

OUR MISSION AND VISION

Provide the people, processes, and facilities to perform research, development, integration, acquisition, and life-cycle support for core avionics systems for Navy and Marine Corp manned and unmanned aircraft. Core avionics are those electronic systems that provide the aircrew with the situational awareness needed for safety-of-flight and interfacing with other aircraft, land-based systems, and shipboard systems.

Through our professional expertise in communications, navigation, flight safety, information processing, cockpit displays, UAS ground stations and fiber optics, we develop and integrate systems that will enable our warfighters to gain the "all domain access" needed to be effective and "sharpen our ability to defeat the advanced strategies that would otherwise hold our forces at risk". Our contribution to the warfighter reaches far beyond the expertise we provide; our work allows our weapon systems to engage and be more relevant than ever before. We re-engineer the past and engineer the future.

Our primary customers include PMA's-202, 205, 209, 261, 262, 263, 265, 266, 268, 271, 274, 275, 276, 280, 281, 290, 299, JSF, Cyber Risk Assessment Team

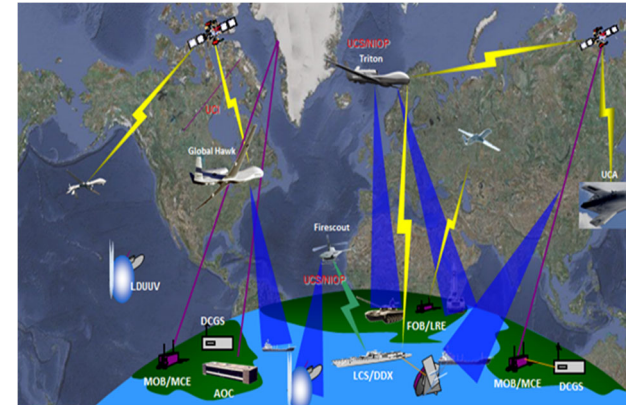


DIVISION POCS

- AIR-4.5.3 – Core Avionics Engineering
 - *Tim Thomas, Division Director (301-757-3351)*
 - AIR-4.5.3.1 - Photonic & Electronic Systems
 - *Mark Beranek, Branch Head*
 - AIR-4.5.3.2 - Communication, Identification & Networking Systems
 - *Rich Tygrett, Branch Head (301-342-9125)*
 - AIR-4.5.3.3 - Navigations Systems & Labs
 - *Pat Clausius, Branch Head (301-342-9127)*
 - AIR-4.5.3.4 - Flight Safety Systems & Integration
 - *Jerod Swinehart, Branch Head (301-757-4365)*
 - AIR-4.5.3.5 - Information Processing & Displays Systems
 - *Andrian Jordan, Branch Head (301-342-9126)*
- Common Systems Integration (CSIL) Lab
 - *Javier Rosales, Lab Manager (301-342-9132)*



4.5.3 Core Avionics Engineering 4.5 Avionics, Sensors & E*Warfare

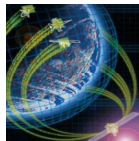


Joint Fiber Optic Working Group (JFOWG)

- The JFOWG creates and implements common supportability and maintainability solutions across the DoD to reduce duplicated effort and cost for fiber optic related issues for all DoD platforms
- Create and maintain documents and acquisition standards based on program office and fleet needs
- Create and implement joint services relevant fiber optics and photonics S&T portfolio
- Currently serving: F/A-18, EA-18, E-2, F-35, P-8, H-60, UAS, C130, B-2, F-22 and F-16 fleet customers

Beyond Line of Sight (BLoS) Communications & Common Data Link (CDL) Working Groups

- Grassroots quarterly working group meetings, initiated by AIR-453
- Share Information on communications efforts across the Naval Air Enterprise to guide PMAs/PEOs in decision making
- Collect and analyze requirements
 - Investigate and leverage common threads and solutions both military and commercial
 - Find common solutions
 - Avoid redundant technical efforts and logistics
- Collaborative efforts: AIR-453/PMA209, NAVAIR/SPAWAR PMA/W170, PEOC41/PMW70



GROUND CONTROL AND DISPLAY SYSTEMS

- Provide engineering expertise for the Mission Computer (MC), Data Transfer Unit (DTU), Multifunction Displays (MFDs), Control Display Unit (CDU), Data Concentrator Units (DCU), Primary Flight Display (PFD), and Maritime Tactical Display (MTD)
- Provide engineering design on hardware and software deployment of computer software configuration item for integration on systems
- Provide Command and Control, Payload, Mission Planning, and Information for Unmanned Ground Control Systems
- Integration of ground network systems and mission computers
- Provide engineering analysis on bus traffic (Ethernet, 1553, Fiber Optic) including routers and Ethernet protocols

VH-92 Mission Communications System (MCS) and Digital VOIP Network

- Executive Airlift Communications Network (EACN)
 - Wideband Line of Sight (WLOS)
 - Government Integrated Logistics Support
- ### Triton Communications and Networking Systems

- Early on flight testing established both Comms and Networking design for platform and ground stations
- Op Limits used for correction of deficiencies and comm/networking design upgrades
- Due Regard (Sense and Avoid) – Modeling and Simulation Development

P-8A Network Enabled Weapon Capabilities

- Increment 1&2 testing for clear/secure voice and Net Enabled Weapons
- Increment 3 planning for Third Party Targeting, HF-IP, Networking Interoperability and WBLOS
- Fleet rapid actions on CDL operations and SIPRNET connectivity over INMARSAT

MQ-25A

- IP/Ethernet Interfaces for mission command and control for legacy/future communication waveforms

FLIGHT SAFETY SYSTEMS

- Certify Navy and Marine Corps aircraft as Traffic Alert Collision Avoidance System (TCAS) compliant
- Provide engineering expertise for integrated Controlled Flight into Terrain (CFIT) avoidance hardware and software systems
- Provide engineering expertise on Crash survivable aircraft parameter, flight information and audio recording
- Provide engineering design of integrated Midair Collision Avoidance capability hardware and software systems

NAVIGATION SOLUTIONS

- Certify Navy and Marine Corps aircraft as CNS/ATM compliant. Required Functionalities include : Mode S datalink, 8.33 kHz VHF communications, Required Navigation Performance Area Navigation (RNP RNAV), Reduced Vertical Separation Minimum (RVSM), Automatic Dependent Surveillance - Broadcast (ADS-B) Out
- Provide new and enhanced hardware and software solutions to comply with national and worldwide civil and military airspace requirements
- Provide Position, Navigation, and Timing solutions in a GPS degraded environment

COMMON SYSTEMS INTEGRATION (CSIL)



Lab Description/Capabilities:

- An Independent Validation and Verification (IV&V) test facility that provides expertise and resources to NAVAIR and other DoD customers to identify hardware/software issues prior to aircraft ground and flight test

Major Work Products:

- Design and fabrication of test benches and test stands
- Engineering support environment to gather test data for working groups, SETR events, CDRL reviews, contract technical evaluations, troubleshooting, etc.
- Technology demonstrations and box-level testing
- Engineering risk mitigation efforts in support of Lead System Integration (LSI) efforts during platform upgrades

FIBER OPTICS AND PHOTONICS



Lab Description/Capabilities:

- Provide R&D expertise and in-house capability for photonics and fiber optics
- Develops, integrates, tests, and evaluates fiber optic interconnect systems from initial system definition to fleet support

Major Work Products:

- Risk Reduction Analysis for PMAs and Fleet
- Fiber optic cable installation and maintenance guide
- Independent evaluation for Naval environment suitability OEM, Suppliers and Small Business industry
- Component Failure Analyses
- Environmental testing
- Fiber optic link system performance test in lab & in field: Insertion loss measurement
- Fault finding & trouble shooting on fiber optic system
- Repairing fiber optic cable & termini: Cable termination, Fusion & mechanical splicing
- Fiber Optic Training
- Summer intern and faculty training