28th Annual **INCOSE**
international symposium

Washington, DC, USA
July 7 - 12, 2018

"The Changing Role of Systems Engineers in the United States Department of Defense (DoD)"

Speaker: Karl C. Geist, Senior Systems Engineer, KBRwyle/Zenetex
Southern Maryland Chapter
INCOSE/DAU Certified 00004 ESEP-Acq

www.incose.org/symp2018

Presentation Overview

Outline

- Show Background and evolution of my career developing as a Systems Engineer, then outline my Contractor career and compare ***similarities and differences***

- Compare tasking and required skills I needed to perform as a ***Government Systems Engineer*** to the tasking and required skills I need to perform as a ***Government Contracted Systems Engineer*** in ***RFPs***

- Compare what Systems Engineers' responsibilities were during my 32 year career in DoD as a Systems Engineer to what Systems Engineers' responsibilities are now as requested by the Government in its Request for Proposals (RFPs) for the "last 11 years".

- Analyze expected required skills in a changing environment for Government Contracted Systems Engineer.

- Attempt to determine conclusion from the data.

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Karl Geist Bio

- Acquisition professional armed with 42 years of acquisition experience developing all aspects of a system throughout the lifecycle.
- DAU certified at Level 3 in Systems Planning, Research Development & Engineering (SE)
- DAU certified at Level 3 in Program Management (PM)
- Provides SE and Program Analysis Support for the Program Manager and Technical Director by performing
  - Technical activity coordination, Systems analysis, Risk assessment, Engineering standards tailoring, Program planning,

    Gap analysis, POM/budget request support, Modeling & Simulation, Analysis support, Transition criteria creation and tracking.
- Maryland's first Certified Systems Engineering Professional (CSEP #00004, 2004)
- Maryland's first Expert Systems Engineering Professional (ESEP-Acq 2010)
- Recognized as SME in Software Engineering and Systems Engineering
- Charter Member of the Southern Maryland Chapter of INCOSE (1998)
- Served as Chapter President, Vice-President, Past-President, Treasurer and Director (20 years)
- Served 6 years on Certification Advisory Group (CAG) as Secretary, Beta Test Coordinator, Trainer, and CAR
- Active speaker throughout INCOSE
- Earned numerous INCOSE services awards
- Graduated with a Bachelors of Arts degree in Physics
- Hired as a Electronics Engineer in the Software Division and assigned as a Programmer

Government Career Evolution

Electronics Engineer NADC, Warminster, PA

Position 1 ▶ Position 2 ▶ Position 3 ▶ Position 4 ▶ Position 5

GS-7 / Programmer / 1974 -1977

GS-9, GS-11 / Simulation Lead / Facility Manager / 1977 -1983

GS-12 / Task Leader / Lead Systems Engineer / 1983 -1985

GS-13 / Project Engineer / 1985 -1990

GS-13 / Project Engineer / Systems Engineer / 1990 -1996
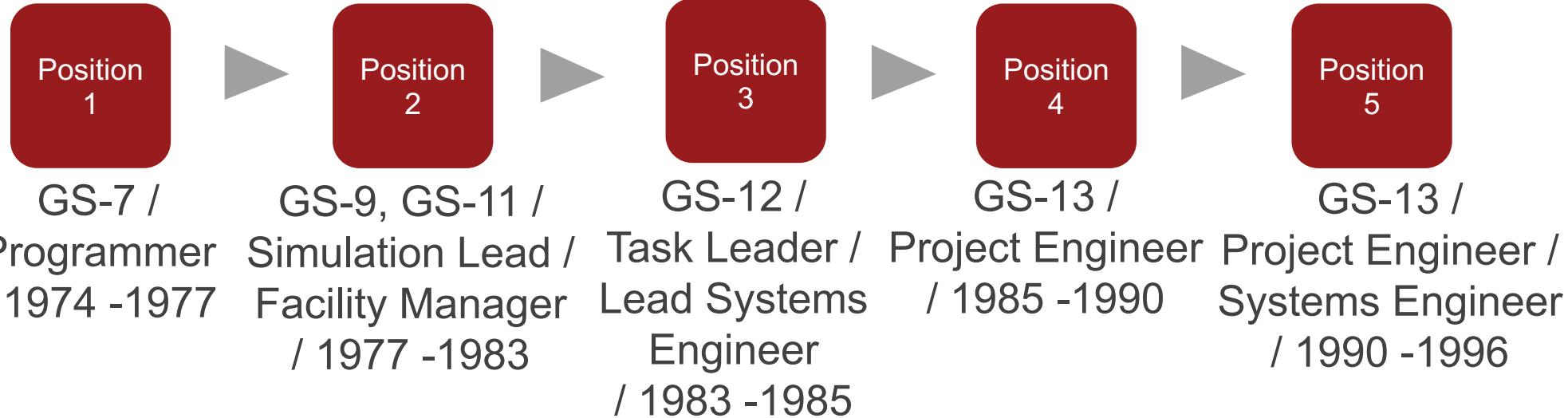
Electronics Engineer NAWC, Patuxent River, MD

Position 6 ▶ Position 7 ▶ Position 8 ▶ Position 9 ▶ Retired

GS-14 / Senior Systems Engineer (SE) / 1996 -1998

GS-14 / Sr Sys Eng / Interoperability Engineer / 1998 - 2000

GS-14 / Sr Sys Eng / Lead Systems Engineer / 2000 - 2005

GS-14 / Sr Sys Eng / Lead Sys Eng / Branch Head 2005 - 2006
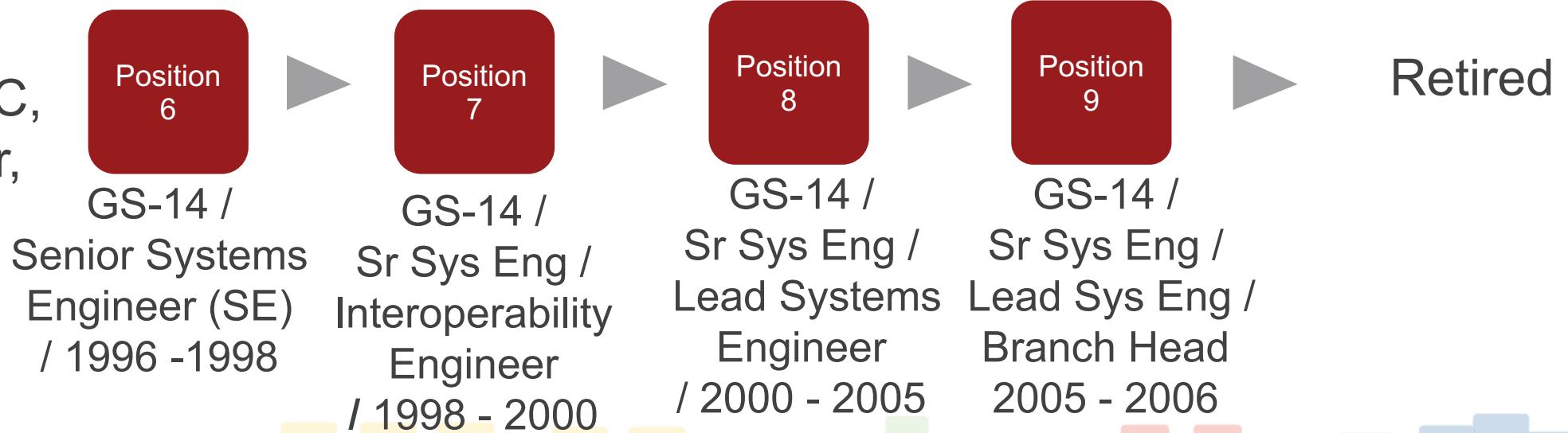
Government Roles (Programmer)

- Skills
    - Learned Software Languages including Mono-code, Machine Code, Fortran, CMS-2Q, CMS-2Y, and ADA
    - Designed, coded and tested software Algorithm enhancing system performance
    - Systems Integration
    - Installed and documented improved System Maintenance Program enhancing P-3C Facility System Test Program development and reducing compilation time
    - Designed, coded, tested and implemented 11 interface test programs for P-3C facilities
    - Generated Simulation Documentation
    - Provided Foreign Military Support (FMS) technical direction
    - Generated System Test Program documentation,
    - Engineered, designed, & integrated Simulation solutions
    - Analyzed, derived and formalized software, systems, safety, and facility requirements
    - Designed, reviewed, coded, tested and debugged software corrections and enhancements for P-3 Facilities software

- Tasking
    - Training and Software Development
    - Pulse train separation program generation for Electronic Support Measures (ESM) threat identification
    - Algorithm Integration into LAMPS Helicopter
    - System Maintenance Program installation and documentation for P-3C Facility
    - Interface test programs integration for P-3C facilities
    - Simulation improvements documentation
    - Foreign Military Support (FMS) technical direction concerning simulation software tasking
    - System Test Program documentation generation
    - Single Display Update Acoustics System (SUDS), Low Cost Sonobuoy, & Expandable Reliable Acoustic Path Sonobuoy (ERAPS) acoustics development
    - System/subsystem functional, performance, and design specifications to derive and formalize software, systems, safety, and facility requirements
    - P-3 Facilities software development

Government Roles (Simulation Lead / Facility Manager)

- Skills
  - Managed and supervised the Program Hardware Integration Center (PHIC) for the software development and testing
  - Provided fiscal planning, technical planning, budgeting, scheduling, control and tracking
  - Originated and conducted Facility Software Configurations Control Board (SCCBs)
  - Prepared and tracked procurement packages through procurement cycle, evaluating proposals, recommending awards and technically managing contractor efforts
  - Formulated concepts, planned, designed, specified, implemented, tested, evaluated, transitioned and maintained simulation and facility software and systems
  - Provided technical direction
  - Managed and supervised various size teams
  - Evaluated and determined change impacts (cost/schedule/resources)
  - Designed, reviewed, coded, tested and debugged software corrections and enhancements
  - Developed concept approaches, and designed alternatives Simulation design requirements

- Tasking
  - Lead Facilities Engineer performing system maintenance, facility operations, facility usage scheduling, problem resolution, facility upgrades, contingency planning, computer security protection, contract monitoring, documentation production, interface testing and modeling and simulation
  - Program Manager for complex weapon systems development and Facility Hardware and Software integration
  - Chairperson for over 200 Facility Software Configurations Control Board (SCCBs)
  - Procurement package creation including CDRLS for simulation software and systems development, facility maintenance, documentation and facility development Concepts for products like Enhance Data Model simulation and ESM extraction capability
  - Simulation software development, facility management, systems training and human systems integration
  - Operational Software and Simulation Software for P-3C UPDATE III Channel Expansion and P-3C Modernization Electronic Support Measures (ESM) efforts
  - Inter and intra Facility system interfaces
  - Software corrections and enhancements for P-3 Facilities
  - Simulation design requirements for Harpoon Weapon

Government Roles (Task Leader / Lead Systems Engineer)

- Skills
  - Developed System Change Requirements (SCRs), performed impact analyses, verified Program Trouble Reports, developed briefings, and recommended solutions
  - Researched, designed, reviewed, coded, tested, debugged, and documented software corrections and enhancements
  - Developed conceptual upgrades, planned and identified design alternatives, performed tradeoff analyses, prepared cost and resource estimates, developed Network Logic models (NLM), and documented requirement specifications for
  - Applied project experience to perform system integration, CM, quality assurance testing, and resource management
  - Provided technical advice and liaison support
  - Provided fiscal planning, technical planning, budgeting, scheduling, control, and tracking for complex weapon systems development
  - Supervised, directed, reviewed, and coordinated IPT Leads' work in avionics production, development, & delivery of full scale production and lifecycle support for the Fleet & FMS customers within cost, scope, & schedule constraints

- Tasking
  - Task Leader and Lead Systems Engineer for lifecycle maintenance of S-3A/B Navigation & Steering subprograms
  - S-3A/B Navigation & Steering Modules Correction and enhancement
  - S-3A/B software corrections, enhancements, and upgrades to improve bias velocity calculations, implement Kalman Filtered track generation, improve steering algorithms, integrate Sonobuoy Reference System (SRS) into the Tactical Navigation Mode, and implement the Tactical Circle capability
  - S-3A/B software improvements
  - Software & Systems Engineering support
  - S-3A/B Operational Software for Fleet and FMS customers support
  - Engineering Management for complex weapon systems development and Hardware and Software integration
  - Avionics production, development, and delivery of full scale production and lifecycle support for the Fleet and FMS customers within cost, scope, and schedule constraints

Government Roles (Project Engineer)

- Skills
  - Led and managed P-3 Fleet Tactical Systems Software Support Activity's (TSSSA)
  - Engineered, supervised, and managed 25 in-house workyears and 75 contractor workyears
  - Performed fiscal/technical planning (near and long-term), budgeting (Planning, Programming, Budgeting & Execution System (PPBES), scheduling, control, and tracking for full scale complex weapon systems developments
  - Generated Program Management artifacts for TSSSA software developments
  - Planned, engineered, developed, and delivered 46 Fleet software products,
  - Analyzed, decided, assessed, negotiated and implemented proper hardware, software and procedural changes
  - Authored and implemented CMMI and CM processes and procedures
  - Identified problems, created and executed Engineering Change Proposals for avionics upgrades
  - Represented VP Program in all
  - Researched, analyzed, and coordinated recommendations

- Tasking
  - Full scale production and lifecycle maintenance of major complex military system acquisitions providing Tactical Operations, Acoustic Detection, System Test, and Training capabilities for Navy and PMA FMS customers
  - Integrated Product Team (IPT) tasking developing and delivering 46 software products and systems for Maritime Surveillance
  - Full scale complex weapon systems developments
  - Airtasks, Work Unit Plans, Status Reports, Quarterly Reviews, Outyear Plans, Team Assignment Agreements (TAAs), Work Breakdown Structures (WBSs), Integrated Master Schedules (IMSs), Budget Estimates, Statements of Work (SOWs), Engineering Change Proposals (ECPs), Technical Directives, Problem Reports (PRs), Software/System Change Requests, Problem Analysis Reports (PARs) and Risks generation for TSSSA
  - Operational avionics capabilities, improved human systems integration, performed mission validation, and enhanced test capabilities for software products
  - Engineering tradeoffs, Optimum approach, Relative urgency of changes and Fleet/Sponsor priorities for proper hardware, software and procedural changes
  - CMMI Software Development and CM processes and procedures per DoD 5000 directives
  - Engineering Change Proposals (ECPs) for avionics upgrades
  - Tactical Systems Software Support Activity meetings with NAVAIR and Fleet
  - Best safety design changes

Government Roles (Project Engineer/System Engineer)

- Skills
  - Conducted studies to derive quantitative and qualitative data supporting engineering plans and decisions
  - Developed conceptual approaches, design alternatives, and software designs
  - Led P-3 Systems and Software requirements definition and development by planning, directing, and executing 44 Operational Advisory Groups
  - Created, developed, tested and delivered analysis tool used for mission analysis in product development testing, and Technical and Operational Evaluation testing
  - Directed, planned, interfaced, negotiated, and developed Interoperability charter
  - Represented P-3 for Tactical Data Link Interoperability Standards
  - Generated and prioritize P-3 Fleet requirements
  - Directed multiple P-3 Aircraft Platform Data Link Certifications
  - Engineered and managed creation, development, testing and delivery of Windows based analysis tool used for threat evaluation in Fleet testing and P-3C VP–30 Fleet training
  - Led Fleet Indoctrination Team developing training materials and conducting training for 29 Operational, Acoustics, and Training software products for P-3C Fleet and FMS customers
  - Engineered and delivered innovative state of the art training techniques training deliveries to P3-C Fleet
  - Led, supervised and managed a 9-person IPT, 20-month, $1.7M budget to conceive, engineer, cost estimate, market, design, develop, test, deliver, and train CATS

- Tasking
  - Systems / software engineering studies
  - Platform & software upgrades
  - P-3C Software Operational Advisory Group (OAG) Chairperson
  - Program Manager and Lead Systems Engineer for the Mission Analysis Replay System (MARS) analysis tool for P-3C UPDATE I, II, & III
  - P-3 Program Interoperability
  - P-3 Data Link messaging definition and approval
  - Tactical Data Link Message Standards Group Meetings representation
  - P-3 Aircraft Platform Data Link Joint Standards Interoperability Certifications
  - Threat Intelligence Data Extraction Systems (TIDES) Windows based analysis and training tool
  - P-3C UPDATE III Computer Based Training (CBT) providing acoustic training (C4.7.1/C4.7.2)
  - Combat Air Crew Training Systems (CATS), Airborne Embedded Training Capabilities for the P-3C UPDATE II and III Aircraft (I4.7/K4.7) programs

Government Roles (Senior System Engineer)

- Skills
  - Documented and implemented P-3C CMMI Software Development and CM processes
  - Generated Operational Requirements Documents (ORDs), Initial Capabilities Documents (ICDs), Systems Engineering Plans (SEPs), and System Performance Specifications for P-3C
  - Developed, maintained, and implemented documents containing software systems descriptions, life cycle plans, milestones, software management organization, configuration management (CM) process, quality assurance process, and resource requirements
  - Identified strategies and workarounds for program funding shortfalls
  - Provided Product Development Expertise for complete life-cycle management and development
  - Researched and co-authored BPR artifacts
  - Generated Program management documentation
  - Developed conceptual approaches, design alternatives and software designs
  - Directed P-3C Certification Testing for Joint Standards Interoperability Certification
  - Coordinated, managed and applied Engineering inputs to systems and program solutions

- Tasking
  - Senior Systems Engineer led TSSSA Transition Team
  - Technical documentation generation
  - Computer Resource Life-Cycle Management Plans (CRLCMP), Software Support Project Plans, and P-3 Execution Plans creation
  - OPNAV & OSD PPBES funding requirements
  - SME Performance
  - Software Development Business Process Re-engineering Strategic Plan and Charter
  - Work Unit/Execution/Life Cycle Management Plans, WBSs, IMSs, Budgets, ECPs, and SOWs
  - Conceptual approaches, design alternatives, and software designs developments
  - P-3 Aircraft Platform Data Link Certification Testing
  - Various Engineering disciplines coordination

Government Roles (Senior System Engineer /Interoperability Engineer)

- Skills
  - Helped create NAIAO, established interoperability interface Memorandum of Agreement (MOA) between NAVAIR, NAVSEA and SPAWAR PEOs, PMAs and PMWs, and wrote Program Office Charter delineating program responsibilities
  - Resolved interoperability issues concerning ASW, ASUW and specialized systems for NAIAO
  - Generated and improved Design Reference Missions
  - Developed and negotiated NAVAIR's interoperability requirements for NAVAIR, NAVSEA, SPAWAR joint efforts
  - Directed planned, interfaced and developed C4ISRT Program charter
  - Led NAVAIR Systems Engineering support for the Year 2000
  - Developed Network Centric Operations / Battle Group Interoperability Simulation Scenarios
  - Represented NAVAIR at Interoperability Meetings
  - Provided technical input for optimizing candidate problem solutions
  - Organized, coordinated, and directed annual NAVAIR Data Calls
  - Developed and conducted Fleet Indoctrination and Computer Based Training
  - Developed, marketed and trained Acoustic Software Training
  - Developed, marketed, and trained FMS Acoustic Software Training
  - Led Advisory Tiger Team for process improvement effort of NAVSEA's CM Process IAW DoD 5000

- Tasking
  - Naval Aviation Interoperability Assurance Office creation
  - Assistant Director, ASW/ASUW and Assistant Director for Battle Group Interoperability service
  - Network Centric Warfare and Battle Group Interoperability Design Reference Missions
  - NAVAIR's interoperability joint effort requirements
  - C4ISRT Program Interoperability
  - Year 2000 (Y2K) Systems Testing and Systems Certification
  - Network Centric Operations / Battle Group Interoperability Simulation Scenarios
  - Net-Centric Operations Symposiums, NAVAIR/NAVSEA Model Strategy Session for Battle Force Interoperability Testing & Evaluation, Interoperability Working Groups, and Joint Y2K Certification
  - NAVAIR/NAVSEA/SPAWAR joint efforts
  - PEO(A)-N81's IWARS Capabilities Data Call
  - P-3C Software Fleet Indoctrination and Computer Based Training
  - FMS P-3C Acoustic Software Training
  - Advisory Tiger Team for NAVSEA's process improvement

Government Roles (Senior System Engineer/ Lead Systems Engineer)

- Skills
  - Designed the Program Management (Project Systems) and Material Management Modules for NAVAIR's Enterprise Resource Planning (ERP) Project Sigma
  - Led, conceptualized and developed Business Requirements
  - Performed Systems Engineering Tradeoffs
  - Defined and generated ERP Scope Document
  - Resolved issues and coordinated engineering, business, and resource management solutions
  - Defined and complied NAVAIR's ERP Project Systems Interface Requirements and Documentation lists
  - Planned, defined, designed, implemented, managed and tested ERP requirements
  - Led Quality Assurance (QA) Testing and Systems Integration Testing
  - Identified issues and created solutions to align cost centers
  - Conducted prototype unit demonstrations and system validation for NAVAIR approval
  - Developed high quality training materials and conducted ERP end users training

- Tasking
  - Systems Engineering for Acquisition Management Integration Product Team (IPT)
  - NAVAIR Enterprise Management and Budget process requirements
  - ERP requirements development concerning Competencies, Activities, and HQ
  - Project Systems/Materials Management High-level Requirements
  - PMAs and Activities issues and resource management solutions
  - NAVAIR's ERP Project Systems Interface Requirements
  - ERP Project Systems Module
  - NAVAIR's ERP Requirements
  - Quality Assurance (QA) Testing Team
  - PMAs and Naval Aviation Systems Team cost centers alignment
  - Project schedule developed for system validation and NAVAIR approval
  - ERP end users training

(Senior System Engineer/ Lead Systems Engineer/Branch Head)

- Skills
  - Performed Engineering and Integration for Software tasking
  - Performed various Systems Engineering Tasking
  - Organized, engineered, assessed, validated, procured funding, produced and transitioned leading edge technology to the Fleet in 12 months
  - Developed a Concept of Operations, defined a structure, identified the requirements, defined repository and identified options to manage and control contents
  - Performed signature authority duties on CCB
  - Prepared tradeoffs between engineering principles and exigencies of cost, priorities and schedules
  - Coordinated engineering solutions and made recommendations
  - Researched, analyzed, presented and documented Battle Space initiatives
  - Identified potential problems, performed risk assessments, managed and coordinated engineering solutions

- Tasking
  - Branch Head for Forced Warfare Systems Engineering and Integration and Software tasking
  - Lead Systems Engineer, SME, and Tiger Team Lead
  - Led an award winning Rapid Technology Transition Task Team
  - Led tiger team of Software Engineers, Program Managers and Configuration Managers creating a Software Hardware Asset Reuse Enterprise Repository (SHARE)
  - NAVAIR's Engineering Change Proposal Configuration Control Board
  - PMAs technical tradeoffs
  - Various aviation and ship based platform problems
  - Air Domain Representative for the Naval Enterprise Open Architecture Software Reuse Repository and Configuration Management Strike Team
 - Potential problems, Risk assessments and engineering solutions

Requested Systems Engineering Skills

Systems engineering (SE) was defined as "an interdisciplinary approach and means to enable the realization of successful systems. SE considered both the business and the technical needs of all customers with the goal of providing "a quality product that meets the user needs."

- SE Technical Areas
  - Requirements Engineering
  - Architecture/Design Development
  - System Integration
  - Qualification, Verification, and Validation

- SE Management Areas
  - Technical Planning
  - Technical Effort Assessment
  - Risk and Opportunity Management
  - Baseline Control

- SE Support Areas
  - Process Definition
  - Training
  - Tool Support
  - Quality Assurance
  - Specialty Engineering

- Other SE Areas
  - System /Program Analysis
  - Engineering Documentation
  - Other

Contractor Career Evolution
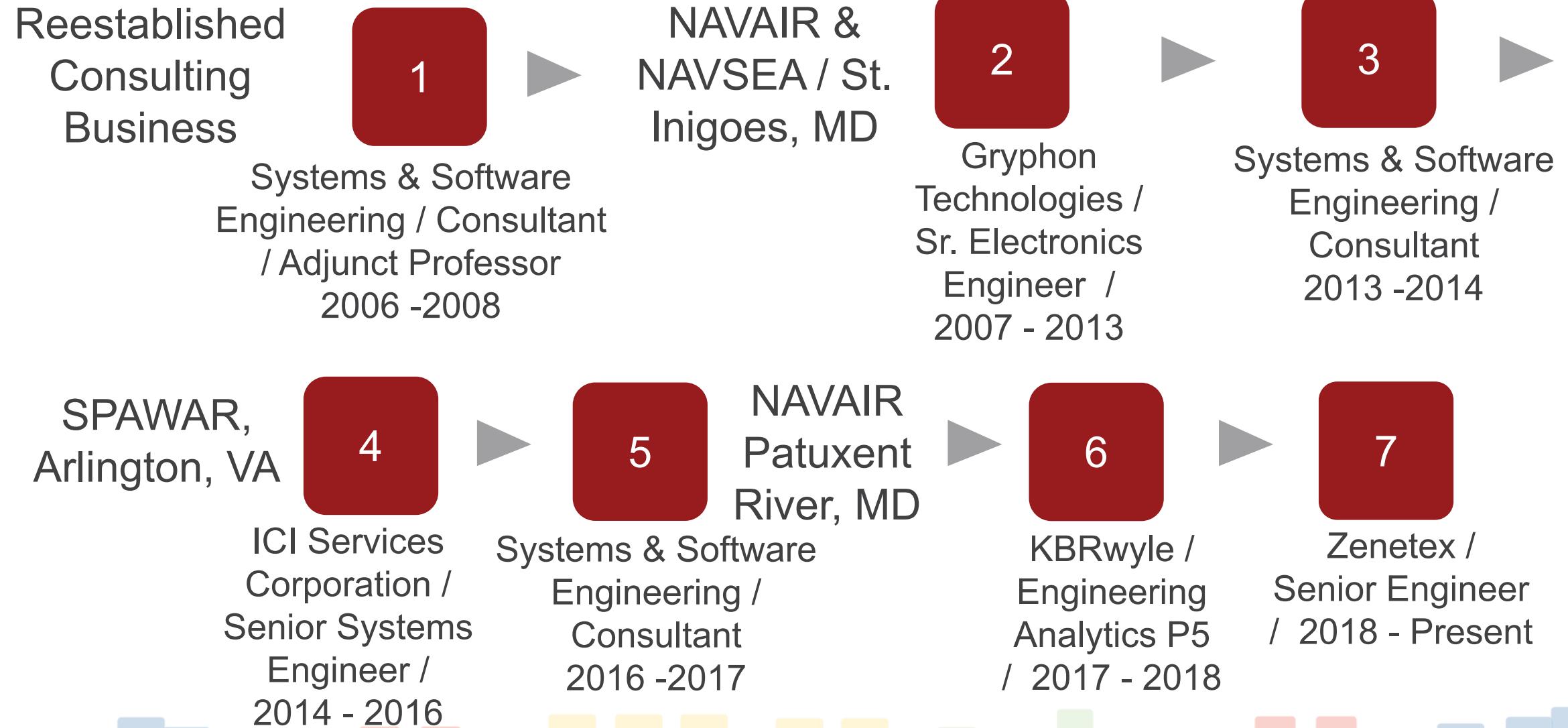
Reestablished Consulting Business

1

Systems & Software Engineering / Consultant / Adjunct Professor 2006 -2008

NAVAIR & NAVSEA / St. Inigoes, MD

2

Gryphon Technologies / Sr. Electronics Engineer / 2007 - 2013

3

Systems & Software Engineering / Consultant 2013 -2014

SPAWAR, Arlington, VA

4

ICI Services Corporation / Senior Systems Engineer / 2014 - 2016

5

Systems & Software Engineering / Consultant 2016 -2017

NAVAIR Patuxent River, MD

6

KBRwyle / Engineering Analytics P5 / 2017 - 2018

7

Zenetex / Senior Engineer / 2018 - Present

Contractor Career Evolution (Continued)

Karl Geist Consulting - Senior Systems Engineering Consultant /Software Engineering Consultant

- Developed and revised Systems Engineering Technical Review (SETR) Process Checklists for 12 different competency areas for both NAVAIR and ASN(RDA) PMs
- Task required familiarly with all systems engineering principles, technical discipline subject matter expert knowledge, and NAVAIR and DoD process knowledge
- Performed as Program Analyst and Senior Technical Writer reviewing and producing progress and synopsis reviews for documentation such as the Systems Engineering Plan (SEP) and other Engineering Documentation
- Participated as software Subject Matter Expert on consulting team for Systems Engineering and Integrations analyses and issues for NASA's Constellation Mission
- Authored NASA's Constellation Mission Analysis Study
- Researched and developed Program Management and Systems Engineering policies, procedures, instructions, manuals, and handbooks IAW DoD and SECNAV 5000 guidance for classified programs, initiatives, and specialized tasking
- Authored and tailored documents which provided guidance and direction to the managers and engineers for classified programs with specialized development
- Assigned as company's Systems Engineering (SE) representative to liaison and interface with the corporate and Government Systems Engineering Communities
- Researched, developed, and presented best practices for Systems Engineering and Program Management Courseware for SE Training, Certification Programs and Customers associated with an "after work" educational development program

Contractor Career Evolution (Continued)

Gryphon Technologies, LC - Senior Electronics Engineer/Systems Engineer/Program Analyst

- Provided Acquisition Systems Engineering and Acquisition Program Analysis Support for NAWCAD's Identification Systems Division Identification Friend or Foe (IFF) efforts and PMA-213 Integrated Product Team (IPT)
- Researched, analyzed, developed and authored system requirements (SRD) and weekly status reports for the Unmanned Carrier Launched Ariel Surveillance and Strike (UCLASS) Program IPT
- Generated, compiled, and provided inputs for systems analyses, risk assessments and risk mitigation for UCLASS
- Researched, defined, developed, and documented the IDS Deficiency Correction Process
- Applied DAWIA SE principles for the to analyze, define, plan, design, develop, implement, test, verify, procure, and train complex weapon systems (i. e. AN/UPX-24(V) Mark XXIIA Mode 5 and AN/UPX-29(V) IFF Interrogator Systems
- Demonstrated DoD and SECNAVINST 5000 knowledge for all phases of system life-cycle management by planning, developing, staging, and documenting formal SE Technical Reviews (SETR) (i.e. FRRs, SRRs, PDRs, etc.)
- Generated, assessed and prioritized PM and Technical IFF risks, and wrote IFF Risk Management Plan (RMP)
- Scheduled, coordinated, and conducted Mode 5 technical interchange meetings and risk boards and working groups
- Initiated revision of Status Reports IAW Acquisition and CDRL requirements to simplify Data Collection and reporting
- Performed cost analysis based on the IDS Mid-year financial review to determine the IDS Cost to Complete

Contractor Career Evolution (Continued)

Gryphon Technologies, LC - Senior Electronics Engineer/Systems Engineer/Program Analyst

- Generated Mode S procurement package, SOW, CDRLs, and DD Form 254s and IQC contracts and Change Proposals
- Led technical problem resolution for System Safety issues and meetings as IFF Mode 5 Principal For Safety (PFS)
- Developed and documented the AN/UPX-29(V) System Safety Program Process and System Safety Program Plan
- Produced briefings & supported IFF Mode 5 Systems Safety meetings (i.e. CSSWGs, SSSTRPs, & WSESRBs)
- Produced PM & Safety briefs, IMSs, EVM analyses, budgets, schedules, data calls, risks, reports, & minutes
- Represented Mode 5 at Monthly Asset Allocation Meetings accounting for systems delivery, validation and activation
- Performed software consultation for a variety of technical products for complex military systems
- Initiating PM/SE Support for AN/UPX-29(V) & Mode 5 Technical Interchange Meetings & Program reviews
- Generated requirements package & Systems Engineering Plan for Small Business Innovation Research (SBIR)
- Planned, organized, & supported Mode 5 Test Requirements and Test Team Planning Meetings
- Provided input & status to Weekly SE Team & Integration Team Meetings
- Researched, prepared and presented studies & analyses for a Collegiate Level Systems Engineering Training;
- Researched, developed, & presented best practices for Systems Engineering and Program Management Courseware for SE Training
- Developed training materials including PowerPoint presentations, instructor notes, homework assignments, and exams

Contractor Career Evolution (Continued)

Karl Geist Consulting - Senior Systems Engineering Consultant /Software Engineering Consultant

- Researched, developed, and presented best practices and SE Training for Systems Engineering Certification Program
- Conducted Systems Engineering Certification reviews based on Government experience and established criteria
- Reviewed, assessed and prepared technical analyses & reports for various levels of INCOSE Systems Engineering Certification program
- Served 6 years on the INCOSE Certification Advisory Group (CAG) for the International Certification Program reviewing and analyzing candidate's skills, producing reports, creating exam questions, and organizing Beta Tests
- Participated as a Program Manager in the proposal development and presentation of a briefing for support of Energy Directed Weapons for NSWCDD
- Researched, analyzed, and generated analyses and text for a JCIDS process Capabilities-Based Assessment
- Performed as Program Analyst and Sr. Technical Writer by engineering, reviewing, commenting, and producing progress reviews for Engineering Documentation
- Participated as a Program Manager and Lead Systems Engineer in proposal development for Mission Planning Systems (MPS) for both domestic and FMS Programs

Contractor Career Evolution (Continued)

ICI Services Corporation - Senior Systems Engineer

- Worked all aspect of Systems Engineering for the Space and Warfare Systems Command (SPAWAR) Program Executive Office – Enterprise Information Systems (PEO-EIS) Program Manager Warfare (PMW) 240 Department of Navy Tasking, Records and Consolidated Knowledge Enterprise Repository (DON TRACKER) Agile IT Program
- Performed Requirements Engineering by analyzing stakeholder needs, generating requirements, performing functional analyses, and generating requirements documentation (i.e. FRD, Use Cases, Change Requests, DoDAF architectural requirements)
- Supported Risk and Opportunity Management Discussions, Risk Development, and Risk Mitigation
- Supported Technical Effort Assessment through technical performance measures and key performance parameters identification, and supported Technical Review Process (i.e. SRR, SFR, PDR, PRB, ATRR, CDR, etc.) by creating and updating Program Artifacts and Deliverable
- Provided Technical Planning by identifying program objectives and technical development strategy, preparing Systems Engineering Plans (SEP), and tracking Integrated Master Schedule (IMS) Milestone Plan and Commitments
- Participated in Developmental Testing (DT) Planning, DT Plan Development, Test and Evaluation Master Plan (TEMP) Development, Test Execution for Agile Software Development, and Defect Identification and Tracking
- Participated in Discussions Concerning the Measures Of Suitability (MOS) Models and Metrics Analyses
- Prepared and updated Program Briefs/Charts for the Systems Engineering Technical Review (SETR) Process
- Performed Process Definition by tailoring enterprise processes for program applications

Contractor Career Evolution (Continued)

ICI Services Corporation - Senior Systems Engineer

- Identified, recorded, reported, and tracked of all Program Change Requests (CRs), defects, issues, and actions
- Supported Information Assurance (IA) Meetings and providing Systems Engineering inputs for IA Certifications
- Assisted in the creation of the IA Certification and Accreditation (C&A) Plan and the Contingency Plan (CP)
- Tracked Baseline Control and Configuration Management of Engineering Documentation for the SETR Process
- Supported Training development and implementation for products and users, and reviewing Training Plans
- Reviewed and provided changes to the Life-Cycle Sustainment Plan (LCSP) for Life-Cycle Sustainment Group
- Reviewed and Assessed Impacts of IA Vulnerability Alerts Against the Software to Determine Program Threats
- Supporting Weekly Team Status Meetings, Navy Enterprise Data Center Meetings, Integrated Master Schedule Meetings, and Working Groups for Deployment Focus, Records Management, Afloat Strategy, and Data Migration

Contractor Career Evolution (Continued)

Karl Geist Consulting - Senior Systems Engineering Consultant /Software Engineering Consultant

- Developed and staged Tutorials entitled "Solving the Systems Engineering Puzzle" based on experience and Lessons Learned
- Researched, developed, and presented best practices and SE Training for Systems Engineering Certification Program
- Conducted Systems Engineering Certification reviews based on Government experience and established criteria;
- Reviewed, assessed, & prepared technical analyses & reports for various levels of INCOSE Systems Engineering Certification program
- Organized, advertised, staged and proctored INCOSE Certification Paper Tests

Contractor Career Evolution (Continued)

KBRwyle - Senior Systems Engineer / Engineering Analytics P5

- Plan and implement systems engineering approach in support of NAVAIR PMA-268 and PMA-205 Programs
- Create White Papers to analyze and evaluate Training Systems and modeling and simulation capability
- Review known and derivative requirements to support requirement prioritization and document in White Papers
- Plan and document Phase IV tasking by performing Analysis of Alternatives (AoA)
- Generate, review and provide comments and corrections for Performance specifications
- Research and develop an integrated Model-based systems engineering development process
- Perform a gap analysis to identify the systems of concerns
- Update Concept of Operations (CONOPS) and block diagrams
- Perform, document and generate reports for trade studies, engineering, technical analyses evaluations and assessments in support of all systems installed on Unmanned Aerial Systems (UAS)
- Support weekly customer team meetings and quarterly Program Management Reviews (PMRs)
- Tailor the Systems Engineering Technical Review (SETR) Process for the new streamlined MACO Process

Contractor Career Evolution (Continued)

Zenetex - Senior Engineer

- Provide engineering support services to assist the government Program Manager (PM) to execute a technically challenging weapon system survivability program encompassing development, testing, evaluation, and acquisition
- Assist in the coordination of all technical activities of the program office
- Assist the Technical Director (TD) with program-level/cross-project technical guidance, interaction, program representation and technical exchange forums
- Assess technical risk and mitigation alternatives
- Tailor engineering standards and controls for appropriate technical oversight
- Project long-range (15+ year) capability gaps and technical roadmaps
- Interact with various DoD Science and Technology (S&T) organizations
- Support Program Objective Memorandum (POM)/budget requests
- Create and track project technical transition criteria
- Provide modeling, simulation and analysis support
- Perform other technical support duties as they arise from the PM or TD

Revised Systems Engineering Skills

Systems engineering (SE) is now defined as "A comprehensive, iterative, problem solving approach for creating an optimized system solution to satisfy customer and user needs," or "an interdisciplinary field of engineering and engineering management that focuses on how to design, model and manage complex systems over their life cycles".

SE Technical Areas

- **Requirements Engineering**
- **System and Decision Analysis**
- **Architecture/Design Development**
- **System Integration**
- **Qualification, Verification, and Validation**
- **System Operation and Maintenance**

- SE Management Areas
  - **Technical Planning**
  - **Technical Monitoring and Control (Technical Effort Assessment)**
  - **Acquisition and Supply**
  - **Risk and Opportunity Management**
  - **Information and Configuration Management (Baseline Control)**

- SE Support Areas
  - **Specialty Engineering**
  - **Lifecycle Process Definition and Management (Process Definition)**
  - **Organizational Project Enabling Activities**
  - **Training**
  - **Tool Support**
  - **Quality Assurance**

- Other SE Areas
  - **Engineering Documentation**

Request for Proposals (RFPs) Requirements

Avionics Systems Engineer to support 4.5 SSQ-125A Sonobuoy efforts

- Performing a wide range of analytical tasks as well as experience developing technical recommendations.
- Experience preparing clear, succinct reports for management consideration.
- Acting as a lead Systems Engineer supporting the SSQ-125A Sonobuoy upgrade (NUAMP), as well as the Extended Life Sonobuoy programs
- Serving as Technical Advisor to the PMA Assistant Program Manager Engineer (APME) and respective project managers
- Responsible for the technical management of avionics systems during various phases of development, test and evaluation, production and fleet use
- Preparing plans, milestone schedules and other control documents
- Verification activities to illustrate how the design matches requirements
- 8 years' relevant experience including supporting avionics systems with NAVAIR programs
- Prior military experience is highly desired
- Experience in requirements development and analysis
- Specification development and requirements negotiation (ASW domain is highly desired)
- ASW/avionics engineering skills and experience are required
- US Citizenship and ability to obtain and maintain a DoD Secret security clearance
- Ability to work well in a dynamic, fast-paced environment

Request for Proposals (RFPs) Requirements

Systems Engineer

- Provides analysis related to the design, development, and integration of hardware, software, man-machine interfaces and all system level requirements to provide an integrated IT solution.
- Develops integrated system test requirement, strategies, devices and systems.
- Directs overall system level testing.
- Possesses and applies a comprehensive knowledge across key tasks and high impact assignments.
- Plans and leads major technology assignments.
- Evaluates performance results and recommends major changes affecting short-term project growth and success.
- Functions as a technical expert across multiple project assignments.
- Provides technical /management leadership on major tasks or technology assignments.
- Establishes goals and plans that meet project objectives. Has domain and expert technical knowledge.
- Directs and controls activities for a client, having overall responsibility for financial management, methods, and staffing to ensure that technical requirements are met.
- Interactions involve client negotiations and interfacing with senior management.
- Decision making and domain knowledge may have a critical impact on overall project implementation.
- May supervise others.
- Experience 12 to 15 years

Request for Proposals (RFPs) Requirements

Senior Systems Engineer for the Air Traffic Control (ATC) Landing Systems program.

- Work in a research & development environment of a military test & evaluation facility.
- Contribute in developing and sustaining next-generation landing systems.
- Perform Requirements Analysis
- Understand technical requirements of a carrier landing system; develop requirements and specifications based on customer inputs.
- Perform Modeling in CORE (ViTech), including reverse-engineering legacy systems and updating for next-generation changes.
- Provide architecture studies, interface definition studies, and trade-off analyses.
- Apply engineering experience to systems integration, configuration management, and quality assurance.
- Possess strong experience building, integrating, running, and maintaining complex research and development systems
- Display Strong understanding of formal systems engineering principles
- Have strong writing and communication skills
- Ability to obtain and maintain the required security clearance
- Preferred Skills and Education Experience in Navy electronic systems, Air Traffic Control, RADAR systems
- Experience with Systems Engineering tools: ViTech CORE, DOORS, Enterprise Architecture, DoDAF 2.0

Request for Proposals (RFPs) Requirements

Senior Systems Engineer

- Deliver products and services to government clients in the field of directed energy.

- Work on complex technical problems

- Provide highly innovative solutions, develop advanced technology ideas

- Guide their development into a final product.

- Apply knowledge of the systems engineering discipline across one or more components of the system development life cycle (SDLC), including concept development, technical planning, requirements development, system analysis, system design, integration, verification, transition, operations, obsolescence, and disposal.

- Participate in program integrated product teams (IPTs) and drive the proper application of systems engineering processes.

- Exhibit a familiarity with the Systems Engineering (SE) process for system acquisitions, including Systems Engineering Plans, System Engineering Technical Reviews (SETR), System Certification processes, and specialty engineering activities.

- 10+ years of experience with systems engineering

- Experience with the integration of systems aboard Navy ships

- Knowledge of other SE disciplines, including configuration management, risk management, Cybersecurity, and certification processes

- Ability to serve as an action officer for SE IPT

- Active Secret clearance

Request for Proposals (RFPs) Requirements

Senior Systems Engineer

- Provide systems engineering support for the PMA Control Station team, with a focus on the software.
- Execute the functional de-composition of the software requirements into various sub-systems and services, including mission control, payload control, and information services.
- Support requirements traceability.
- Interface with SysML architects to ensure the system is modeled correctly including what the system does, how it behaves, how it fits into sub systems and services, and how those services and sub-systems interact.
- Review MQ-25 vendor documentation.
- Provide systems engineering expertise to the government IPT leads and report progress and status at weekly meetings.
- 10 years of experience with engineering or software
- Experience with functional decomposition of software requirements
- Experience with the development of system level software requirements documents
- Secret clearance
- BS degree in Engineering, Physics, Computer, Electrical, or Electronic Engineering
- Experience with NAVAIR Systems Engineering process and Model Based Systems Engineering (MBSE), including SysML
- -Experience with DOORS requirements database
- -Knowledge of UAS and CVN operations

Request for Proposals (RFPs) Requirements

Senior Systems Engineer

- Work as a team member of larger, multi–disciplinary teams and apply systems and communications engineering expertise on several simultaneous design projects

- Support requirements analysis and solution formation supporting technical solutions that meet larger program objectives.

- Participate in Systems Engineering Working Group (SEWG) activities by updating Standard Work Packages,

- Assist with analyzing and updating quality management tools, monitor performance metrics,

- Make recommendations to improve project execution, including Capability Development Documents (CDDs), Concepts of Operations and Concept of Employment documentation, Trade Studies, Analysis of Alternatives (AoAs), and System Performance Specifications.

- Assist with the completion of Office of Technical Information Assurance (OTIA) test documents and test planning.

- Support systems under development and requiring engineering support, including Airborne manned and unmanned, shipboard, and ground–based communication systems and platforms.

- Assist with the development and delivery of systems engineering training related courses, including the DoD Architecture Framework (DoDAF) Overview Course.

- Manage/participates in T&E events, conduct risk analysis, apply Cybersecurity and RMF, and deliver training material.

- 10 years of experience with systems engineering supporting US Navy Programs developed under the NAVAIR Systems Engineering and Technical Review (SETR) Process

- Experience with supporting the design, development, and review of Systems Engineering design artifacts, including Concepts of Operations (CONOPs), Requirements Analysis, Interface Design, System Architecture Development, and System Performance Analysis

Contractor Career Evolution (Continued)

Senior System Engineer serves as the engineering lead and assists both NAVAIR and their client organizations

- Identifying, developing, integrating and transitioning potential solutions through the process of requirements definition, concept development and experimentation, analysis and refinement.
- Responsible for providing overall system level testing of both current NAWCAD SCMS DLS systems as well as any future enhancements.
- Designs and defines system architecture for new or existing computer systems.
- Performs complex systems development and design work that may include logic design, I/O design, firmware development, model formulation, manufacturing and development cost projections, computer architecture analysis and design, and analog or digital systems engineering. Performs systems modeling, simulation, and analysis.
- Participates in the upgrading of operating systems and design of systems enhancements.
- Provides input for documentation on new or existing systems.
- Develops and conducts tests to ensure systems meet documented user requirements.
- Identifies, analyzes, and resolves system problems.
- Provides system/equipment/specialized training and technical guidance.
- Determines system specifications, input/output processes, and working parameters for hardware/software compatibility.
- May provide guidance and work leadership to less-experienced systems engineers.
- Maintains current knowledge of relevant technology as assigned.
- Participates in special projects as assigned

Contractor Career Evolution (Continued)

Senior System Engineer Serve as a project manager or team leader for the support of tasking

- Formulate system concept

- Provide system, and subsystem design analysis

- Perform interface design analysis

- Conduct field service analysis

- Perform installation, integration, and test and evaluation of Communications-Electronics (C-E) equipment/systems and subsystems

- Serve as principal project coordinator on the contract

- Shall be responsible for managing complex and technical elements of the total project effort.

- Responsible for oversight of multiple systems integration, testing and delivery. These complex systems integration efforts require multi-disciplinary oversight including mechanical, electrical, environmental, human interface as well as logistics support.

- Responsible for interfacing with customer and developing schedules, cost estimates, work breakdown structures and work descriptions

- 8-10 years of related experience, including supervisory experience.

- 7 years of experience in engineering management and supervision of a project in systems engineering or the design/field service of military command and control, or C-E equipment/systems and subsystems.

- Have strong writing and communication skills

- Ability to obtain and maintain the required security clearance

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Contractor Career Evolution (Continued)

Senior Program Analyst Serve as a project manager or team leader for the support of tasking

- Responsible for engineering and managerial oversight of technical processes used to develop, acquire, deploy, and maintain systems.
- Apply Systems Engineering knowledge and experience to manage the development of tactical aviation weapons systems.
- Participate as a member /or support specified Integrated Product Teams (IPTs) and IPT directed technical meetings
- Develop, prepare and review system design and system engineering documentation
- Prepare and review technical analyses, reports, and change proposals
- Collect, complete, organize and interpret technical data and information relating to radar product acquisition programs
- Provide subject matter expertise on development process, policies, procedures, and industry best practices related to systems engineering
- Provide subject matter expertise on Anti-Tamper development, integration, and processes
- Provide technical analysis support and apply knowledge of DoD systems acquisitions in specified technical areas
- Three (3) years of experience with Systems Engineering Technical Review process in support of DoD acquisition required
- One (1) year of experience working as a member of an Integrated Product Team is required.
- Five (5) years of experience with SETR process in support of DoD acquisition programs is desired.
- One (1) year of experience with Anti-Tamper development programs is desired.
- Defense Acquisition University certification of Level II or higher in SPRDE is desired.
- Three (3) years of experience supporting major weapon system development and acquisition is desired.
- Familiarity with the Department of Defense acquisition process, including PPBE is desired..

Contractor Career Evolution (Continued)

Senior Systems Engineer

- Provide planning, scheduling, and reporting in support of assigned projects in accordance with DoD acquisition program management and T&E instructions and guidebooks.

- Perform system integration

- Perform documentation development

- Develop government specifications and requirements documents

- Author Test Strategy or Test and Evaluation Master Plan (TEMP) documentation development and revisions

- Participate in and support to T&E meetings (i.e. Test and Evaluation Program Assessments (TEPA), IPT)

- Support Systems Engineering Technical Reviews (SETR) and other technical reviews and meetings

- Support to technology insertion,

- Perform business re-engineering process development and documentation

- Support to processes supporting joint aircraft/stores integration and certification maintenance and tracking

- Support program office Foreign Military Sales (FMS) activities to include coordination of test activities, Foreign Comparative Testing, and routing of all associated deliverables through the appropriate program offices.

- Have M.S. or M.A. in engineering, science, logistics, or related discipline, or a B.S. or B.A. and 4 additional years required.

- At least 10 years of experience in an engineering position with at least 3 years directly related to Naval systems

- Experience applying engineering principles to investigate, analyze, plan, and design, develop, implement, test or evaluate military weapons systems is required.

- Must be able to perform these tasks with little or no supervision.

Observations

Skills required

- SE Technical Areas
  - **Requirements Engineering**
  - **System and Decision Analysis**
  - **Architecture/Design Development**
  - **System Integration**
  - **Qualification, Verification, and Validation**
  - **System Operation and Maintenance**
- SE Management Areas
  - **Technical Planning**
  - **Technical Monitoring and Control (Technical Effort Assessment)**
  - **Acquisition and Supply**
  - **Risk and Opportunity Management**
  - **Information and Configuration Management (Baseline Control)**
- SE Support Areas
  - **Specialty Engineering**
  - **Lifecycle Process Definition and Management (Process Definition)**
  - **Organizational Project Enabling Activities**
  - **Training**
  - **Tool Support**
  - **Quality Assurance**
- Other SE Areas
  - **Engineering Documentation**

- Skills requested
- Performing a wide range of analytical tasks as well as experience developing technical recommendations
- Provides analysis related to the design, development, and integration of hardware, software, man-machine interfaces and all system level requirements to provide an integrated IT solution
- Participate in program integrated product teams (IPTs) and drive the proper application of systems engineering processes
- Execute the functional de-composition of the software requirements into various sub-systems and services, including mission control, payload control, and information services
- Work as a team member of larger, multi–disciplinary teams and apply systems and communications engineering expertise on several simultaneous design projects
- Participates in the upgrading of operating systems and design of systems enhancements
- Have strong writing and communication skills
- Provide subject matter expertise on Anti-Tamper development, integration, and processes
- Support program office Foreign Military Sales (FMS) activities to include coordination of test activities, Foreign Comparative Testing, and routing of all associated deliverables through the appropriate program offices

Conclusions

- Diversity is work assignments in what enabled me to achieve Systems Engineering Expertise
- The development of the "Systems Engineer" in DoD now is more heavily base on Education and training than "grassroots experience"
- There appears to be advantages to work in an "environment" that provides educational opportunities
- Many RFPs are very generic with only generalities requested
- Other RFPs are extremely specific as if written from someone's resume
- Advanced degrees are almost a must
- Certifications and outside speciality training provide additional advantages
- One of the biggest key to DoD Systems Engineering is Networking
- Other conclusions?

Questions or more information

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Back up Slides

Government Career Evolution (Continued)

- Graduated with a Bachelors of Arts degree in Physics and hired as a Electronics Engineer in the Software Division and assigned as a Programmer to learn how to code and develop all types of Software

- Underwent extensive Training learning Software Languages including Mono-code, Machine Code, Fortran, CMS-2Q, CMS-2Y, and ADA

- Successfully designed, coded and tested pulse train separation program for Electronic Support Measures (ESM) threat identification enhancing system performance by 50%, then integrated into LAMPS Helicopter

- Installed and documented improved System Maintenance Program enhancing P-3C Facility System Test Program development and reducing compilation time by 40%

- Designed, coded, tested and implemented 11 interface test programs for P-3C facilities

- Documented simulation improvements in the Simulation Systems Design Document, Simulation Software Program Performance Specification, & Simulation Programmer's Reference Manual

- Provided Foreign Military Support (FMS) technical direction concerning simulation software development, facility management, human systems integration, & product development processes and procedures

- Generated System Test Program documentation, including monthly System Test Program Status reports, & yearly System Test Program functional requirement descriptions updates

- Engineered, designed, & integrated Simulation solutions for Single Display Update Acoustics System (SUDS), Low Cost Sonobuoy, & Expandable Reliable Acoustic Path Sonobuoy (ERAPS) acoustics developments

- Analyzed system/subsystem functional, performance, & design specifications to derive and formalize software, systems, safety, and facility requirements

- Designed, reviewed, coded, tested, & debugged software corrections and enhancements for P-3 Facilities software

Government Career Evolution (Continued)

- Served as Lead Facilities Engineer by managing and supervising the Program Hardware Integration Center (PHIC) for the software development and testing for tasking which included hardware and software maintenance, facility operations, facility usage scheduling, problem resolution, facility upgrades, contingency planning, computer security protection, contract monitoring, documentation production, interface testing and modeling and simulation

- Provided Program Management, fiscal planning, technical planning, budgeting, scheduling, control and tracking for complex weapon systems development and Facility Hardware and Software integration

- Originated and conducted as Chairperson over 200 Facility Software Configurations Control Board (SCCBs)

- Prepared procurement packages including Contractor Data Requirements Lists (CDRL), tracked packages through procurement cycle, evaluated proposals, recommended awards and technically managed contractor efforts for simulation software and systems development, facility maintenance, documentation and facility development or upgrade

- Formulated concepts, planned, designed, specified, implemented, tested, evaluated, transitioned and maintained simulation & facility software and systems for products like Enhance Data Model simulation and ESM extraction capability

- Provided technical direction for simulation software development, facility management, systems training and human systems integration

- Managed and supervised various size teams developing Operational Software and Simulation Software for P-3C UPDATE III Channel Expansion and P-3C Modernization Electronic Support Measures (ESM) efforts

- Evaluated inter and intra Facility system interfaces and determined change impacts (cost/schedule/resources)

- Designed, reviewed, coded, tested and debugged software corrections and enhancements for P-3 Facilities

- Developed concept approaches, design alternatives and Simulation design requirements for the Harpoon Weapon

Government Career Evolution (Continued)

- *Served as Task Leader and Lead Systems Engineer for lifecycle maintenance of S-3A/B Navigation & Steering subprograms by developing System Change Requirements (SCRs), performing impact analyses, verifying Program Trouble Reports (PTRs), developing briefings, and recommending solutions*

- *Researched, designed, reviewed, coded, tested, debugged, and documented software corrections & enhancements for S-3A/B Navigation & Steering Modules*

- *Developed conceptual upgrades, planned & identified design alternatives, performed tradeoff analyses, prepared cost & resource estimates, developed Network Logic models (NLM), and documented requirement specifications for S-3A/B corrections or enhancements for software upgrades to improve bias velocity calculations, implement Kalman Filtered track generation, improve steering algorithms, integrate Sonobuoy Reference System (SRS) into the Tactical Navigation Mode, and implement the Tactical Circle capability*

- *Applied project experience to perform system integration, CM, quality assurance testing, and resource management*

- *Provided Software & Systems Engineering support, technical advice, and liaison support for S-3A/B Operational Software for Fleet and FMS customers*

- *Provided Engineering Management, fiscal planning, technical planning, budgeting, scheduling, control, and tracking for complex weapon systems development and Hardware/Software integration*

- *Supervised, directed, reviewed, & coordinated IPT Leads' work in avionics production, development, & delivery of full scale production & lifecycle support for the Fleet & FMS customers within cost, scope, & schedule constraints*

Government Career Evolution (Continued)

- *Led & managed P-3 Fleet Tactical Systems Software Support Activity's (TSSSA) full scale production and lifecycle maintenance of major complex military system acquisitions providing Tactical Operations, Acoustic Detection, System Test, and Training capabilities for Navy and PMA FMS customers*

- *Engineered, supervised, and managed 25 in-house workyears and 75 contractor workyears for Integrated Product Team (IPT) developing and delivering 46 software products and systems for Maritime Surveillance*

- *Performed fiscal/technical planning (near and long-term), budgeting (Planning, Programming, Budgeting & Execution System (PPBES), scheduling, control, and tracking for full scale complex weapon systems developments*

- *Generated Airtasks, Work Unit Plans, Status Reports, Quarterly Reviews, Outyear Plans, Team Assignment Agreements (TAAs), Work Breakdown Structures (WBSs), Integrated Master Schedules (IMSs), Budget Estimates, Statements of Work (SOWs), Engineering Change Proposals (ECPs), Technical Directives, Problem Reports (PRs), Software/System Change Requests, Problem Analysis Reports (PARs), and Risks for TSSSA software developments*

- *Planned, engineered, developed, and delivered 46 Fleet software products, which provided operational avionics capabilities, improved human systems integration, performed mission validation, and enhanced test capabilities*

- *Analyzed engineering tradeoffs, decided optimum approach, assessed relative urgency of changes, negotiated Fleet/Sponsor priorities, then implemented proper hardware, software and procedural changes*

- *Authored and implemented CMMI Software Development and CM processes and procedures per DoD 5000 directives*

- *Identified problems, created and executed Engineering Change Proposals (ECPs) for avionics upgrades*

- *Represented VP Program in all Tactical Systems Software Support Activity meetings with NAVAIR and Fleet*

- *Researched, analyzed, and coordinated recommendations for best safety design changes*

Government Career Evolution (Continued)

- *As Senior Systems Engineer led TSSSA Transition Team establishing, documenting, and implementing P-3C CMMI Software Development and CM processes*

- *Generated all Technical documentation (Operational Requirements Documents (ORDs), Initial Capabilities Documents (ICDs), Systems Engineering Plans (SEPs), and System Performance Specifications)*

- *Developed, maintained, and implemented Computer Resource Life-Cycle Management Plans (CRLCMP), Software Support Project Plans, and P-3 Execution Plans containing software systems descriptions, life cycle plans, milestones, software management organization, configuration management (CM) process, quality assurance process, resource requirements and documentation*

- *Identified strategies and workarounds for program funding shortfalls for OPNAV & OSD PPBES requirements*

- *Perform as SME providing Product Development Expertise for complete life-cycle management and development*

- *Researched and co-authored Software Development Business Process Re-engineering Strategic Plan and Charter*

- *Generated Work Unit/Execution/Life Cycle Management Plans, WBSs, IMSs, Budgets, ECPs, and SOWs*

- *Developed conceptual approaches, design alternatives, & software designs for various weapons upgrades*

- *Directed P-3 Aircraft Platform Data Link Certification Testing for Joint Standards Interoperability Certification*

- *Coordinated & managed various Engineering disciplines, & applied their inputs to systems & program solutions*

Government Career Evolution (Continued)

- *Conducted systems / software engineering studies to derive quantitative & qualitative data supporting engineering plans and decisions*

- *Developed conceptual approaches, design alternatives, and software designs for platform & software upgrades*

- *Led P-3 Systems and Software requirements definition and development as Operational Advisory Group (OAG) Chairperson by planning, directing, and executing 44 Operational Advisory Groups for P-3C Software*

- *Performed as Program Manager and Lead Systems Engineer for the creation, development, testing and delivery of the Mission Analysis Replay System (MARS) analysis tool used for mission analysis in product development testing, and Technical and Operational Evaluation testing for P-3C UPDATE I, II, & III*

- *Directed P-3 Program Interoperability through planning, interfacing, negotiating, and charter development*

- *Represented P-3 Data Link messaging definition and approval of Tactical Data Link Interoperability Standards*

- *Generated and prioritize P-3 Fleet requirements for 28 Tactical Data Link Message Standards Group Meetings*

- *Directed multiple P-3 Aircraft Platform Data Link Certifications for Joint Standards Interoperability Certification*

- *Engineered and managed creation, development, testing and delivery of Threat Intelligence Data Extraction Systems (TIDES) (Windows based analysis tool) used for threat evaluation in Fleet testing and P-3C VP–30 Fleet training*

- *Led Fleet Indoctrination Team developing training materials and conducting training for 29 Operational, Acoustics, and Training software products for P-3C Fleet and FMS customers*

- *Engineered and delivered innovative state of the art training techniques including introducing Computer Based Training (CBT) to P-3C UPDATE III Fleet providing acoustic training (C4.7.1/C4.7.2), then used techniques for subsequent training deliveries*

- Led, supervised and managed a 9-person IPT, 20-month, $1.7M budget to conceive, engineer, cost estimate, market, design, develop, test, deliver, and train two the Combat Air Crew Training Systems (CATS), Airborne Embedded Training Capabilities for the P-3C UPDATE II and III Aircraft (I4.7/K4.7) programs

Government Career Evolution (Continued)

- Led Systems Engineering support for PMA-201 Precision Strike Weapons Program as Joint Air-to-Surface Standoff Missile Class Desk
- Requested by PEO (W) CHENG to lead Mission Planning for Strike Weapons (JSOW/JDAM/SLAM-ER/EGBU)
- Supported F/A-18 in planning & conducting Joint Mission Planning System (JMPS) Operational Evaluation
- Participated as SE in all F/A-18 JMPS major & OTRRs
- Produced & coordinated F/A-18 JMPS System Security Authorization Agreements & all Weapon Certifications
- Created standardized process for the release of Mission Planning Products for PMA-201's Foreign Military Sales
- Assisted in the development of a Cross Weapons Requirements Matrix, & a Future Imagery Analysis (FIA)
- Supported PM by developing & reviewing SOW & Cost Estimates for various Mission Planning contracting efforts
- Provided Sr. Systems Engineer support for BAMS Risk Assessment Team & Configuration Management Team
- Generated BAMS Data Dictionary, Data Dictionary Acronym List, & Work Breakdown Structure (WBS) Dictionary
- Authored/updated BAMS System & High Altitude Modular Maritime RADAR Performance Based Specifications
- Developed BAMS Statement of Work (SOW)/Statement of Objectives (SOO), & Contract Requirements Data List
- Performed requirements analyses of Operational Requirements Document (ORD) for BAMS spiral development

Government Career Evolution (Continued)

- Led SE by managing and supervising Organic Airborne Mine Counter Measures (OAMCM) Engineering Team in planning, developing, and authoring Team Work Plan (TWP) for 15 Patuxent River and 12 Coastal Systems Station work years of OAMCM multi-discipline Teams consisting of SE, Survivability, R&M, Human Factors, Cost, and Structural engineering

- Requested Established MH-60S OAMCM Systems Requirements for 5 NAVSEA sensors and 2 NAVAIR operational systems

- Performed systems integration to ensure airworthiness and commonality for MH-60S/SH-60R platforms

- performing System, Preliminary, and Critical Design Reviews for Platforms and all System Level Elements

- Documented, planned, analyzed cost, schedule, and technical performance goals for SECNAV and OSD PPBES

- Evaluated Technical efforts and EVM results of Government Engineers and Contractors to assess Program benchmark progress

- Generated documentation (ICD, SEP, WBS, and Systems Performance Specifications) for IPT tasking direction

- Led SOW development, conducted contract award reviews, supported engineering reviews, and generated and documented budget estimates

- Led Engineering review of all Contractor responses for bidder selection and award

- Documented and performed risk assessments and risk management to identify system development progress

- Evaluated, integrated, and resolved technical efforts and conflicts between Government and Contractors

Government Career Evolution (Continued)

- *Helped create Naval Aviation Interoperability Assurance Office (NAIAO) by establishing interoperability interface Memorandum of Agreement (MOA) between NAVAIR, NAVSEA, & SPAWAR PEOs, PMAs and PMWs, and writing a Program Office Charter delineating program responsibilities*

- *Served as Assistant Director, ASW/ASUW & Assistant Director for Battle Group Interoperability resolving interoperability issues concerning ASW, ASUW and specialized systems for NAIAO*

- *Generated and improved Network Centric Warfare/Battle Group Interoperability Design Reference Missions*

- *Developed and negotiated NAVAIR's interoperability requirements for NAVAIR, NAVSEA, SPAWAR joint efforts*

- *Directed C4ISRT Program Interoperability through planning, customer interfacing, & charter development*

- *Led NAVAIR Systems Engineering support for the Year 2000 (Y2K) Systems Testing and Systems Certification*

- *Developed Network Centric Operations / Battle Group Interoperability Simulation Scenarios*

- *Represented NAVAIR at Net-Centric Operations Symposiums, NAVAIR/NAVSEA Model Strategy Session for Battle Force Interoperability Testing & Evaluation, Interoperability Working Groups, and Joint Y2K Certification*

- *Provided technical input for optimizing candidate problem solutions for NAVAIR/NAVSEA/SPAWAR joint efforts*

- *Organized, coordinated, and directed annual NAVAIR Data Call response for PEO(A)-N81's IWARS Capabilities*

- *Developed and conducted Fleet Indoctrination and Computer Based Training for P-3C Software*

- *Provided SE support for development, marketing, and execution of P-3C Acoustic Software Training for FMS*

- *Led Advisory Tiger Team for NAVSEA's process improvement effort of their CM Process IAW DoD 5000*

Government Career Evolution (Continued)

- *Led Systems Engineering for Acquisition Management Integration Product Team (IPT) designing the Program Management (Project Systems) and Material Management Modules for NAVAIR's Enterprise Resource Planning (ERP) Project Sigma*

- *Led NAVAIR Enterprise Management and Budget process to conceptualize and develop Business Requirements*

- *Performed Systems Engineering Tradeoffs for ERP requirements concerning Competencies, Activities, and HQ*

- *Defined and generated Project Systems/Materials Management High-level Requirements for ERP Scope Document*

- *Resolved issues by coordinating engineering, business, and resource management solutions for PMAs and Activities*

- *Defined NAVAIR's ERP Project Systems Interface Requirements and Documentation, and compiled requirements lists*

- *Performed planning, requirements definition, design, implementation, configuration management, and testing of the ERP Project Systems Module*

- *Led Quality Assurance (QA) Testing Team through successful Systems Integration Testing for NAVAIR's ERP*

- *Identified issues and created solutions to align cost centers throughout PMAs and Naval Aviation Systems Team*

- *Conducted prototype unit demonstrations accelerating project schedule for system validation and NAVAIR approval*

- *Developed high quality training materials and conducted Program Office training sessions for the ERP end users*

Government Career Evolution (Continued)

- *Served as Branch Head for Forced Warfare Systems Engineering and Integration and Software tasking*
- *Served as Lead Systems Engineer, SME, and Tiger Team for various Systems Engineering Tasking*
- *Organized, led, and engineered an award winning Rapid Technology Transition Task Team, which assessed and validated leading edge technology, procured funding, then produced & transitioned technology to the Fleet in 12 months*
- *Led tiger team of Software Engineers, Program Managers and Configuration Managers creating a Software Hardware Asset Reuse Enterprise Repository (SHARE) by developing a Concept of Operations, defining a structure, identifying the requirements, defining repository components, and identifying options for managing/controlling contents*
- *Performed signature authority duties on NAVAIR's Engineering Change Proposal Configuration Control Board*
- *Prepared PMAs technical tradeoffs between engineering principles and exigencies of cost, priorities and schedules*
- *Coordinated engineering solutions for various aviation and ship based platform problems and made recommendation*
- *Researched, analyzed, presented and documented Battle Space initiatives as the Air Domain Representative for the Naval Enterprise Open Architecture Software Reuse Repository and Configuration Management Strike Team*
- *Identified potential problems and performed risk assessments/management and coordinated engineering solutions*