forces Command and OPNAV are working together to determine the appropriate afloat/shore-based architecture and fielding plan that will meet fleet ISR exploitation and targeting requirements.

Developers

Northrop Grumman; Linthicum, Maryland
Raytheon; Garland, Texas
SAIC; Maryland
BAE Systems; Rancho Bernardo, California



Dynamic Network Management (DNM)

Description

DNM will effectively increase Link 16 Network throughput and provide the warfighter greater flexibility in the use of Link-16. DNM will facilitate automated net entry/exit of additional platforms in the future, including smart weapons with a weapons data link, and will provide a real-time capability to modify Link-16 network parameters with existing messages to meet evolving changes in the theater. DNM will also enable capabilities such as IP over Link-16, variable update and throughput rates, monitoring and analyzing of real-time network loading, and executing stacked and multi-net operations. DNM is essential to reducing Link-16 network saturation and is an enabler for the JICO Support System (JSS). It also provides essential support for time critical targeting and time critical strike. DNM includes the following capabilities:

- Time Slot Reallocation (TSR)
- Dynamic Multi-netting
- Network Control Technology (NCT) used by the JICO
- SHUMA — a new contention access capability.

Status

The DNM program enables a fully tested and interoperable version of the platform's host system, known as the Joint Host Demand Algorithm (JHDA) to support the Time Slot Reallocation (TSR) protocol, implemented and fielded in the shipboard Command and Control Processor (C2P) in early FY 2006 and will be fielded in E-2Cs in May 2007. TSR is also being expanded to enable further use of it on the Link 16 network (TSR RC) for other users and applications. A random access mode that provides a nodeless, flexible, and scalable means of adapting the network to rapid changes in topology and message traffic conditions, known as SHUMA, is being lab tested. Both SHUMA and TSR RC will enable fully ad-hoc, dynamic network operations on Link 16.

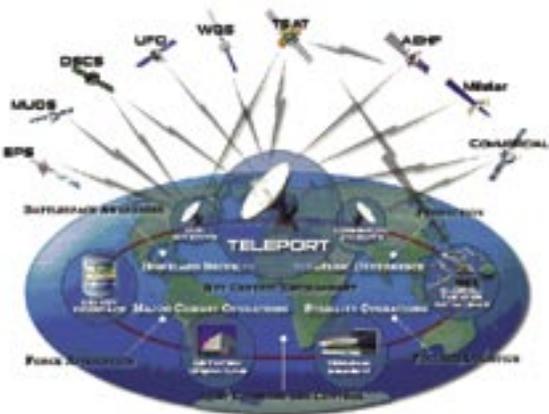
Developers

SPAWARSYSCEN; San Diego, California
Northrop Grumman; San Diego, California

DoD Teleport

Description

The DoD Teleport links the space segment with the shore infrastructure and provides tactical users a worldwide communications interface to the Global Information Grid. Through multiple radio frequency media (military and commercial bands), Teleport provides inter-theater reach back into the Defense Information Systems Network (DISN) and service C4I systems, as well as in-



tra-theater communications support for tactical users. Teleport consists of six primary sites and one secondary site. The Navy operates and maintains Teleports at Wahiawa, Hawaii; Northwest, Virginia; Lago Patria, Italy; and Bahrain. Non-Navy Teleports sites are located at Fort Buckner, Okinawa, Japan; Camp Roberts, California; and Landstuhl/Ramstein, Germany.

Status

DoD Teleport is an Acquisition Category (ACAT) 1AM program with OSD (NII) as the Milestone Decision Authority (MDA). Acquisition Decision Memorandum (ADM) 5 May 2000 established DISA as the Executive Agent and Joint Requirements Oversight Council Memorandum (JROCM) 044-01 of March 2001 established Service Teleport site responsibility as well as Navy as the Teleport Requirements Sponsor. Teleport entered Milestone C for Generation One in July 2002 and reached IOC 1 with X, C, and Ku-bands in April 2004. In July 2004, the JROC approved the DoD Teleport Operational Requirements Document (ORD) Generation Two update, which supported a Milestone B decision in 2006. Teleport Generation Two will provide military Ka-band and initial network-centric IP capability. The Capabilities Development Document (CDD) for Teleport Generation Three (FY 2008-FY 2012) which adds Advanced EHF (AEHF), Wideband Global Satellite (WGS) System, interface to the Mobile User Objective System (MUOS), and Internet Protocol (IP)/Net-Centric capability, has been approved through the Net Centric Functional Capabilities Board (NC FCB).

Developers

Arrowhead; Alexandria, Virginia
ViaSat; Carlsbad, California
Raytheon; St. Petersburg, Florida
ITT; Colorado Springs, Colorado

Global Broadcast Service (GBS)

Description

The GBS can augment and interface with other communications systems to provide a virtual two-way network to deliver a high-speed, one-way flow of high-volume information disseminated quickly by broadcast to proliferated, low-echelon, geographically dispersed users supporting situational awareness, weapons targeting, intelligence, and homeland defensive operations. GBS can support military operations with U.S. allies or coalition forces and non-DoD governmental organizations. GBS will revolutionize communications with increased capacity, faster delivery of data, near-real-time receipt of imagery and data to the warfighter, and reduced over-subscription of current MILSATCOM systems.

Status



The Navy is fielding receive-suites on carriers, large-deck amphibious ships, command ships, guided missile submarines (SSGN), and half of the nuclear-powered attack submarines (SSN). Guided missile cruisers, destroyers, and strategic missile submarines are required, but not funded. Transition to an IP-based enhanced architecture should be completed in FY 2007. The enhanced architecture nearly doubles worldwide capacity with potentially eight times more coverage. Afloat-platform capability will have up to six multiple-receive channels (each up to 24 Mbps) and support additional security enclaves (each of 70 Mbps). Compartmented enclaves such as a top secret or allied broadcast are not funded. Within bandwidth there are no constraints on the number of concurrent video stream products received for viewing on computer workstations across attached networks. The enhanced architecture permits improved sharing and reallocation of broadcast coverage and bandwidth between, users, information product, media types, and security levels. The system is more queue driven, priority based rather than scheduled based. On the large, more capable ships or fixed shore platforms, the enhanced architecture will also permit multiple satellite receive capability, including UFO and WGS or commercial satellites, concurrently.

In January 2005, DoD approved new and maturing operational requirements defining spiral development, including automated satellite spot beam sharing (important naval requirement), two-way transmit receive suites, better management of new space segment resources, enhanced GIG integration, suitcase and rucksack portable receive suites, communications-on-the-move ground mobile receive suites, terrestrial wireless rebroadcast receive suites, global system-wide management and content sharing, flexible system restoration, and bandwidth efficiency metric reporting for better planning and system allocation planning.

Developers

U.S. Air Force, Space and Missile Systems Center/Raytheon; El Segundo, California

Global Command and Control System—Maritime (GCCS-M)

Description

As the naval implementation of the GCCS, GCCS-M is the OSD-designated Command and Control (C2) migration system for the Navy. GCCS-M supports multiple warfighting and intelligence missions for commanders at every echelon, in all afloat, ashore, and tactical naval environments, and for joint, coalition, and allied forces. GCCS-M meets the joint and service requirements for a single, integrated, scalable C2 system that receives, displays, cor-



relates, fuses, and maintains geo-locational track information on friendly, hostile, and neutral land, sea, and air forces and integrates it with available intelligence and environmental information. Key capabilities include: multi-source information management, display, and dissemination through extensive communications interfaces; multi-source data fusion and analysis/decision-making tools; and force coordination. More than 56 joint and naval systems interface with GCCS-M to exchange data.

The GCCS-M program was designated an ACAT-1AC program in March 2001. GCCS-M Version 3.1.2.1 was released to the fleet in FY 2001, and included major enhancements to GCCS-M's intelligence and warfighting software applications. Version 3.1.2.1 reduces time-latency problems with Common Operational Picture (COP) track data, and enables high-data-rate communication-configured ships and shore headquarters to exchange COP track information via a faster IP transmission method. GCCS-M 4.0 completed Operational Test on USS *Nimitz* (CVN 68), COM-PACFLT HQ, and COMSUBPAC HQ and was approved for full-rate production in FY 2005. GCCS-M 4.0 is a significant hardware, software and capability upgrade to the circa-1998 3.X product and is synchronized with roll-out of similar GCCS products by Joint commands and other Services. GCCS-M 4.X will deliver to all designated warships and ashore installations by the end of FY 2010. GCCS-M 4.1 software capability upgrade was approved for Milestone B in FY 2005. GCCS-M 4.1 will deliver software-only capability improvements in late 2008 in response to emerging warfighter C4I requirements and evolving security and technology standards. GCCS-M will transition to the Net-Enabled Command Capability (NECC) based on Net-Centric Enterprise Services (NCES) over the FYDP as these joint programs deliver capability that can be implemented to naval afloat and ashore sites.

Status

GCCS-M Afloat is installed on 260 ships and submarines throughout the Navy. GCCS-M Ashore has been installed at 36 sites including the Chief of Naval Operations Navy Command Center; five fleet commander headquarters; and various allied/NATO sites.

Developers

Various COTS/GOTS

Information Assurance (IA)

Description

IA is defined as information operations that protect and defend information and Information Systems (IS) by ensuring their authenticity, availability, confidentiality, data integrity, and non-repudiation. The Navy's primary IA program is Information Systems Security Program (ISSP). FORCENet is the Navy's component to





the DoD Global Information Grid. The Navy has embraced a Defense-in-Depth strategy to protect FORCENet by employing multiple layers of protection starting at the desktops. The IA Technical Framework (IATF) has been adopted and divides ISSP resources into three fundamental categories: technology, operations, and people. The IATF provides a documented source of technical solutions and guidance mapped to the Defense-in-Depth goals. Selection, training, and retention of network security specialists are vital elements in our ISSP arsenal. ISSP focuses on development, acquisition, implementation, upgrade of the CND products and services such as firewalls, guards, Virtual Private Networks (VPN), intrusion detection systems, electronic key management systems, Public Key Infrastructure (PKI), and Common Access Cards (CAC). ISSP also focuses on the development of new cryptographic technology that can support a wide variety of applications and algorithms.

Status

Acquisition vehicles are in place for TYPE I Communications Security (COMSEC) and TYPE II COTS technologies to support the Navy's bandwidth requirements for secure voice and data, and PKI under the expanding umbrella of Key Management Infrastructure highlighted by the Navy's contributions to the DoD's Crypto Modernization (CM) program.

Developers

Space and Naval Warfare Systems Command (SPAWAR)

INMARSAT B

Description

The INMARSAT B High Speed Data (HSD) terminal includes a full duplex, medium data rate satellite terminal (INMARSAT B) and architecture that operates in the L-Band spectrum up to 128Kbps. INMARSAT B HSD is a FORCENet enabler which provides voice and data to small surface combatants (FFGs and MCMs). It also is installed on Command Ships, Air craft Carriers and large Amphibious platforms.

Status

The INMARSAT B HSD terminals are currently installed on 220 platforms. The CNO N6 Program of Record for INMARSAT B HSD satellite leases has been gradually reduced since PR05. The end date for INMARSAT B HSD continues to be evaluated and will be replaced by the Commercial Broadband Satellite Program (CBSP).

Developers

McKay
STRATOS

Integrated Broadcast Service/Joint Tactical Terminal (IBS/JTT)

Description

The IBS is a system-of-systems that will migrate the Tactical Receive Equipment and Related Applications Data Dissemination System (TDDS), Tactical Information Broadcast Service (TIBS), Tactical Reconnaissance Intelligence Exchange System (TRIXS), and Near Real-Time Dissemination (NRTD) system into an integrated service with a common format. The IBS will send data via communications paths, such as UHF, SHF, EHF, GBS, and via networks. This program supports Indications and Warning (I&W), surveillance, and targeting data requirements of tactical and operational commanders and targeting staffs across all warfare areas. It comprises broadcast-generation and transceiver equipment that provides intelligence data to tactical users. JTT receives, decrypts, processes, formats, distributes, and transmits tactical data according to preset user-defined criteria across open-architecture equipment. JTT is modular and has the capability to receive all current tactical intelligence broadcasts (TDDS, TADIXS-B, TIBS, and TRIXS). JTT is also interoperable with the follow-on IBS UHF broadcasts. However, the current JTT form factor does not meet space and weight constraints for a majority of the U.S. Navy and Air Force airborne platforms. Therefore, to ensure joint interoperability, the Navy and Air Force will continue to support the current Multi-mission Airborne Tactical Terminal (MATTT) through a low cost Pre-Planned Product Improvement (P3I) program until the transition to an IBS capable JTRS airborne variant.

Status

A receive-only JTT was delivered to the Navy for early integration efforts in third quarter FY 2000. The Navy received the first four fully capable JTTs (with transmit capability) in third quarter FY 2001. The Navy commenced shipboard installations in fourth quarter FY 2001 for developmental testing. OT&E was completed in fourth quarter FY 2005. JTT fielding occurred from 2001 to 2004. Additional installations are scheduled for 2007 but remain unfunded. JTTs will continue to receive the legacy broadcasts (e.g., TDDS, TIBS, TRIXS) until next-generation broadcast services are developed and fielded.

Developers

IBS: TITAN/BTG; Fairfax, Virginia

JTT: Raytheon Systems; St. Petersburg, Florida





Integrated Shipboard Network System (ISNS)

Description

The ISNS program is a derivative of the common elements from various other programs of record with the purpose of providing robust LANs on all Navy ships. ISNS provides integration and support for all requisite classifications (i.e., SCI, TS, secret, non-U.S., and unclassified). It enables real-time information exchange within the ship and between afloat units, Component Commanders, and Fleet Commanders. It is also a key factor in the implementation of the Navy's portion of Joint Vision 2020. The ISNS program implements networks using a combination of network switches, hubs, routers, servers, PCs and commercial network software application technologies. It provides the capability to establish connectivity to the Defense Information Systems Network (DISN) WAN for global information distribution. In addition, it provides internal information dissemination capabilities for individual fleet units. By providing the infrastructure for shipboard C4I programs, ISNS facilitates implementation of the Navy's IT-21 strategy and is an enabler for network-centric warfare. It provides the transport medium for Web-enabling all IT-21 related programs (i.e., GCCS-M, Voice-Video-Data (VVD)). ISNS networks support the robust information flow requirements necessary to achieve *Sea Power 21* capabilities, and provides the backbone for information interoperability with coalition forces (CENTRIXS-M).

Status

ISNS installations have transitioned from ATM networks to the Gigabit Ethernet Architecture. Under current procurement and installation funding, IOC for ISNS Inc 1 is fourth quarter FY 2011; Inc 2 first quarter FY 2013; Inc 3 to be determined. ISNS was designated an ACAT II Major Weapons Systems on 16 August 2004.

Developers

Hardware for procurement and development of ISNS is under the cognizance of PEO C4I/Space PMW 160 as well as OPNAV (N6). These organizations work together to identify and implement the latest technologies to ensure proper implementation into the program. Engineering, development, integration, installation, training, and life cycle support will be accomplished through Navy and DoD activities.

Joint Interface Control Officer (JICO) Support System (JSS)

Description

The JSS is a "tool set" enabling the JICO to plan, monitor, and manage the Multi-Tactical Data Link (TDL) network in support of the Joint Force Commander. Using the Dynamic Network Man-

agement tool Network Control Technology (NCT), the JICO can accommodate required changes to the operating Network including unplanned entry and egress of Link -16 platforms. In his role as the manager of the multi-TDL network, the JICO contributes to maintaining the near real time Common Tactical Picture and responds to the requirements of the Joint Data Network manager.

Status

Milestone C for JSS is scheduled for FY 2007 with full-rate production to follow in FY 2008.

Developers

Northrop Grumman; Reston, Virginia

Joint Precision Approach and Landing System (JPALS)**Description**

JPALS is a joint DoD effort with the U.S. Air Force and Army. The Air Force is currently designated the lead service. Navy will assume lead service during FY 2007. JPALS fulfills the need for a rapidly deployable, adverse weather, adverse terrain, day-night, survivable, interoperable and mobile precision approach and landing capability that can support the principles of forward presence, crisis response, and mobility. Sea-based JPALS consists of a GPS-INS based precision landing system component (Shipboard Relative GPS) with a low probability of intercept two way data link and an independent backup system. JPALS provides critical enabling technology for emerging Naval programs such as CVN 21, JSE, N-UCAS, and DDG 1000. Sea-based JPALS will also be installed on all air-capable surface ships and all CVN air wing aircraft (F/A-18E/F/G, E-2C/D, C-2A, and MH-60 R/S). Except for the system designated as the SRGPS backup, JPALS will replace the Automatic Carrier Landing System (ACLS) on CVNs, SPN-35 on LH-class Amphibious ships, and various approach systems including Instrument Landing Systems (ILS), TACAN, and Precision Approach Radar (PAR) ashore. JPALS will be civil interoperable and FAA certifiable.

Status

JPALS is in the Technology Development acquisition phase with Milestone B and SDD contract award scheduled in FY 2008. Sea-based JPALS IOC is 2014 and is on schedule to be installed on CVN 78, the lead ship of the CVN 21 program new design aircraft carrier.

Developers

The JPALS System Development and Demonstration (SDD) contract will be awarded in FY 2008 in open competition.



Joint Tactical Information Distribution System (JTIDS)

Description

The JTIDS Link-16 terminal provides rapid, secure, jam-resistant (frequency-hopping) communications, navigation, and identification capabilities appropriate for military use up to and including secret information. A joint program directed by OSD, JTIDS provides crypto-secure, jam-resistant, and low-probability-of-exploitation tactical data and voice communication at a high data rate to Navy tactical aircraft and ships and Marine Corps units. JTIDS also provides capabilities for common-grid navigation and automatic communications relay. It has been integrated into numerous platforms and systems, including Navy aircraft carriers, surface ships, and E-2C Hawkeye aircraft; Air Force Airborne Warning and Command System (AWACS) aircraft; and Marine Corps Tactical Air Operations Centers (TAOCs) and Tactical Air Command Centers (TACCs). Other service and foreign country participants include the Army, Great Britain, and Canada. Additionally, JTIDS has been identified as the preferred communications link for Theater Ballistic Missile Defense programs. JTIDS is the first implementation of the Link-16 Joint Message Standard (J-series) and provides the single, near real-time, joint data link network for information exchange among joint and combined forces for command and control of tactical operations.

Status

The Air Force is the lead service for JTIDS. The program successfully completed OPEVAL in August 1994 and was authorized to enter full-rate production in March 1995. Production is now complete. The Multifunctional Information Distribution System (MIDS) Low Volume Terminal (LVT) is the Pre-Planned Product Improvement (P3I) to the JTIDS terminal. The MIDS Joint Tactical Radio System (JTRS) terminal is the follow-on to MIDS LVT.

Developers

GEC-Marconi Electronics Systems; Wayne, New Jersey
 Rockwell-Collins Avionics; Cedar Rapids, Iowa
 Northrop Grumman; Bethpage, New York



Joint Tactical Radio System (JTRS)

Description

The JTRS is a software-programmable multi-band, multi-mode family of networked radios capable of simultaneous voice, data, and video communications. The program will effect the migration of more than 25 radio families, encompassing thousands of radio systems, to the JTRS family of radio systems. All radios will

be compliant with Software Communications Architecture (SCA), a single, open-system architecture. SCA provides the standards for all JTRS software in the future. In addition, JTRS will be developed with a focus toward integrated Global Information Grid (GIG) transformational capabilities. At the same time the JTRS will be backwards compatible with selected legacy radio systems. At present there are five designated product lines that make up the JTRS family across DoD: Multifunctional Information Distribution System (MIDS), Airborne/Maritime/Fixed Station (AMF), Ground Mobile Radio (GMR), Handheld/Manpack/Small Form Fit (HMS) and JTRS Network Enterprise Domain (JNED). The JTRS requirements are derived from the Joint Tactical Radio System (JTRS) Operational Requirements Document (ORD) Version 3.2.1 dated 28 August 2006 to accommodate the Increment I requirements. A Capabilities Development Document (CDD) is currently being written to provide the capabilities needed for Increment II; it is expected to go to the JROC in May 2007. JTRS will enable FORCENet by implementing current tactical communications standards in addition to future higher data rate networking waveforms.

Status

In February 2005, USD (AT&L) established a Joint Program Executive Office (JPEO) for the JTRS program. In August 2005, the JPEO determined that the JTRS program required restructuring to reduce program risk. In August 2006 DEPSECDEF signed a memo on the new JTRS Management Structure and named SECNAV as the Lead DoD Component for JTRS. As such, all execution year funding will go through Navy to the JPEO.

Developers

Manufacturers to be determined in open competition.

Lightweight Super High Frequency Satellite Communications

Description

The Super High Frequency (SHF) Satellite Communications (SATCOM) terminal AN/WSC-6(V) and parabolic antenna enables Navy ships to access the Defense Satellite Communications System (DSCS) for reliable, secure, beyond line-of-sight information exchange at medium-to-high data rates. This capability is provided by upgraded and new WSC-6 terminal variants and enhancements to the submarine High Data Rate Antenna, which provides an SHF capability for the Navy's attack submarines. Key services available via SHF SATCOM are: Defense Information Systems Network (DISN), Global Command and Control System (GCCS and GCCS-M), broadcast record message traffic, Tomahawk Mission Planning packages and updates, imagery support, DSN telephone/ISDN access, Joint Deployable Intelligence Sup-



port System (JDISS), Joint Worldwide Intelligence Communications System (JWICS), Unclassified-but-Sensitive Internet Protocol Router Network (NIPRNET), Secret Internet Protocol Router Network (SIPRNET), and Video Information Exchange System (VIXS)/Video Teleconferencing (VTC).

Status

SHF SATCOM capability is being provided to Navy surface ships by several WSC-6 variants according to the requirements of those platforms. Surveillance Towed Array Sensor (SURTASS) platforms are configured with the WSC-6(V)7. One aircraft carrier has the WSC-6 (V)4 variant. Numbered fleet commander flagships (LCC), the other aircraft carriers, and flag-capable amphibious ships (LHA/LHD) are configured with the WSC-6(V)5. This variant provides a dual-termination capability, enabling the ships to establish and simultaneously maintain their C4I links with Naval Computer and Telecommunications Area Master Stations (NCTAMS) and additional links with an Army, Marine Corps, or Air Force Ground Mobile Force (GMF) SHF terminal ashore in the AOR. The WSC-6(V)7 is a single-termination variant being fielded on Aegis cruisers and amphibious ships (LPD and LSD). The WSC-6(V)9 is a single-termination, dual (C/X) band terminal developed to provide wideband, high data rate capability to guided missile destroyers (DDGs) and amphibious ships (LPDs and LSDs). The WSC-6(V)9 terminal is in the process of being fielded on all DDGs (to be completed in FY 2009). Future terminal plans include the Navy Multi-Band Terminal (NMT). All WSC-6(V) variants will be equipped with the Enhanced Bandwidth Efficient Modem (EBEM) (tactical variant) in the FY 2007 to FY 2009 timeframe.

Developers

Electro-Space Inc.; Dallas, Texas
Raytheon; Marlborough, Massachusetts
Various COTS/NDI

Mark XIIA Mode 5 Identification Friend or Foe (IFF)

Description

The Mark XXIIA Mode 5 IFF is a secure, real-time, cooperative blue force combat identification system. Combat identification is a prerequisite in FORCENet, thereby becoming a precondition for each of the other pillars as well. IFF Mode 5 uses technology advances in modulation, coding and cryptographic techniques to provide reliability, security, and performance improvements over Mode 4. It is implemented through evolutionary upgrades to Mark XIIA interrogators, transponders, and processors. Mode 5 can be fielded on all DoD platforms, whether Link-capable or not. It is NATO and JROC-approved and meets U.S. and international civil IFF requirements.

Status

The Navy's ACAT II program of record is based on the improved Mark XII Cooperative IFF Operational Requirements Document, dated 27 April 2001. It will be installed on over 3,000 ships and Navy and Marine Corps aircraft. The program does not include fielding of the shipboard control and display unit, F/A-18 platform integration, or Mode S shipborne interrogation capability. Milestone C was achieved in July 2006. IOC is first quarter FY 2009; FOC is 2015. Navy is the lead service for Mode 5 cryptographic modernization and Mode 5 synchronization across the services. Army and Air Force plan leveraging off Navy development.

Developers

BAE Systems; Greenlawn, New York

General Dynamics Decision Systems; Scottsdale, Arizona

Military Flight Operations Quality Assurance (MFOQA)

Description

MFOQA is a process using data collected during flight to conduct post-flight analysis of aircrew and aircraft systems performance after every flight. No additional equipment is mounted on the aircraft platform and no additional tasking is added to the aircrew during flight. The aircrew can remove the data collection card and take it to the squadron ready room and load in the data to squadron computers. Applying MFOQA software already loaded in the computer, the aircrew can replay the flight in animation, noting geographic position, instrument readings and aircraft performance parameters. Through this analysis and recording, maintenance personnel can perform diagnostic analysis of the aircraft systems, aircrews can self-evaluate their performance, and squadron leadership can review and counsel on flight procedures, safety issues and training issues. The ultimate payoff will be increased readiness. Data from the flight is aggregated, after removal of aircrew and aircraft identification, for trend analysis at upper tiers of command at the group, wing and type command level. Flight operations quality assurance has been used in the commercial aviation industry for several years. Surveys of the airlines have yielded high praise for this process and for its benefits to maintenance, operations, safety, and training.

Status

The Navy has developed a plan to implement MFOQA across Naval Aviation. The lead aircraft is the F/A-18C/D/E/F, followed by the MH-60R/S helicopters, the CH-53E heavy lift helicopter, the MV-22B tilt-rotor aircraft and the T-45 trainer. Initiated with funding beginning in FY 2006, the current schedule is to achieve IOC in first quarter FY 2010

Developers

To be determined.



Multi-functional Information Distribution System Joint Tactical Radio System (MIDS-JTRS)

Description

The MIDS-JTRS is an engineering change proposal migrating the MIDS Low Volume Terminal (LVT) to Joint Tactical Radio System Software Communication Architecture (SCA) compliance. MIDS JTRS will be a four channel software programmable radio capable of processing Link-16 on one dedicated channel and other JTRS waveforms on the remaining three channels.

Status

MIDS-JTRS is in early development with IOC in the F/A-18 expected in FY 2009.

Developers

ViaSat; Carlsbad, California

Data Link Solutions; Cedar Rapids, Iowa

Multi-functional Information Distribution System (MIDS-LVT)

Description

MIDS-LVT is a multi-national cooperative development program to design, develop, and produce a tactical information distribution system equivalent to Joint Tactical Information Distribution System (JTIDS), but in a low-volume, lightweight, compact terminal designed for fighter aircraft with applications in helicopters, ships, and ground sites. Navy procurement, limited by available resources, is targeted for F/A-18 Hornet aircraft as the lead aviation platform and surface craft. MIDS-LVT is a pre-programmed product improvement and replacement for JTIDS, providing identical capabilities at reduced size, weight, and cost. As a P3I of the JTIDS Class 2 Terminal, the MIDS-LVT will employ the Link-16 (TA-DIL-J) message standard of Navy/NATO publications. MIDS-LVT is fully interoperable with JTIDS and was designed in response to current aircraft, surface ship, submarine, and ground host volume and weight constraints. The solution variants, MIDS-LVT (1), MIDS-LVT (2), and MIDS-LVT (3), support Navy, Marine Corps, and Air Force aircraft; Navy ships; Army Patriot, THAAD, MEADS and ground-based defense systems; Air Force and Marine Corps ground-based command and control platforms; and potentially other tactical aircraft and ground-based systems. MIDS-LVT is an international project partnering the U.S. with Germany, Spain, Italy, and France. The MIDS-LVT (1) variant will be used in the MIDS on ship program providing the Link 16 capability to new Construction Surface Combatants.



Status

The program entered the engineering, management and development (EMD) phase in December 1993. MIDS was approved for LRIP in FY 2000. It reached IOC on the F/A-18C/D Hornet in FY 2003. MIDS is being procured for F/A-18 C/D/E/F/G aircraft. The U.S. is the MIDS-LVT program leader with Germany, Spain, Italy, and France entering into a European partnership, called EU-ROMIDS. The Air Force F-15 fighter variant, MIDS-LVT (3), is currently in full-rate production and has reached IOC. The Army variant, LVT-2 entered full-rate production in September 2003. The Navy/Air Force variant, LVT-1, passed OPEVAL and was authorized to enter full-rate production on 9 September 2003. MIDS on ship is scheduled for IOC in late FY 2006. Additionally, in order to maintain continuity with the MIDS-JTRS initiative, Program Management and Acquisition Authority for the MIDS-LVT has transitioned to the JTRS JPEO with resource sponsorship under the oversight of CJCS (J6). However, contract management and procurement responsibilities remain with COMNAVSPAWAR (PMW-780).

Developers

ViaSat; Carlsbad, California

Rockwell-Collins; Cedar Rapids, Iowa

Data Link Solutions; Cedar Rapids, Iowa

An International consortium, MIDSCO, developed MIDS-LVT.

EUROMIDS will be the European producer of MIDS terminals

Mobile User Objective System (MUOS)
Description

The MUOS will provide a replacement tactical narrowband satellite communications (SATCOM) capability to the UHF Follow-On (UFO) satellite program. MUOS has been designated a DoD Space Major Defense Acquisition Program (MDAP) and will leverage commercial technology to the greatest degree possible. It will provide tactical narrowband netted, point-to-point, and broadcast services of voice, video, and data worldwide. It will consist of four geo-synchronous satellites plus a spare and provide a four-fold increase in network accesses. The target users are unified commands and joint task force components, DoD and non-DoD agencies, and allied and coalition mobile users who need to communicate while on the move.

Status

Concept exploration studies, AoA, the component advanced development phase, and preliminary design review have been completed. PEO Space, PMW 146 awarded the RR&DD contract to Lockheed Martin on 24 September 2004. MUOS has now entered the critical design review phase and is expected to reach On Orbit Capability (OOC) in 2010. The program successfully completed



Key Decision Point (KDP) C on 1 August 2006 and gained Milestone Decision Authority (MDA) to continue with the final design. Build Decision for the first two satellites is scheduled for October 2007. The MUOS Capability Production Document (CPD) is in formal Navy review.

Developers

Lockheed Martin; Sunnyvale, California
Boeing; El Segundo, California
General Dynamics; Scottsdale, Arizona

Link-22**Description**

Link-22 is the next-generation NATO Tactical Data Link also referred to as the NATO Improved Link Eleven (NILE). It is a co-development program with seven NATO countries and is in the latter half of its research and development phase. As an evolutionary new Link design, Link-22 is based on modern, media-independent networking technology that will be applied in the exchange and forwarding of tactical data at extended ranges and between multiple networks over a variety of RF media. A member of the J-series family, Link-22 will complement Link-16 by providing Beyond Line of Sight (BLOS) connectivity among C2 platforms and modern, robust, relay/routing techniques. The Link-22 design includes a growth feature to accommodate the addition of SATCOM media for BLOS J-series data exchange. Link-22 will support interoperability with critical allied/coalition partners that have transitioned from Link-11 to Link-22 but do not possess a Link-16 capability. Implementation of Link-22 will ensure allied/coalition forces maintain the level of situational awareness required to plan and execute coordinated combat operations across the allied/coalition Area of Responsibility. Since Link-22 is an evolutionary Tactical Data Link (TDL), the Next Generation Command and Control Processor (NGC2P) will implement hardware and software changes that will provide a full Link-22 capability with little, if any change, to host combat systems.

Status

Link-22 was introduced in an adjunct processor to Common Data Link Monitoring System (CDLMS) in FY 2006. Full Link-22 functionality will be introduced as part of the Next Generation Command and Control Processor (NGC2P) in FY 2007.

Developers

Northrop Grumman; San Diego, California
VIASAT; San Diego, California
SPAWARSYSCEN; San Diego, California

NAVSTAR Global Positioning System (GPS)

Description

The NAVSTAR GPS is a space-based, satellite, radio navigation system that provides users with worldwide, all-weather, three-dimensional positioning, velocity, and precise time data. Navy requirements include the integration of GPS in more than 300 surface ships and submarines, 5,100 aircraft, as well as integration of shipboard combat systems with the Navigation Sensor System Interface (NAVSSI), and anti-jam protection for high-priority combat platforms through the Navigation Warfare (NavWar) Program. GPS plays an important role not only in navigation, but also in precision strike weapons, naval surface fire support systems, and ship C4I systems. NAVSSI is a system that collects, processes, and disseminates position, velocity, and timing data to weapons systems, and C4I and combat support systems onboard surface warships. This system hosts embedded, next-generation, card-based GPS receivers. NavWar will provide anti-jam antennas for the protection of select naval platforms to ensure a continued high level of mission effectiveness in a GPS-jamming environment. NavWar also incorporates the capabilities of GPS modernization into Navy user equipment to receive future military satellite signals.

Status

All ships and submarines have completed their initial GPS installations. Aircraft integrations are ongoing. The FY 2007 budget supports equipping the remaining planned aircraft with initial GPS capability, providing surface combatants with modernized NAVSSIs through the FYDP, and ensuring that the GPS signal is protected on naval platforms.

Developers

Rockwell-Collins; Cedar Rapids, Iowa
Raytheon; Los Angeles, California
Trimble Navigation; Sunnyvale, California
Litton Data Systems; San Diego, California

Navy EHF/AEHF Navy Extremely High Frequency Satellite Communications

Description

The Navy Multi-band Terminal (NMT) is the future satellite communications (SATCOM) terminal that will provide protected and wideband SATCOM services for Navy ships, submarines, and shore stations. NMT replaces the AN/USC-38/Follow-on Terminal (FOT). NMT will provide a family of anti-jam, low-probability-of-intercept, and low probability of detection EHF SATCOM terminals. NMT supports a variety of protected command-and-



control and communications applications (i.e., secure voice, imagery, data, and fleet broadcast systems). The NMT replaces the WSC-6 terminal series, which provides key wideband SATCOM services via SHF. NMT services include Defense Information Systems Network, Global Command and Control System, broadcast record message traffic, Tomahawk Mission Planning, imagery support, DSN telephone/ISDN access, Joint Deployable Intelligence Support System, Joint Worldwide Intelligence Communications System, Unclassified-but-Sensitive Internet Protocol Router Network, Secret Internet Protocol Router Network, and Video Information Exchange System/Video Teleconferencing. The NMT will also enable the Global Broadcast Service (GBS) suite to access the GBS broadcast. The NMT will be interoperable with Army and Air Force terminals. The NMT will allow access to: protected EHF SATCOM services available on Milstar; EHF payloads onboard Ultra High Frequency Follow-On satellites, and three planned (one operational in 2003) Polar EHF payloads. NMT will also allow wideband (X band) access to the Defense Satellite Communications System (DSCS) satellites and to the follow on Wideband Gapfiller Satellites (WGS). Additionally, NMT will expand protected SATCOM services to include those provided by the Advanced EHF (AEHF) satellites. The terminal will operate in the EHF and SHF radio frequency spectra (X, Ka, Ku, and Q bands). The terminal will support the current EHF waveforms: EHF Low Data Rate (LDR) - 75 bps to 2400 bps, and EHF Medium Data Rate (MDR) - 4.8 Kbps to 1.544 Mbps. The NMT will also support the AEHF waveform, which will extend data-rates up to 8.129 Mbps (XDR).

Status

The NMT received Milestone B approval in October 2003. FY 2007 focuses on NMT prototype development by two competing contractors, leading to the award of an engineering development model contract in July 2007. Initial fielding is planned for FY 2012. The Follow-on Terminal (FOT) version of the AN/USC-38 (V) will reach FOC in 2007 for ships and 2009 for submarines.

Developers

NESP and FOT: Raytheon; Marlborough, Massachusetts
 NMT Developers: Raytheon; Marlborough, Massachusetts
 Harris; Melbourne, Florida

Navy Meteorological/Oceanographic Sensors (METOC) Sensors (Space)

Description

The Navy METOC Sensors (Space) program supports Navy interests in meteorological and oceanographic (METOC) space-based remote sensors. These interests include commitments to satellite, sensor, and operational development activities associated with



the Defense Meteorology Satellite Program (DMSP) and the National Polar-orbiting Operational Environmental Satellite System (NPOESS). The sensors carried on DMSP and future NPOESS satellites provide global oceanic and atmospheric data of direct operational relevance, including sea surface temperature, wind speed and direction, sea ice conditions, precipitation rates, and storm intensity. The program provides for Navy participation in Navy/Air Force cooperative efforts leading to current and future METOC sensor development, including calibration and validation of instruments and delivery of satellite products to the Fleet.

Status

In October 1997, the program commenced development of Coriolis/Windsat, the world's first space-based sensor that passively measures ocean surface wind speed and direction, launched in December 2002. Development of the Airborne Polarimetric Microwave Imaging Radiometer (APMIR) for calibration and validation (cal/val) of the Air Force Special Sensor Microwave Imager/Sounder (SSMIS) and Coriolis/Windsat, began in early FY 1998. APMIR is in service to support the first SSMIS mission on DMSP-F16, launched in October 2003. APMIR will continue as an ongoing cal/val program for DMSP, Coriolis/Windsat, and NPOESS microwave radiometer sensors. In addition to these projects, discussions are underway with NASA, NOAA, and other agencies to fulfill the long-standing requirement for geostationary environmental imagery of the Indian Ocean.

Developers

WINDSAT Sensor: Naval Research Laboratory(NRL); Washington, District of Columbia

CORIOLIS Spacecraft: Spectrum Astro; Gilbert, Arizona

Navy Marine Corps Intranet (NMCI)

Description

NMCI is a long-term initiative between the DoN and the private sector to deliver a single, integrated department-wide network for Navy and Marine Corps shore commands. The NMCI contract, awarded in October 2000, as a seven-year contract with a three-year option, has been extended through 30 September 2010. The contract allows DoN to procure service-wide IT services and provides the shore network infrastructure within the CONUS for the Navy's FORCENet architecture. NMCI provides comprehensive end-to-end information services for data, video, and voice communications for DoN military and civilian personnel and connects to the GIG, making the DoN workforce more efficient, more productive, and better able to support the critical DoD warfighting missions.



Status

NMCI is operational and continues to provide commercial IT services for nearly half a million DoN employees and one Combatant Commander. To date, the DoN has ordered 348,000 of the expected FY 2007 seats and deployed 306,751 end-state seats. Implementing NMCI has enabled the DoN to increase the security posture of its networks and has provided unprecedented visibility into IT costs.

Developers

The NMCI contract was awarded to a team of contractors led by Electronic Data Systems (EDS). The remainder of the contractor team comprises Verizon Business (communications circuits), Microsoft (operating systems and desktop software), Dell (desktop hardware and servers), WAMNET (network architecture), Cisco (switching and network devices), Raytheon (information assurance).

Naval Tactical Command Support System (NTCSS)**Description**

NTCSS is the combat logistics support information system used by Navy and Marine Corps Commanders to manage and assess unit and group material and personnel readiness. As the logistics management cornerstone of the Sea Base pillar of *Sea Power 21*, NTCSS provides intermediate and organizational maintenance, supply, and personnel administration management capabilities to surface, sub-surface, and aviation operational commanders in peacetime and during war. NTCSS also supports network-centric warfare by integrating logistics information to complement the tactical readiness picture for operational commanders. Through an evolutionary acquisition strategy, NTCSS replaced, merged, and optimized legacy Shipboard Non-tactical ADP Program (SNAP), Naval Aviation Logistics Command Management Information System (NALCOMIS), Maintenance Resource Management System (MRMS), and several smaller logistics applications into an integrated and modernized capability. The first stage of the strategy included hardware modernization and network installations using open system architectures and operating environments common with shipboard tactical programs. The second stage optimized the functional applications using modern software development tools, relational databases, and data replication. Going forward, Business Process Improvements will be developed and implemented under sponsorship of functional and fleet managers. Such planned initiatives include: transfer of shipboard logistics data ashore as part of a broader initiative to Move Workload Ashore and reduce shipboard manpower; making NTCSS data accessible via the Common Operational Picture to enable operational decisions based on near-real time readiness data; and merging systems such as NTCSS, GCSS-MC, and GCSS-M into a unified capability that exchanges data with Naval Enterprise Resource Planning (ERP). As a result, the Navy and Marine Corps will realize increased efficiencies and reduced total ownership costs.



Status

NTCSS is a mature program in full-rate production and continues to be the warfighter's production system to maintain Fleet readiness. FOC at Naval Air Stations and Marine Air Logistics Squadrons has been achieved. FOC for ships and submarines will be achieved by FY 2010. An optimized NTCSS capability, targeted for aircraft squadrons, is undergoing Follow-On Test and Evaluation and pursuant to a fielding decision in FY 2007 will achieve FOC by FY 2011. Upon FOC, a Tech Refresh Phase will replace antiquated NTCSS Hardware/Software and maintain compliance with DoD/DoN Information Assurance and Baseline Reduction mandates.

Developers

The COTS hardware is being procured through indefinite delivery/indefinite quantity government contracts. Engineering, development, integration, installation, training, and life cycle support will be accomplished through Navy and Defense Department activities, with additional support from industry partners.

Open Architecture (OA)**Description**

OA is a core Sea Enterprise component transforming Navy acquisition processes and a critical FORCENet enabler. A broad, operationally focused open architecture definition means having the business and technical environment that encourages collaborative competition for third party developers to replace or add a module anywhere, anytime in a system. The objective is rapid, affordable translation of Fleet requirements into Fleet capabilities. Open business practices are a cost-effective means to that end.

Status

Surface Navy programmed funding for OA beginning in 2003. The CG and DDG Modernization plan started with a technical undertaking to open architecture with de-couple hardware from software for cost-effective sustainment by 2008. All the surface combat systems (AEGIS, SSDS, LCS, DDG 1000 and ACDS through CNI) are under review to ensure development of scalable, modular software application components and to provide greater business opportunities for competitive alternatives. The acquisition-led OA Enterprise Team (OAET) is adopting broader business aspects of "open architecture" for more collaborative competition within and across programs; including small business involvement through the ONR-led Small Business Innovative Research (SBIR) program. By expanding third party Developers' involvement using the SBIR program, the rapid capability insertion program (RCIP) will deliver cost-effective, common capability quickly and more efficiently to the fleet.



Developers

More than 80 companies nationwide, including:

Lockheed Martin; Moorestown, New Jersey; Syracuse, New York;
Eagan, Minnesota
Sippican; Marion, Massachusetts
Advanced Acoustic Concepts; Hauppauge, New York
BAE Systems
General Dynamics Advanced Information Systems; Fairfax,
Virginia
General Dynamics Information Systems; Arlington, Virginia
General Dynamics Bath Iron Works; Bath, Maine
Northrop Grumman Ship Systems; Pascagoula, Mississippi
Northrop Grumman PRB Systems; Goleta, California
Raytheon; St. Petersburg, Florida; Sudbury, Massachusetts; San
Diego, California
Raytheon Missile Systems; Tucson, Arizona
Space and Naval Warfare Systems Center; San Diego, California
Johns Hopkins University Applied Physics Laboratory; Laurel,
Maryland
SECHAN Electronics; Lititz, Pennsylvania
Integrated Combat Systems Test Facility (ICSTF); Dam Neck,
Virginia
Space and Naval Warfare Systems Center; San Diego, California
Naval Surface Warfare Center; Dahlgren, Virginia; Port Huen-
eme, California
Naval Undersea Warfare Center; Keyport, Washington; Newport,
Rhode Island

Tactical Switching
Description

Tactical Switching and its implementation, formerly known as the Shore Infrastructure Master Plan (SIMP), is focused on the automation and conversion of the existing circa-1970 Serial Switched point-to-point shore infrastructure connecting three Navy Computer and Telecommunications Area Master Stations (NCTAMS), ten Navy Computer and Telecommunications Stations (NCTS), 27 NCTS Detachments, 23+ Network Operation Centers (NOC), and 5,270 personnel. The plan currently underway will invoke multiple spirals to implement new technology and automation and infrastructure necessary to evolve the shore infrastructure to two Regional Network Operations and Security Centers (Atlantic/Pacific) and one Global Network Operations and Security Center providing interoperable joint global network-centric services and connectivity to tactical and strategic naval assets. Through this technology and remote management capabilities, this architecture will be managed, monitored, operated, maintained, and defended with fewer than 50 percent of today's manpower resources and eliminate more than 70 percent of today's fixed sites further re-

ducing infrastructure costs.

Status

During FY 2005, the Tactical Switching program provided High Speed Global Ring (HSGR) connectivity between the five critical regions, which enabled accelerated consolidation of services into the Atlantic and Pacific regions. Significant progress has been made to convert the existing Tactical Video Teleconferencing (VTC) to IP reducing reliance on the serial infrastructure and installation of Element Management Systems that will enable remote management and operations of existing equipment. During FY 2006, Enterprise Management and Monitoring systems were evaluated and purchased to further consolidate services and personnel as well as provide tactical and strategic visualization of the Navy enterprise to service and Combatant Command/Commander (COCOM) agencies NetOps in support of GIG operations. Initial Network Management System implementation will be delivered to RNOSC East and West in early FY 2007.

Developers

PEO C41 and Space; San Diego, California

Trusted Information Systems (TIS)

Description

TIS provides a complete cross-domain capability for the automatic exchange of critical intelligence and operational information between U.S., Allied, and Coalition forces. TIS includes both the Radiant Mercury (RM) and Joint Cross Domain Exchange (JCDX) systems. Both systems are Director of Intelligence Directive 6/3 Protection Level 4 (PL-4), Multi-level Secure (MLS) certified providing unique cross-domain information sharing capabilities from top secret Sensitive Compartmented Information (SCI) to General Services (GENSER) and GENSER to unclassified.

RM is certified and accredited by both the SCI (top secret and below interoperability) and GENSER (secret and below interoperability) communities. RM provides a fully-automated, bi-directional, multiple input/output channel capability, that can be serial or network connected, to sanitize, transliterate, downgrade, and guard classified, formatted information to users at lower classification levels. RM also processes unformatted message types and imagery utilizing reliable human review (semi-automated). RM is deployed to more than 200 sites worldwide including all Combatant Commands, aircraft carriers and large-deck amphibious warships, Shared Early Warning, Blue Force Tracking and numerous Air Force and Army sites as well as national agencies.

JCDX is DoD's only comprehensive multi-level C4I system certified to connect to multiple networks at multiple security levels. JCDX serves as the backbone automated information system pro-



viding accredited manual and automatic exchange of multilevel Common Operational Picture (COP), e-mail, imagery, and event-by-event data dissemination. The system provides MLS C4I and cross-domain services to U.S. Joint Intelligence Centers and is the national level defense intelligence system for the United Kingdom and Australia, and is the service-level operational intelligence system for the Japanese Maritime Defense Forces and the Republic of Korea.

Status

JCDX is currently being phased-out of the U.S. inventory in FY 2007 and will be replaced by the Global Command and Control System (GCCS) Integrated Imagery and Intelligence (I3). JCDX Foreign Military Sales customers and Maritime Surveillance System (MSS) sites are currently assessing the impact of this decision. Other developments within TIS are focused on migrating RM's certified MLS capabilities into a Services Oriented Architecture and integrating with additional afloat, joint, and coalition-network architectures. As the Executive Agent of the multi-service RM program, the Navy will continue to oversee RM and RMIG support to more than 200 locations worldwide.

Developers

Maxim Systems; San Diego, California
Northrop Grumman Mission Systems; Arlington, Virginia
Lockheed Martin; Denver, Colorado
Booz-Allen-Hamilton; Chantilly, Virginia



Ultra High Frequency (UHF) Follow-On (UFO)

Description

The Ultra High Frequency (UHF) Follow-On (UFO) satellite program comprises eight satellites and it replaced the Fleet Satellite (FLTSAT), Gapfiller, and Leased Satellite (LEASAT) UHF constellations. UHF SATCOM services, provided by UFO, include worldwide, narrowband, unprotected netted, point-to-point, and broadcast service of voice, video, and data using 5 and 25 Khz UHF channels. UFO also provides a protected Fleet Broadcast using an Extremely High Frequency (EHF) uplink and UHF downlink to provide an anti-jam capability on the uplink. UFOs 4-11 carry an EHF payload that provides anti-jam capability on the uplink and downlink. Protected services include netted, point-to-point, and broadcast service of voice and data. The EHF payload also provides an anti-jam telemetry tracking and control uplink capability. UFOs 8-10 also include a Global Broadcast Service (GBS) payload. GBS uses direct broadcast technology at an extremely high data rate to many users via very small terminals.

Status

Eleven satellites have been launched and eight are operational. The launch of UFO 1 was a failure and UFO 10 was launched

in November 1999 as a replacement. A Gapfiller (UFO-11) was launched in December 2003 to maintain constellation availability at minimum acceptable 70 percent through 2010 to coincide with the launch of MUOS. UFO 3 failed in orbit in June 2005 and UFO 9 failed in orbit in August 2006. This moved the UFO 70 percent availability from 2010 to 2007. Mobile User Objective System (MUOS) is still on track to begin replacing UFO in 2010 leaving a potential 28 month gap.

Developers

Boeing Satellite Systems (BSS); Los Angeles, California
SPAWAR Systems Command; San Diego, California

Undersea Warfare-Decision Support System (USW-DSS)

Description

The USW-DSS program provides an integrated, near-real time, network-centric Undersea Warfare (USW) Command and Control (C2) capability across multiple platforms, even with low bandwidth or intermittent inter-platform communications. USW-DSS leverages existing communication links, networks, contact pictures, and sensor data from air, surface, submarine, theater, and surveillance platforms and integrates them to produce a common USW near-real time decision support tool. It provides a critical capability, not only for the Sea Combat Commander (SCC), but also for the Theater USW Commander (TUSWC), Antisubmarine Warfare Commander (ASWC), and Mine Warfare Commander (MIWC), for an integrated capability to plan, conduct, and coordinate USW operations with multiple ASW and MIW platforms. USW-DSS will provide common and improved visualization, integrated USW platform sensor data sharing, reduced data entry, improved performance prediction, data fusion and reduce redundancy across USW Tactical Decision Aids (TDA). USW-DSS will provide greater understanding of the undersea battle space by allowing the entire force (CSG/ESG, theater, or other) to have a common, thorough understanding of the battle space with characterized uncertainties. USW-DSS uses the spiral development process. A peer review group will select current and developmental technologies to be incorporated into a build-test-build process to develop a network-centric USW capability. Current plans are for USW-DSS to transition into a GCCS-M application with a subsequent migration as part of a maritime application in Net Enabled Command Capability (NECC).

Status

USW-DSS currently uses a Top Level Requirements (TLR) document signed by the Warfare Sponsor, Task Force ASW (formerly N74) on 2 October 2003, and was documented based on high-level guidance from a Net-Centric USW (NCUSW) Mission Needs



Statement (MNS). The TLR was further updated to incorporate new requirements resulting from the 2005 C2 in ASW Study. A Capability Production Document (CPD) reflecting the requirements in the TLR is in draft form. In FY 2007, USW-DSS will be installed on two carrier strike groups as well as theater USW assets.

Developers

Multiple Navy and university labs and industry participants will perform the various developer and manufacturer roles. The software integration role for Build 2 and follow will be a full and open competition.

Airborne

Aerial Common Sensor (ACS)

Description

The transformation of Naval Airborne Information Warfare is driven by the need for a capability supporting a variety of ISR, target acquisition and Information Warfare/Operations (IW/IO) missions during peacetime and through all levels of war. The aging EP-3E aircraft will be replaced once a suitable replacement platform is identified. This replacement platform will align with all *Sea Power 21* pillars, but will primarily support FORCENet by providing fused Multi-INT derived time critical, actionable information to the warfighter. Accomplishing this requires a combination of sensors, including Signals Intelligence (Communication Intelligence/Electronic Intelligence), Imagery Intelligence (IMINT) Electro-Optical (EO)/Infrared (IR), Synthetic Aperture Radar (SAR), Multi-Spectral and Hyper-Spectral Imaging (MS/HSI), Ground/Maritime Moving Target Indicator (G/M MTI), and Measurement and Signatures Intelligence (MASINT) systems. The follow-on EP-3E will be capable of multiple operational configurations, using a combination of onboard and off-board collection, processing and reporting operations. The new platform will be a primary ISR node within FORCENet and will use joint standards and architectures to achieve interoperability across the Global Information Grid. This transformational process will allow for optimum use of external processing while maintaining exploitation, fusion, and dissemination capabilities within the battlespace. The aforementioned capabilities will allow for better use of Low Density/High Demand (LD/HD) personnel assets, deploy with a smaller footprint, and garner a significant manpower reduction. Supporting the Navy objective to provide immediately employable forward-deployed naval forces, the new platform will deploy anywhere in the world within 72 hours. Operating initially without support and with a minimum footprint, it will be capable of conducting operations en route and immediately upon arrival in theater.

Status

Initial Army ACS contract (addressing JROC approved Army and Navy ISR requirements) was awarded to Lockheed Martin in July 2004 and terminated in January 2006. ACS program development preceeded a 2006 Joint service study of ISR requirements which identified the requirements to develop this capability. The EP-3E will be modernized to a common configuration and sustained until a replacement platform is fielded.

Developers

To be determined.

E-2 Hawkeye Airborne Early Warning Aircraft Upgrade**Description**

The E-2 Hawkeye is the Navy's airborne surveillance and command-and-control platform, providing battle management and support of decisive power projection at sea and over land in a joint operational architecture. In addition to current capabilities, the E-2 has an extensive upgrade and development program to prepare it as a critical element in an overall joint theater air and missile defense program.

Two upgrades that will ensure that Hawkeyes keep pace with changing tactical environments are the E-2C Hawkeye 2000 and the E-2D Advanced Hawkeye (AHE), including the Radar Modernization Program (RMP). The E-2C Hawkeye 2000, the most advanced Hawkeye variant in production, features Mission Computer Upgrade (MCU), Cooperative Engagement Capability (CEC), Improved Electronic Support Measures (ESM), Joint Tactical Information Distribution System (JTIDS), Global Positioning System (GPS), and data and voice satellite communications. The MCU greatly improves weapons systems processing power enabling incorporation of CEC. In turn, CEC-equipped Hawkeyes will significantly extend the engagement capability of surface forces. It is key to early cueing of the Aegis Weapon System, dramatically extending the lethal range of the Standard Missile (SM-2). Advanced Hawkeye's RMP is developing a radar that will bring over-the-horizon, overland detection, and tracking to the strike group. This and CEC will fully integrate Advanced Hawkeye into the Joint Integrated Air and Missile Defense (JIAMD) role. This advanced detection and tracking capability, in conjunction with Aegis and upgraded Standard Missiles, will allow strike groups to deploy an organic, theater-wide air and cruise missile Sea Shield umbrella to protect high-priority areas and U.S. and coalition forces. The E-2's systems are fully interoperable with the Airborne Warning and Control System (AWACS) and ground-based systems for a seamless joint architecture. The Hawkeye will continue as the airborne "eyes and ears" of the fleet as it applies its capabili-

ties in the integrated joint, overland, theater-wide air and cruise missile-defense environment. Many technological upgrades being incorporated in the Hawkeye represent leading-edge improvements for U.S. forces, not just in the Navy's theater air and missile defense programs.

Status

Two E-2D Advanced Hawkeye System Development and Demonstration aircraft had a "Keel Start" ceremony in April and July 2005. First flight is scheduled for fourth quarter FY 2007, with IOC in FY 2011.

Developers

Northrop Grumman; Bethpage, New York
Northrop Grumman; St. Augustine, Florida



EP-3E Modification and Sustainment

Description

The EP-3E is the Navy's airborne Information Warfare (IW) and tactical Signals Intelligence (SIGINT) platform supporting naval and joint commanders. EP-3Es provide long-range, high-endurance support to aircraft carrier strike groups and expeditionary strike groups in addition to performing independent maritime operations. The current force consists of two active squadrons. The original EP-3E Joint Airborne SIGINT Architecture Modification (JMOD) program has been restructured to bring all EP-3E platforms into a common configuration and will be sustained until Aerial Common Sensor (ACS), a joint development program with the Army, can be fielded with an FOC of approximately 2017. EP-3E modernization/sustainment strategy includes three elements: P-3 to EP-3E conversions; EP-3E JMOD common configuration; and airframe inspections/repairs.

- **P-3 to EP-3E conversions:** The P-3 to EP-3 conversion program converts five P-3C Orion aircraft to EP-3E platforms. Two were completed in FY 2006 and three are scheduled for completion in FY 2007.

- **EP-3E JMOD Common Configuration (JCC):** The EP-3E JMOD Program has been restructured to align all EP-3E mission systems to a common baseline that meets the challenge of rapidly emerging threat technology, identified as the JCC. JCC will address mission system obsolescence and incorporate "quick reaction" capabilities specifically developed for Operations Enduring Freedom and Iraqi Freedom. JCC will also accelerate capabilities, developed under the JMOD program, to the fleet five years ahead of schedule. The JCC includes expanded ELINT exploitation capability and COMINT signals coverage, new multi-platform COMINT Direction-Finding Capability, and advanced Special Signals-Collection capability.

- **Inspections/repairs:** EP-3Es will be sustained through a series of Special Structural Inspections (SSIs) and Special Structural Inspection-Kits (SSI-Ks). SSIs will be completed on all aircraft. SSI-Ks will be completed on select aircraft meeting criteria as required and will include preemptive replacement of fatigue critical structures.

Status

The EP-3E JCC ORD was approved on 10 June 2005. The JCC Development/Production Contract was awarded on 29 June 2005. The EP-3E will be modernized to a common configuration and sustained until Navy Aerial Common Sensor (ACS) reaches IOC.

Developers

L3 Communications; Waco, Texas
 Northrop Grumman; Baltimore, Maryland
 Titan; Vienna, Virginia
 Aeronix; Melbourne, Florida
 General Dynamics; San Jose, California
 Allied Signal; Sunnyvale, California
 TRW; Sunnyvale, California
 EDO Corporation; San Jose, California
 Lockheed Martin; Fort Worth, Texas and Denver, Colorado
 Naval Surface Warfare Center (NSWC); Crane, Indiana
 NSWC; Dahlgren, Virginia
 Naval Aviation Depot; Jacksonville, Florida
 AT&T Solutions; Vienna, Virginia
 Raytheon; Indianapolis, Indiana

Naval Mission Planning Systems (NavMPS)

Description

NavMPS is a suite of applications that allow aircrew to perform tactical mission planning at the secret level for a wide variety of aviation platforms and air launched weapons. NavMPS consists of the Joint Mission Planning System (JMPS), Tactical Automated Mission Planning System (TAMPS), and the Navy Portable Flight Planning Software (N-PFPS). JMPS is the next generation mission planning system and a collaborative development effort by the Navy, Air Force, Army, and SOCOM that will bring all “stove-pipe” legacy DoD mission-planning systems under one program with a common framework. JMPS is a single source for preflight planning including aircraft performance data, fuel planning, route planning, threat assessment, precision and conventional weapons planning, and provides the interface to load mission data onto the aircraft. TAMPS is the legacy Navy/Marine Corps standard unit-level aircraft mission planning system for tactical aircraft. N-PFPS is the Navy/Marine Corps standard flight-planning system that covers non-TAMPS aircraft, primarily the helicopter community.



Status

JMPS began replacing TAMPS in FY 2005. TAMPS is being removed from the Fleet. JMPS will replace PFPS in FY 2008. JMPS Core Architecture commenced development in 1998 and reached IOC in FY 2004. JMPS was incorporated into the expeditionary warfare planning capability in FY 2006

Developers

British Aerospace; Camarillo, California
 USAF 46TS/TYBRIN; Fort Walton, Florida
 Northrop Grumman; San Pedro, California

Submarine Systems

Common Submarine Radio Room (CSRR)

Description

The CSRR modernizes the radio rooms on *Seawolf* (SSN 21), *Ohio* (SSBN 726, SSGN 726), and *Los Angeles* (SSN 688)-class submarines based on the Exterior Communications System (ECS) architecture in development for *Virginia* (SSN 774)-class submarines. The system includes up to two High Data Rate (HDR) and/or up to two OE-538 Multi-function Masts (total of two masts per ship) for enhanced wideband connectivity. A common approach to submarine radio room modernization provides the submarine force with the added benefit of common training, common logistics, and common technical insertion.

Status

There are currently seven submarines, spanning three classes, installed with the CSRR design. All class submarines are to be backfitted by FY 2019.

Developers

Lockheed Martin; Eagan, Minnesota
 Naval Undersea Warfare Center; Newport, Rhode Island
 Space and Naval Warfare Systems Center; San Diego, California

Submarine High Data-Rate Antenna (HDR)

Description

The submarine HDR antenna program is a top-priority submarine C4I initiative and is the Navy's first multi-band dish antenna. The HDR antenna provides the submarine force with worldwide high data-rate satellite communications capability. It enables the submarine to access the secure, survivable Joint MILSTAR Satellite Program in the Extremely High Frequency (EHF) band. It also



provides the capability to receive time critical tactical information from the Global Broadcast Service (GBS). Additionally, the HDR antenna will provide access to the Defense Satellite Communications System (DSCS) in the Super High Frequency (SHF) band.

Status

The HDR Antenna is currently installed on fast attack submarines, with all submarines being outfitted by FY 2009. SHF FOT&E is scheduled for FY 2009 with the implementation of SHF FOT.

Developers

Raytheon; Marlboro, Massachusetts

Submarine Local Area Network (SubLAN)

Description

SubLAN provides separate secret, top secret, SCI, and unclassified LANs with full network services and connectivity. It integrates non-tactical subsystems and applications, including Task Force Web's Navy Enterprise Portal and back-fit versions of *Virginia* (SSN 774)-class Web-enabled "paperless ship" applications. It accommodates hardware/software upgrade and technology insertion for the life of the ship. SubLAN provides end-to-end connectivity for all tactical and non-tactical subsystems, enabling battle force/JTF interoperability and enables ship-wide access to the common operating picture, JWICS/SIPRNET/NIPRNET e-mail and Web browsing, battle force chat, and other collaborative tools.

Status

SubLAN 1 installations commenced in FY 2004 and will complete in FY 2011. SubLAN 2 installations will commence in FY 2009 and are planned to complete in FY 2015.

Developers

Naval Undersea Warfare Center; Newport, Rhode Island
Space and Naval Warfare Systems Command Systems Center; San Diego, California
Science Applications International Corporation; Sterling, Virginia

Surface and Expeditionary Systems

Advanced Combat Direction System (ACDS)

Description

ACDS is a centralized, automated command-and-control system. An upgrade from the Naval Tactical Data System (NTDS) for aircraft carriers and large-deck amphibious ships, it provides the



capability to identify and classify targets, prioritize and conduct engagements, and exchange targeting information and engagement orders within the battle group and among different service components in the joint theater of operations via tactical data links. ACDS is a core Sea Shield component of non-Aegis/non-SSDS combat systems.

Status

Development is complete. Most legacy ACDS ships will transition to Ship Self Defense System but several ACDS Block 0/1 ships will remain in that configuration until they are decommissioned. Navy will improve and sustain FORCENet interoperability through the Common Network Interface (CNI). CNI is being installed in the remaining ACDS Block 0 LHA/LHDs to augment the expeditionary strike group command staff with operational situational awareness by improved networking and consolidation of disparate applications. One of the most important applications CNI enable in ACDS ships is the Single Integrated Air Picture (SIAP) Integrated Architecture Behavior Model (IABM). This joint application will provide for common distributed processing of air tracks with all CEC and IABM-equipped units in the joint force.

Developers

Raytheon; San Diego, California
 Raytheon Space and Naval Warfare Systems Center; San Diego, California
 General Dynamics Advance Information Systems; Fairfax, Virginia
 Naval Surface Warfare Center; Dahlgren, Virginia
 Combat Direction System Center; Dam Neck, Virginia
 Naval Surface Warfare Center; Port Hueneme, California

Cooperative Engagement Capability (CEC)

Description

CEC has demonstrated significantly improved battle force air defense capabilities by integrating sensor data of each cooperating ship and aircraft into a single, real-time, fire-control-quality, composite track picture. CEC is a critical pillar of Naval Integrated Fire Control-Counter Air (NIFC-CA) capability and will provide a significant contribution to the Joint Integrated Fire Control operational architecture. CEC interfaces the weapons capabilities of each CEC-equipped ship in the strike group to support integrated engagement capability. By simultaneously distributing sensor data on airborne threats to each ship within a strike group, CEC extends the range at which a ship can engage hostile tracks to beyond the radar horizon, significantly improving area, local, and self-defense capabilities. Already today, CEC enables a strike group or joint task force to act as a single, geographically distributed combat system. CEC provides the fleet with greater defense in-depth and the

mutual support required to confront evolving threats of anti-ship cruise missiles and theater ballistic missiles.

Status

IOC for the shipboard CEC system (USG-2) was declared in FY 1996. TECHEVAL and OPEVAL were successfully completed between 1998-2001 following extensive development and testing of shipboard combat systems with which CEC interfaces. In his report, Commander, Operational Test and Evaluation Force declared shipboard CEC ready for fleet use. In April 2002, the Defense Acquisition Board (DAB) approved production for USG-2 shipboard and USG-3 airborne equipment sets. In September 2003, USD (AT&L) approved FY 2004/FY 2005 follow on production for the USG-3. CEC systems are at sea in 41 ships (Aegis CGs and DDGs, carriers, and amphibious) and 24 E-2C Hawkeye 2000 aircraft. Total future CEC installation is planned in approximately 250 ships, aircraft and land units including E-2D Advanced Hawkeye aircraft, CVN 21, and DDG 1000 ships. Navy revised the CEC acquisition strategy in August 2004 to achieve overall system cost, size, weight, power and cooling reductions and open architecture initiatives promoting Single Integrated Air Picture (SIAP) common track management capability and sensor fusion initiatives. Navy is also coordinating with Joint Staff and OSD to explore potential multi-Service avenues for CEC capability implementation that will expand sensor netting track data availability to meet a variety of warfighter requirements across various platforms including ground mobile systems such as the Army's Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS).

Developers

Johns Hopkins University, Applied Physics Laboratory; Laurel, Maryland
Raytheon Systems Company; St. Petersburg, Florida

SCI Networks

Description

SCI Networks (previously known as TACINTEL II/SCI ADNS) is an IP-capable, network-centric, automated, communication system for real-time receipt and transmission of Special Intelligence (SI) and Sensitive Compartmented Information (SCI) data while satisfying established Information Assurance (IA) Computer Security criteria. SCI Networks provides secure and reliable IP communications for Cryptologic, Intelligence, and Information Operations (IO) systems supporting strike group commanders including Direction Finding (DF) Data Transfer, Record Messaging, E-Mail, Chat, File Transfer and Web Browsing. SCI Networks uses open-architecture standards and is thus a critical element in the Navy's evolving concept of network-centric warfare. The full capability will include voice, video and data transfer among SCI-

capable ships and submarines, with gateways to shore nodes. Under the submarine phase of the program, SCI Networks brings the top secret enclave to submarines in addition to the SCI enclave. SCI Networks is the lead program for implementing the SI/SCI portion of the Joint Maritime Communications Strategy (JM-COMS) under the C4I Networks initiative.

Status

Installation of the Shore Network Operations Center Facilities is complete and the Defense in Depth DCID 3/6 security upgrades was completed in FY 2005. Installation of Build 2 ship hardware began in FY 1999 and was completed early in FY 2003. Software Release 2.2 began fielding in second quarter FY 2003 and reached FOC in FY 2005. A Milestone III full-rate production decision was approved on 4 October 2001. Incremental hardware and software upgrades scheduled through FY 2005 and beyond will provide the following capabilities: Defense in Depth security, Submarine Version (includes the TS Enclave), Packet Prioritization, Direct Ship-to-Ship Network Services, Quality of Service, Interface to Defense Messaging System (DMS), an Interface Afloat to DMS, VoIP and an Airborne EDM version. A Maintenance Modification to address the WINDOWS NT End of Life security issue will be executed between FY 2006 and FY 2009. To realize the FORCENet architecture, FY 2008 through FY 2012 program funds will procure and incorporate Increment 1 capabilities necessary to implement the emerging DoD/Joint architecture enabling SCI Networks to continue providing rapid, reliable, and secure SI communications to the Fleet well into the future.

Developers

Science Applications International Corporation; Arlington, Virginia

Ship Signal Exploitation Equipment (SSEE) Increment E

Description

The SSQ-137 SSEE Increment E is a Shipboard Information Warfare program that provides commanders with threat search and identification information and electronic attack options. SSEE provides deployed forces with an afloat IW sensor. SSEE is a COTS/NDI program that is easily reconfigured and therefore able to respond rapidly to tasking. The system design permits the rapid insertion of new and emerging technologies that will integrate capabilities from existing systems and advanced technologies into a single, scalable, spirally developed, interoperable system.

Status

SSEE Increment E is in full-rate production.

Developers

Argon-ST; Fairfax, Virginia

Single Integrated Air Picture (SIAP)/Integrated Architecture Behavior Model (IABM)

Description

The SIAP (the air track portion of the common operational picture) consists of common, continuous, and unambiguous tracks of airborne objects. The SIAP is achieved by real-time and near real-time data processed identically throughout the force in systems behaving consistent with the IABM and consists of correlated air tracks (one object = one track) and associated track attribute information. IABM is being developed in conjunction with the Joint Program Office–SIAP. This deployable SIAP capability satisfies requirements mandated by the Global Information Grid (GIG), Theater Air and Missile Defense (TAMD) and Combat Identification (CID) Capstone Requirements Documents (CRDs).

Status

The SIAP effort facilitates Aegis, SSDS, and E-2 engineering communities in determining engineering impacts based on the planned scope of IABM integration. To date, the IABM has successfully conducted a System Requirements Review (SRR) and System Functional Review (SFR). The designated Navy pathfinder programs for IABM integration are Aegis, E-2 Hawkeye, and SSDS. The Navy will continue systems engineering efforts with planned fielding in the 2012-2014 time-frame.

Developers

Lockheed Martin; Moorestown, New Jersey
Raytheon; San Diego, California
Northrop Grumman; Bethpage, New York
Boeing; Lexington Park, Maryland
Galaxy Scientific; San Diego, California
General Dynamics Advance Information Systems; Fairfax, Virginia

