



CAPABILITIES



Philosophy

Our Philosophy:

- ❖ Ethical and professional, team-oriented work environment
- ❖ Open communication and outside-the-box thinking
- ❖ Continuous employee professional development/training
- ❖ Careful short and long-term planning with strategic staffing
- ❖ Collaborative long-term relationships with customers and corporate partners
- ❖ Responsibility to the warfighter, peers, and the local community
- ❖ Ability to deliver rapid turnaround solutions to meet customers needs



Objectives:

- ❖ Commitment to Integrity, Professionalism, Service and Ethics
- ❖ Manage Corporate Growth and Profitability
- ❖ Maintain Employees as a “Most Important Resource” and Facilitate a Balance Between Family and Professional Success
- ❖ Collaborative Long-term Relationships with Customers and Corporate Partners
- ❖ Recognizable in the Scientific and Technical Community
- ❖ Investment in Local Community Charities

Introduction

BFA Systems:

- Founded in 2005 as a woman-owned small business
- Employee-Owned
- Plans to maintain steady growth to meet the emerging requirements of our customers
- Focused on giving back to community charitable organizations through BFA Hope

Our Mission:

BFA Systems, Inc. is a growing employee-oriented company recognized by our customers for surpassing set expectations and goals. Our primary focus to develop strong relationships within the government and industry communities allows us to identify and provide cost-effective solutions for technical and operational problems. By facilitating successful system design, fielding and support, development, and risk management opportunities, BFA Systems, Inc. strives to emerge as an industry leader.

Vision:

BFA Systems, Inc. provides superior professional support by developing and maintaining a highly motivated technical team encompassing the depth of talent necessary to **exceed the needs and expectations of customers.**

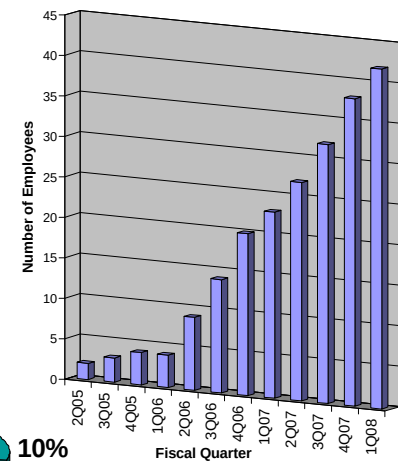
Corporate Revenue

FY06 – \$1,729,477.75

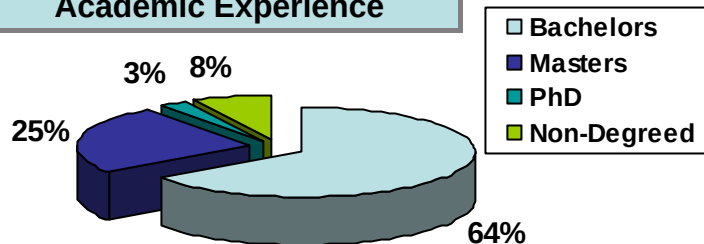
FY07 – \$3,954,054.46

Est. FY08 – \$8,100,000.00

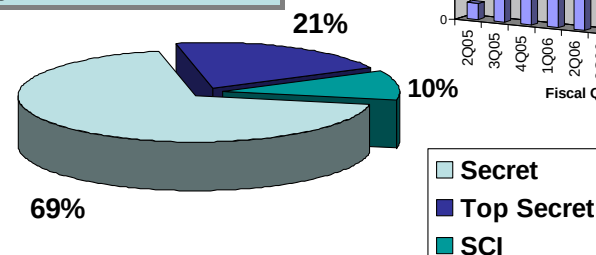
Employee Growth



Academic Experience



Security Clearances



Contact Us

In June 2005, BFA Systems, Inc. opened it's corporate headquarters in Huntsville, AL.



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Kristen Bodeker

Chairman, Board of Directors

Delaina Foust

Secretary, Board of Directors

Lisa Brown

Treasurer, Board of Directors

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Mr. Jim Smith – VP, NASA Division

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jim.smith@bfasystems.com

Contract Vehicles

Team Members / Contract Vehicles:



General Services Administration (GSA)
Professional Engineering Services (PES) : GS-10F-0303T



MADISON RESEARCH CORPORATION

SETAC

- BAE Systems, Inc.
- DMD, LLC.
- Madison Research Corporation
- TSI
- System Studies and Simulation (S3)
- Radiance Technologies



AMCOM Express

- AMS (Technical)
- Belzon (Logistics)
- CAS (Programmatics)
- CSC (Technical)
- Intuitive Research (Programmatics)
- Morgan (Technical)
- SAIC (Technical)

BAE SYSTEMS



Belzon



Customers



Market Solutions / Customers:

Program Executive Office for Missiles and Space (PEO M&S)

Program Manager, Integrated Air and Missile Defense (PM IAMD)

Program Manager, Cruise Missile Defense Systems (PM CMDS)

Product Manager, Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (PM JLENS)

Program Executive Office for Ground Combat Systems (PEO GCS)

Robotic Systems Joint Project Office (RS JPO)

Space and Missile Defense Command, Integrated Capabilities Management Directorate (SMDC-ICM)

AMRDEC System Simulation and Development Directorate (SSDD)

Space and Missile Defense Command, Research and Development Technical Center, Technology Directorate Lethality Division (SMDC-RDTC-TDL)

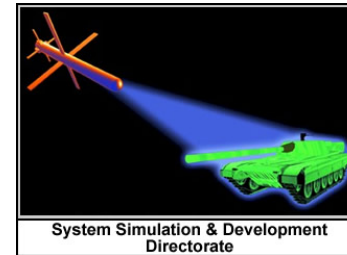
Missile Defense Agency (MDA) Combined Test Force (CTF), Test Analysis & Reporting (DTCA)

National Aeronautics and Space Administration – Ares I First Stage Element Office

DoD Expertise

Weapon System Engineering

- Battle Management Command and Control
 - Kill Chain & Timeline Analysis
 - Track Manager Assessment
 - Communication Network Analysis
- Modeling and Simulation
 - SSDD
 - VV&A Methodology
 - HWILT/BMDS VV&A
 - Threat Analysis
 - Anchoring
- Unmanned Systems
 - Modular Robotic Test Set
- Space and Intelligence
- Threat Lethality Engineering
- Independent Verification and Validation
- Software Engineering
 - Requirements and Design Analysis
 - Development, Verification and Testing



NASA

- Project Support
- Structural Analysis



Kill Chain & Timeline Analysis

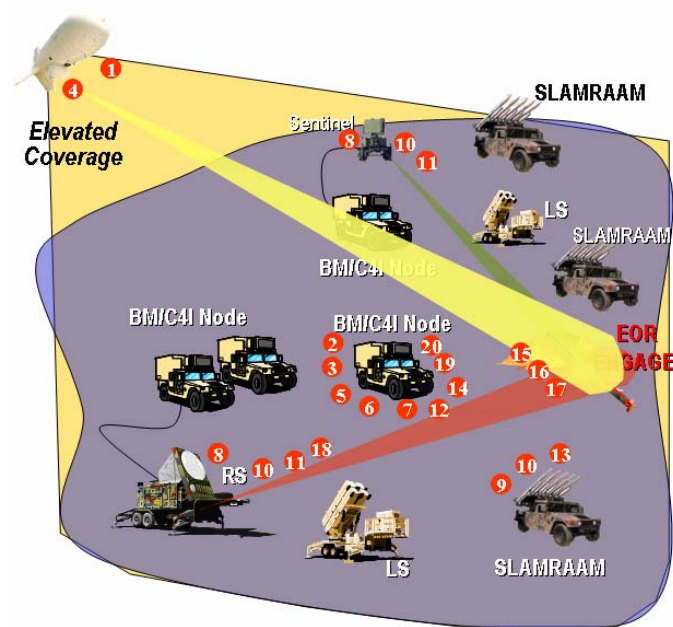
Kill Chain Analysis

- Search
- Detect
- Track
- Threat Assessment
- Engagement Planning
- Engagement Decision
- Weapon Assignment
- Engagement Execution
- Kill Assessment



Timeline Analysis

- Sensor and Missile Performance
- Kill Chain Timeline Determination



1. Surveillance Sensor Detects Object, Establishes Track, and Puts It On the Sensor Net. Surveillance Sensor Begins Processing info on Object
2. BM/C4I Node begins Track Correlation, Fusion & CID
3. BM/C4I Node Performs Threat Assessment and Places Track(s) Into Engagement Processing
4. Tracking Sensor Is Cued To Acquire Target
5. BM/C4I Node Establishes Engagement Plan Based On Available Sensors and Shooters Engageability.
6. BM/C4I Node coordinates deconfliction of airspace based on engagement queue.
7. BM/C4I Node establishes Shooter and Sensor(s) Assignments.
8. Sensor(s) Tasked to Support Engagement
9. Shooter Tasked to Support Engagement
10. Sensor(s) and Shooter Acknowledge Tasking
11. Sensor(s) Provide Data to support Engagement.
12. BM/C4I Node makes final engagement decision
13. Shooter Launches Interceptor
14. BM/C4I Node Monitors Engagement & Retasks as Necessary
15. Midcourse updates transmitted and received
16. Seeker activates and acquires target
17. Interceptor completes Engagement
18. Sensor provides data to perform Kill Assessment
19. BM/C4I Node Performs Kill Assessment
20. BM/C4I Node Assesses Re-engagement Opportunities

Track Manager Assessment

Cooperative Engagement Capability	CEC	Tactical Component Network	TCN
Composite Tracker and Target Classification System	CTC	Integrated Architecture Behavior Model	IABM

Composite Track Manager

- Existing and emerging technologies for Integration within Army Systems
- Joint Systems Engineering Organization (JSSEO) to define the future capabilities of the IABM

Combat Identification (CID)

- Definition and association of attribute data for accurately applying CID technologies/capabilities and distributing data

Communications

- Examine existing and emerging radio alternatives
- Identify new technologies to support the required architecture



Multi-Source Integration

- Correlation-Association-Combination of multiple source of information to provide a single track store containing all known kinematic and non-kinematic data of a given track

Support Joint Analysis Working Group (JAWG) to define the future Joint Track Management requirements

Communication Network Analysis

Physical Characteristics

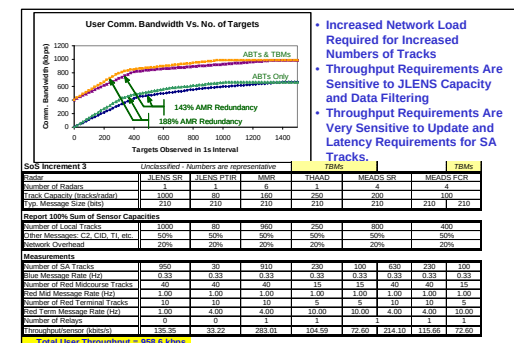
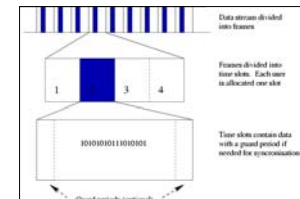
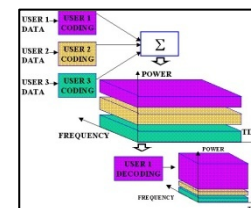
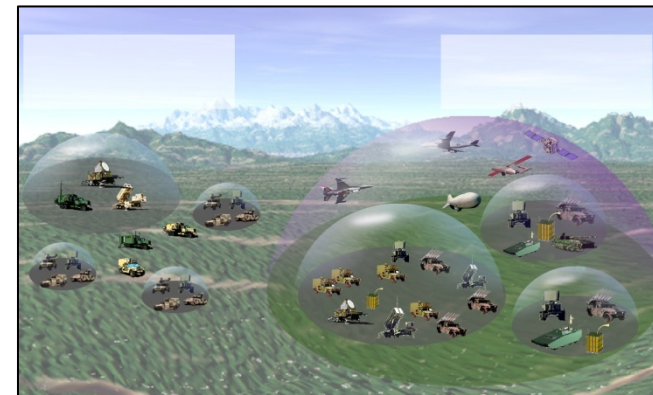
- Size, Weight, Power, Loss
- Range, Bandwidth, Latency

Network Architecture

- Frequency Division Multiple Access (FDMA)
- Time Division Multiple Access (TDMA)
- Code Division Multiple Access (CDMA)
- Point-to-Point
- Mobile Ad Hoc Networking (MANET)

Tactical Data Links

- Link-11
- Link-16
- Forward Area Air Defense (FAAD) Data Link (FDL)
- Remote Radar Data Link (RRDL)
- Cooperative Engagement Capability (CEC)
- United States Message Text Format (USMTF)
- Variable Message Format (VMF)
- Integrated Broadcast System (IBS I/S)



Modeling and Simulation

BFA systems has experience in using the following models, simulations and tools:

Force Level / Campaign Analysis

- Extended Air Defense Simulation (EADSIM)
- Extended Air Defense Test Bed (EADTB)
- CAPS

System Performance Analysis

- FMS/D
- LSI Integration Defense Simulation (LIDS)
- Multi-functional Simulation (MFSIM)
- Sensor Simulation Test Bed (SSTB)
- Ballistic Missile Defense System (BMDS) SIM

Lethality Analysis

- Kinetic Impact Debris Distribution (KIDD)
- Parametric Endo / Exoatmospheric Lethality Simulation
- Post-Engagement Ground Effects Model (PEGEM)
- BRL-CAD

Threat Trajectory Analysis

- Pioneer

Architecture Development & Analysis

- System Architect
- CORE
- J8 Architectural Analysis Tool
- DOORS
- CRADLE

Structural Analysis

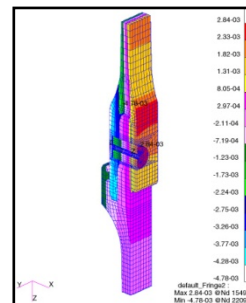
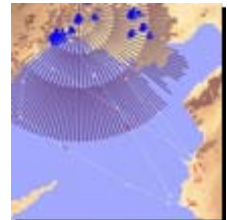
- NASA Structural Analysis (NASTRAN)
- PATRAN
- Solid Edge

Orbital Mechanics

- **Satellite Tool Kit (STK)**

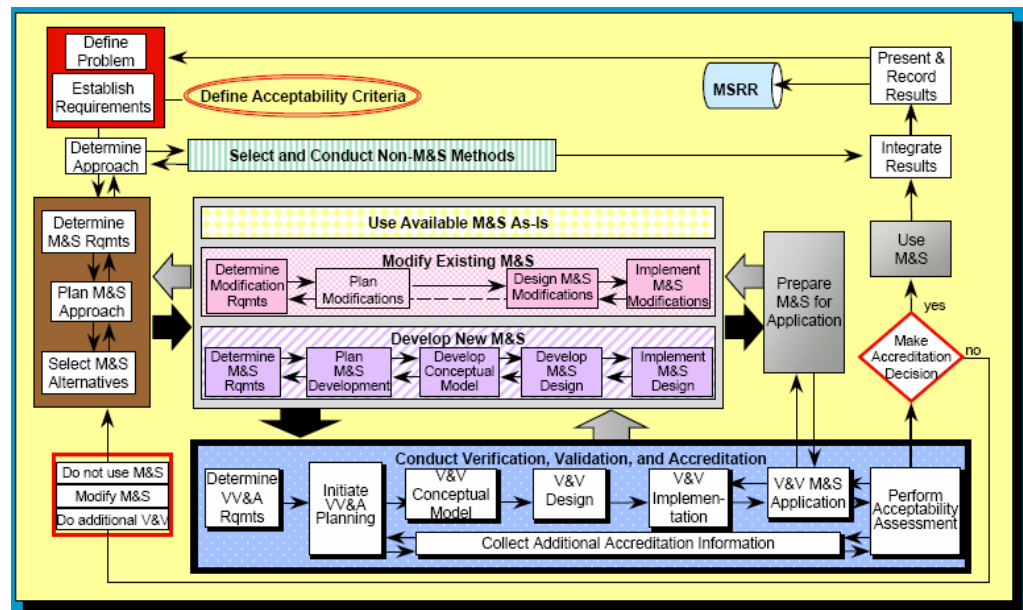
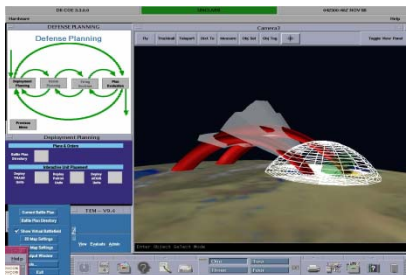
Test / Exercise Support and Analysis

- Joint Analysis Development Environment (JADE)
- MATLAB
- LabVIEW



Models and Simulation Verification, Validation and Accreditation (VV&A)

- M&S Requirements
- VV&A Requirements
- Accreditation Plan/Support
- Acceptability Criteria/Intended Use
- V&V Plan/Report Development
- V&V Documentation
- Capabilities/Limitations
- Acceptability Assessment
- Accreditation Decision
- Lessons Learned



Adherence to the DMSO Methodology Ensures the M&S Environment Meets Customer Requirements

Ballistic Missile Defense System (BMDS) Hardware-In-The-Loop (HWIL) Support

BMDS HWIL SE&I Team

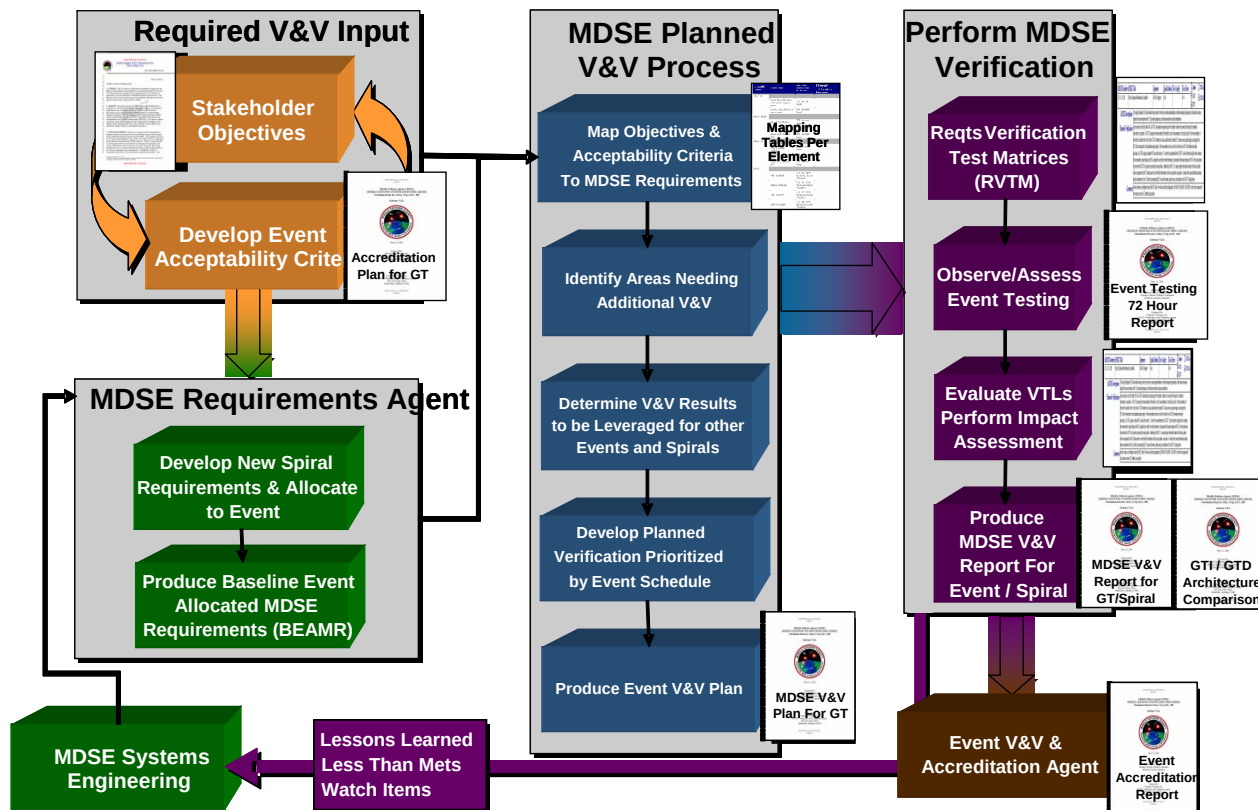
- BMDS HWIL System Engineering SETA
- BMDS HWIL Requirements Definition
- BMDS HWIL Systems Integration Support
- BMDS HWIL Test Plan Development

BMDS HWIL V&V Team

- BMDS HWIL Interoperability V&V
- Test Event Accreditation Risk Assessments
- OTA Assessments (Data Source and Test Verification Matrices)

BMDS HWIL Test & Evaluation Team

- Anchoring (Specs, Ground & Flight Tests)
- Threat Assessment / Verification
- Latency Analysis



Supporting OTA, Warfighter, Combined Task Force and BMDS Element Success Through Ground and Flight Test Events

- **System Acquisition & Program Management Guidance**

- Joint Capabilities Integration and Development System (JCIDS)
- Milestone Reporting Support
- Army and Marine Corps Robotic Program Support
- Hazard Tracking Database
- Frequency Allocation & Spectrum Compliance
- Acquisition Strategy Development
- Ground Robotics Master Plan (GRMP)



- **Systems Engineering**

- Participate in Prime Contractor Integrated Product Team (IPT) Meetings
- Product Improvements - Designed, Built, and Tested a Remote Video Terminal
- Security Classification Guide Development
- Interoperability Analysis (EMI / EMC)



- **Threat Analysis**

- Current on Enemy Tactics, Techniques, and Procedures (TTP)
- Recommend Product Improvements or Change to US TTPs in Response to Enemy TTPs
- Communication Countermeasure Analysis

- **Requirements Analysis**

- Performance Specification Development
- Requirements for UAV to Support UGV Missions

- **Robotic Troubleshooting and Repair**

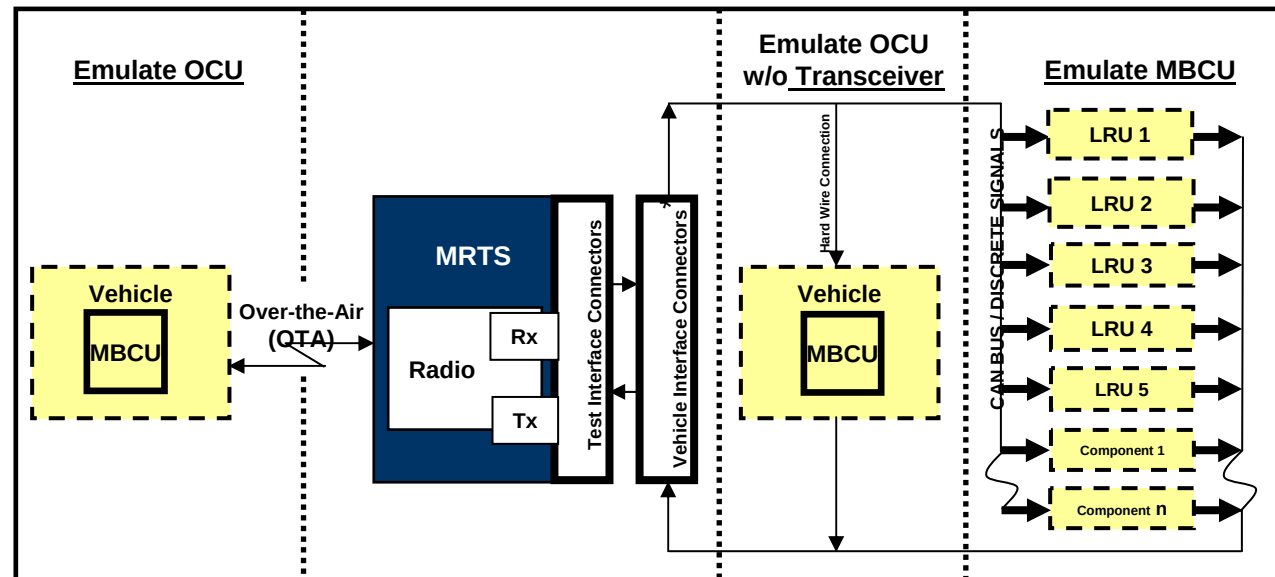
- Operation and Maintenance Procedures
- Diagnostic Specialist Specializing in LUGVs

- **Robotic Test**

- Robot Operations
- Test Scenarios
- Data Collection, Reduction, and Analysis



- System Level Test Asset
 - Isolate failures to the LRU level
 - Provides verifiable repeatable processes for isolating failures in large ground robotic systems
 - Reduces maintenance time
 - Provides logistical support data
 - Provides reliability data
-
- Three Phase Approach
 - Emulate the OCU, and test vehicle using over the air communications
 - Emulate the OCU, and test vehicle using hard wire connection (by passing radios)
 - Emulate the Main Computer to exercise individual LRUs
 - Common hardware/software infrastructure design to allow testing of multiple types of systems with single test set concept.

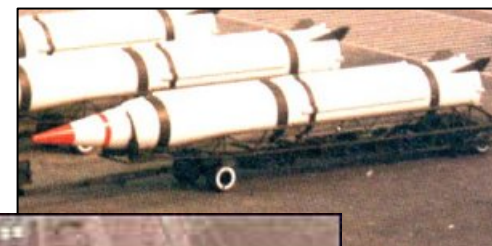


*Vehicle Interface Connector is unique to each Test Setup

BFA Systems Experienced in Space & Intelligence Areas:

Range of Expertise

- Personnel with over 45+ years of combined support to DIA Missile and Space Intelligence Agency & the National Air and Space Intelligence Center
- Experienced with Space (Ground Control, Satellite & Transportation Systems) and Counterspace Systems Analysis, Development, Operations and Fielding
- Experienced Career Intelligence Officers & S&TI personnel



Enabling Elements

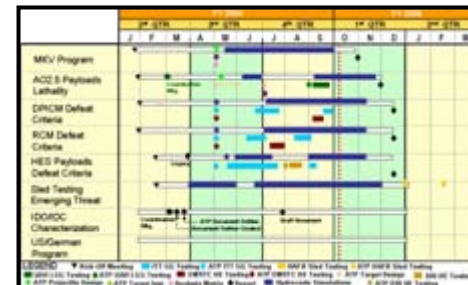
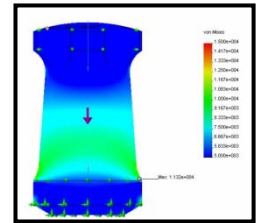
- Personnel with SCI active clearances
- TS Facility Clearance
- SCIF able area
- DD 254 requiring access to SCI



Threat Lethality Engineering

Lethality Program Management

- Lethality Assessment of BMD Systems Against US Threats (High Explosive, Nuclear, Chemical, Biological, etc.)
- Lethality Experiments
 - Full-Scale Impact Testing
 - Full Scale Arena (Detonation) Testing
 - Scaled Light Gas Gun Testing
- Hardware Fabrication
 - Projectile Design & Manufacturing Oversight
 - Target Design & Manufacturing Oversight
 - Test Set-up
- Scheduling & Budgeting
 - Test Planning
 - Continuous Interface with Prime Lethality Contractor (ITT Systems) to Maintain Schedule & Budget
 - Interaction & Planning with Test Ranges
 - Monthly Accrual Reporting on all Contractors

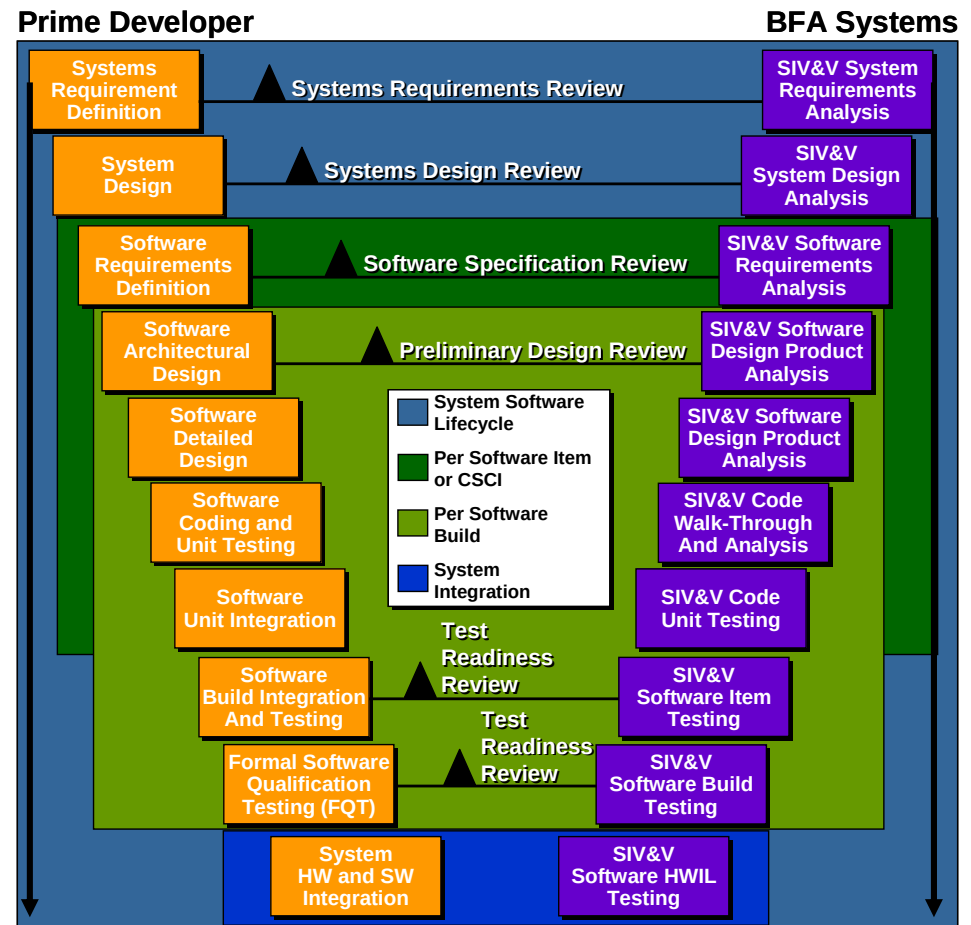


Test Data is Provided to the Lethality & Collateral Effects Communities to Validate and Improve Predictive Code Capabilities (PEELS, PEGEM, KIDD, Hydrocodes, Etc.)

Standard Software IV&V Process

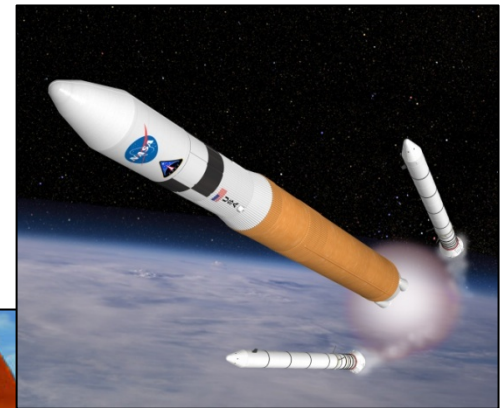
BFA Systems Engineers Have Extensive SIV&V Experience

- Comprehensive SIV&V Planning
- Interface with Customer and Prime
- Approach Mirrors Software Lifecycle
- Based on IEEE Standards
- Results:
 - Requirement Traceability
 - Risk Assessment
 - Product Maturity Assessment
 - Specification / Process Compliance
 - Defects Uncovered and Identified
 - Problems Understood and Reported
 - System / Software Usability Assessed
 - Increased Confidence in Software
 - Programmatic Impact Visibility
 - Technical and Schedule Risk Reduced



Capabilities

- Programs
 - Shuttle
 - Solid Rocket Booster
 - Redesigned Solid Rocket Motor
 - SSME
 - Constellation
 - Ares I/J2-X
 - Ares V/RS-68
 - Lunar Missions
- Capabilities
 - System Engineering
 - Integration
 - Test Set
 - Robotics
 - Verification and Validation
 - Models and Simulations



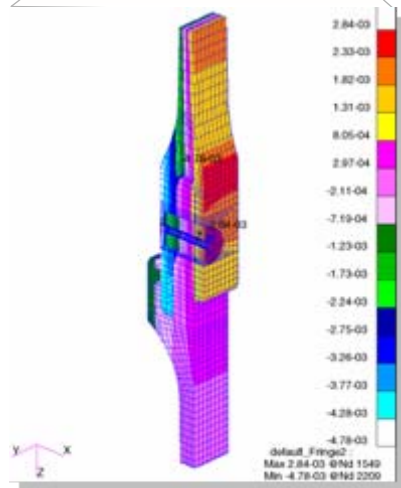
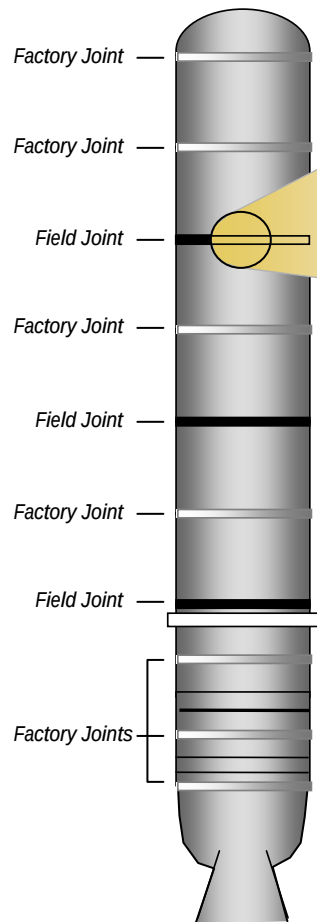
Structural Analysis

Examples of Structures Analyzed

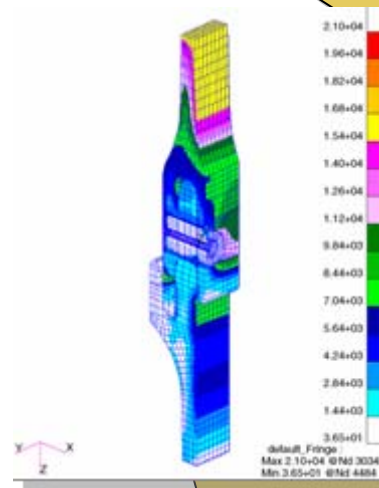
- Missile Aeroshells/Control Surfaces
- Solid Rocket Motor Cases
- Liquid Rocket Fuel Tanks
- Wind Tunnel Model Components

Types of Results Obtained Using Classical and Finite Element Techniques

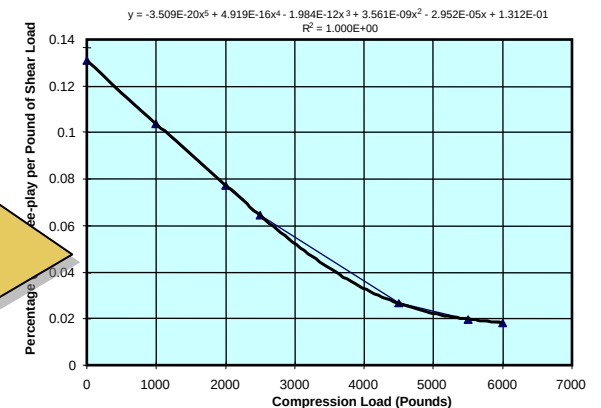
- Stress Contour Plots
- Displacement Contour Plots
- Deformed Shape Plots
- Natural Frequencies
- Mode Shapes
- Buckling Loads
- Dynamic Responses
- Power Spectral Densities
- Load Paths and Transmissibility
- Temperature Gradients
- Thermal Stresses
- Mass Properties



Displacement Contour



Stress Contour



Our Promise:

BFA Systems, Inc. promises to provide exceptionally innovative engineering support and software integration services that provide incredible insight to improve national business and defense productivity.

BFA Systems is striving to:

- ❖ Promote a Professional, Collaborative Working Environment
- ❖ Maintain open Communication With Customers and Peers
- ❖ Succeed the Needs of the Customer
- ❖ Deliver Long-Term and Quick Turnaround Quality Products
- ❖ Provide Innovative Analytical Solutions with Outside-the-Box Thinking