

MARK FRAKER

ASSOCIATE, DAYTON AEROSPACE, INC.

PROFILE

Over 30 years of systems engineering experience in Department of Defense (DOD) systems acquisition, development, testing, and research and development (R&D). Former US Air Force (USAF) senior leader for avionics development and integration. Chief engineer and chief systems engineer-level experience in the F-22 and F-16 programs and at the Air Force Research Laboratory (AFRL) sensor directorate. Extensive expertise—across the entire DOD acquisition life cycle—in systems development policy, processes, and procedures; systems engineering application; systems integration; technical management; test planning and execution; and risk assessments in air vehicle and avionics development and modernization, including Active Electronically Scanned Array (AESA) radars, electronic warfare (EW), electronic protection (EP), airborne networks, navigation, avionics architectures, armament, fire control, target track fusion, low observables (LO) and reliability/integrity programs. Senior Leader (SL), Department of the Air Force (DAF) (Retired).

PRINCIPAL AREAS OF EXPERTISE

Avionics Integration

Led integration, test, and verification technical planning and risk reduction activities for numerous USAF programs. Championed new systems integration processes and procedures and established technical metrics for steady-state incremental avionics software releases to flight test—resulting in more efficient flight test programs while driving down problem reports and improving software quality. Led numerous executive independent review teams (EIRTs) to assess, measure, and plan systems integration activities on F-22, F-35, F-15 and F-16.

Electronic Warfare

Experienced in EW system development, integration analyses and technical planning activities on fighter/bomber programs including F-16, F-15, F-22, F-35, B-2, and B-52. Led USAF independent review team assessing the best EP development processes across all fighter, fire control radar and AMRAAM programs and established an EP development guide to capture best practices and contractual requirements. Assisted with effectiveness analyses to establish system requirements for numerous ACAT 1 EW programs. Familiar with USAF modeling and simulation tool utilization for conducting effectiveness analyses.

Technical Engineering Management

Skilled in systems engineering processes and practices on numerous USAF and US Navy (USN) acquisition programs. Experienced in the development and application of System Requirements Documents (SRDs), Technology Readiness Assessments (TRAs), Regulatory Technical Certifications (RTCs), Open Systems Architecture (OSA) initiatives, the Air Force Life Cycle Management Center Engineering Directorate (AFLCMC/EN) systems engineering tool set, and Operational Safety, Suitability, and Effectiveness (OSS&E) assurance. Knowledgeable in systems engineering methods to improve systems acquisition in planning, developing, verifying, and managing avionics risk. As the F-22A chief engineer, supported and briefed numerous Defense Acquisition Boards (DABs) concerning F-22A low rate initial production (LRIP) and initial operational test & evaluation (IOT&E) readiness reviews. As F-16 chief engineer, oversaw Mission Modular Computer (MMC) 4, 5 and 6 operational flight program (OFP) development and fielding at ACAT I and II levels. As an Avionics SL, represented the engineering directorate at the Center senior functional reviews on multiple fighter/bomber and mobility ACAT I and II Acquisition Strategy Panels (ASPs) and milestone acquisition reviews. Conducted and chaired preliminary and critical design reviews (PDRs/CDRs) for F-22A, F-16 and F-35.

Airworthiness Certification

Extensive experience leading the application of MIL-HDBK-516, *Airworthiness Certification Criteria*, towards Tailored Airworthiness Certification Criteria (TACC) and Modified Airworthiness Certification Criteria (MACCs) generation including standards and methods of compliance. Assisted with policy and methodology in the stand-up of AFLCMC/EN as the USAF airworthiness authority during transition from the platform program offices. Participated in AFLCMC/EN airworthiness process reviews and served as an AFLCMC/EN Airworthiness Review Boards advisor for ACAT I and II programs.

Experience that matters...solutions that count!



DAYTON AEROSPACE

4141 Colonel Glenn Hwy.
Suite 252
Dayton, Ohio 45431

P: (937) 426.4300

E: mark.fraker@daytonaero.com

EDUCATION

BS, Electrical Engineering
Ohio State University

**MS, Management Science
(Engineering Management)**
University of Dayton

Systems Engineering Management
Defense Systems Management
College (DSMC)

Leadership Management
Federal Executive Institute

KEY POSITIONS

**Technical Advisor, Avionics &
Integration**
AFLCMC

**Chief Systems Engineer, Sensors
Directorate**
AFRL

Technical Director
F-16 Program Office

Chief Engineer
F-22A Program Office

ORGANIZATIONAL MEMBERSHIPS

**National Defense Industrial
Association (NDIA)**

**Institute of Electrical and Electronic
Engineers (IEEE)**

**Aerospace and Electronic Systems
Society (AESS)**

Air Force Association (AFA)

WORK HISTORY

Associate | Dayton Aerospace, Inc.

2015-present, *Dayton, OH*

Consultant to government and industry clients on multiple acquisition topics on avionics acquisition programs, including modular open systems approaches, obsolescence mitigation strategies, technical risk management, radio frequency (RF) threat environment definition and assessment, system architectures to counter modern threats, and airworthiness certification.

Senior Leader (SL) for Avionics & Integration | AFLCMC/EN

2009-2017, *WPAFB, OH*

Consultant to the Office of the Secretary of Defense (OSD) and USAF on acquisition programs, including F-16, F-15, F-22, F-35, B-1, B-2, B-52, Global Positioning System (GPS) Management, and Mission Planning, and Electronic Protection (EP). Principle technical facilitator to Air Force Life Cycle Management Center Commander (AFLCMC/CC), Secretary of the Air Force (Acquisition) (SAF/AQ), Air Mobility Command (AMC), and Air Combat Command (ACC) organizations on semi-annual Executive Weapon System Reviews (EWSRs). Led USAF publications on EP, Avionics Integrity Program (AVIP), and EWSR Guides. Led multiple independent Technical Readiness Assessments (TRAs) and executive independent review teams (EIRTs).

Chief Systems Engineer | AFRL Sensors Directorate

2007-2009, *WPAFB, OH*

Principle systems engineering advisor to Air Force Research Laboratory Sensors Directorate (AFRL/RY) director and chief scientist (SES levels) of 900 scientists and engineers. Directorate representative on the AFRL Systems Engineering and Thermal Management Councils and Technical Review Boards. Assured systems engineering practices and principles tailoring was institutionalized in science and technology (S&T) planning, execution, and technology transfer processes.

Chief Engineer | F-16 Program

2004-2007, *WPAFB, OH*

Technical director for over \$120M in Block 40/50 aircraft upgrades. Assured operational safety, suitability, and effectiveness (OSS&E) for the F-16 Fleet. Led technical development to meet three Iraqi Freedom Urgent Need Requests (UNRs), including the 500 lb. JDAM, SNIPER targeting pods, and ARC-210 radios. Led transition of all F-16 engineering operating instructions to Hill AFB commensurate with Air Force Materiel Command (AFMC) program executive office (PEO) realignment.

Chief Engineer | F-22A Program

2002-2004, *WPAFB, OH*

Responsible for advising PEO and system program manager (SPM) on \$20B F-22A technical management. Directed over 60 engineering air vehicle specialists in low observables (LO), crew systems, flight sciences, vehicle management, avionics, armament, environmental sciences, propulsion, ground systems, and safety. Defended program status to CSAF, SECAF, and OSD/AT&L, and successfully drove F-22A development test completion and entry into initial operational test & evaluation (IOT&E).

Chief Avionics Engineer | F-22A Program

2000-2002, *WPAFB, OH*

Led development, integration, and test of the F-22's \$3B integrated avionics, including Comms/Nav/ID, electronic warfare, radar, stores management system, common integrated processor, advanced countermeasures, weapons integration, controls and displays, and integration of 2.4M+ lines of operational flight program (OFP). Led initial planning for a \$300M 4th generation AESA APG-77 air-ground Synthetic Aperture Radar (SAR) imaging upgrade.

Prior to 2000

- Chief Avionics Analysis and Integration IPT, F-22A Program, *WPAFB, OH*
- Lead Avionics Integration Engineer, F-22A, *WPAFB, OH*
- Lead Avionics Engineer, Advanced Tech Dem/Val, ATF, *WPAFB, OH*
- Lead Avionics Engineer, EC-130H Compass Call, *WPAFB, OH*
- Lead Project Engineer, EP-3E Airborne Recon and ESM Systems, *NAC, IN*

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www.daytonaero.com