NDIA

Beyond SBIR Phase II Conference

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Innovative Manufacturing Process Improvements

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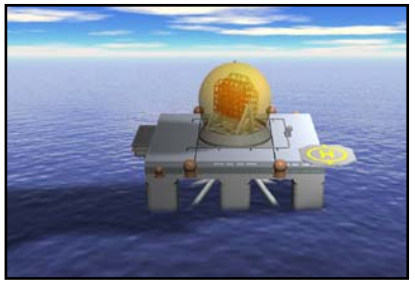
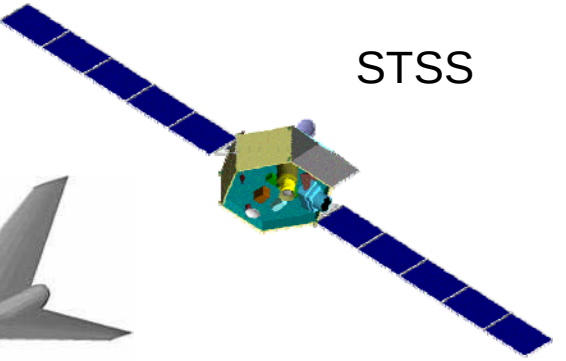
Agenda

- MDA/DEP Focus
- Topic Being Published
- Key Issues
- Summary of Topic
- Contact Information
- Questions?

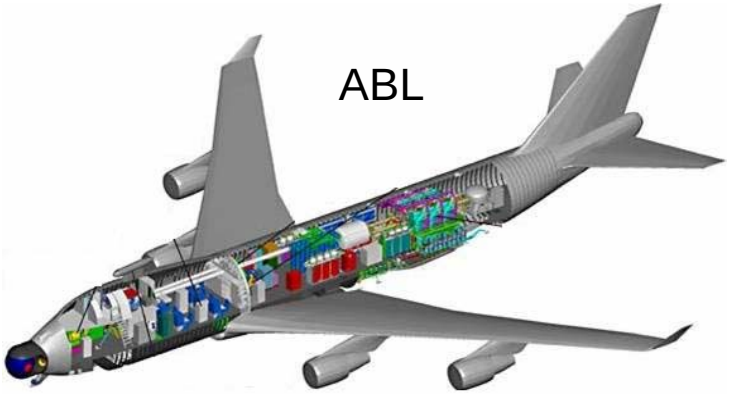
BMDS Elements



RADAR & RF
(Sensors)

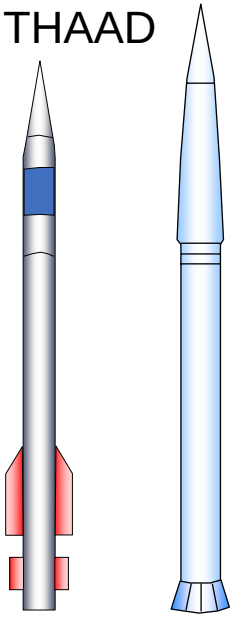


STSS



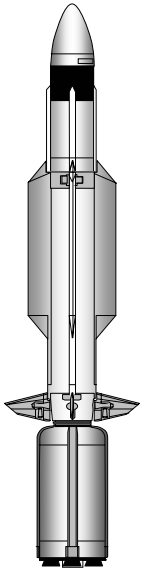
ABL

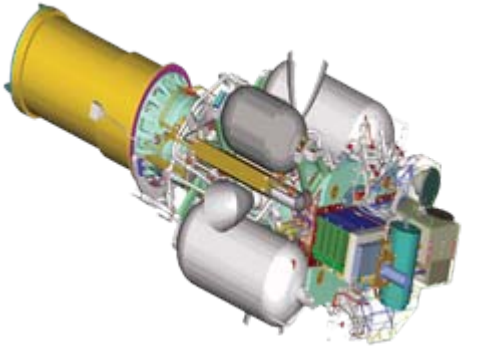
THAAD



PAC-3

SM-3 Aegis BMD





GMD/EKV

MDA/DEP FOCUS

- BMD System/Element Near Term Spiral Development
  - Potential For Near-Term Insertion (1-3 Years)
  - EMRL Of 3 Or higher
  - Demonstrated Capabilities For Multiple Applications
  - Component Commonality
  - Modularity/Scalability
- Demonstrate Producibility
  - Best Industry Practices
  - Foster Tie-in With MDA Primes, 1st, 2nd, and 3rd Tier

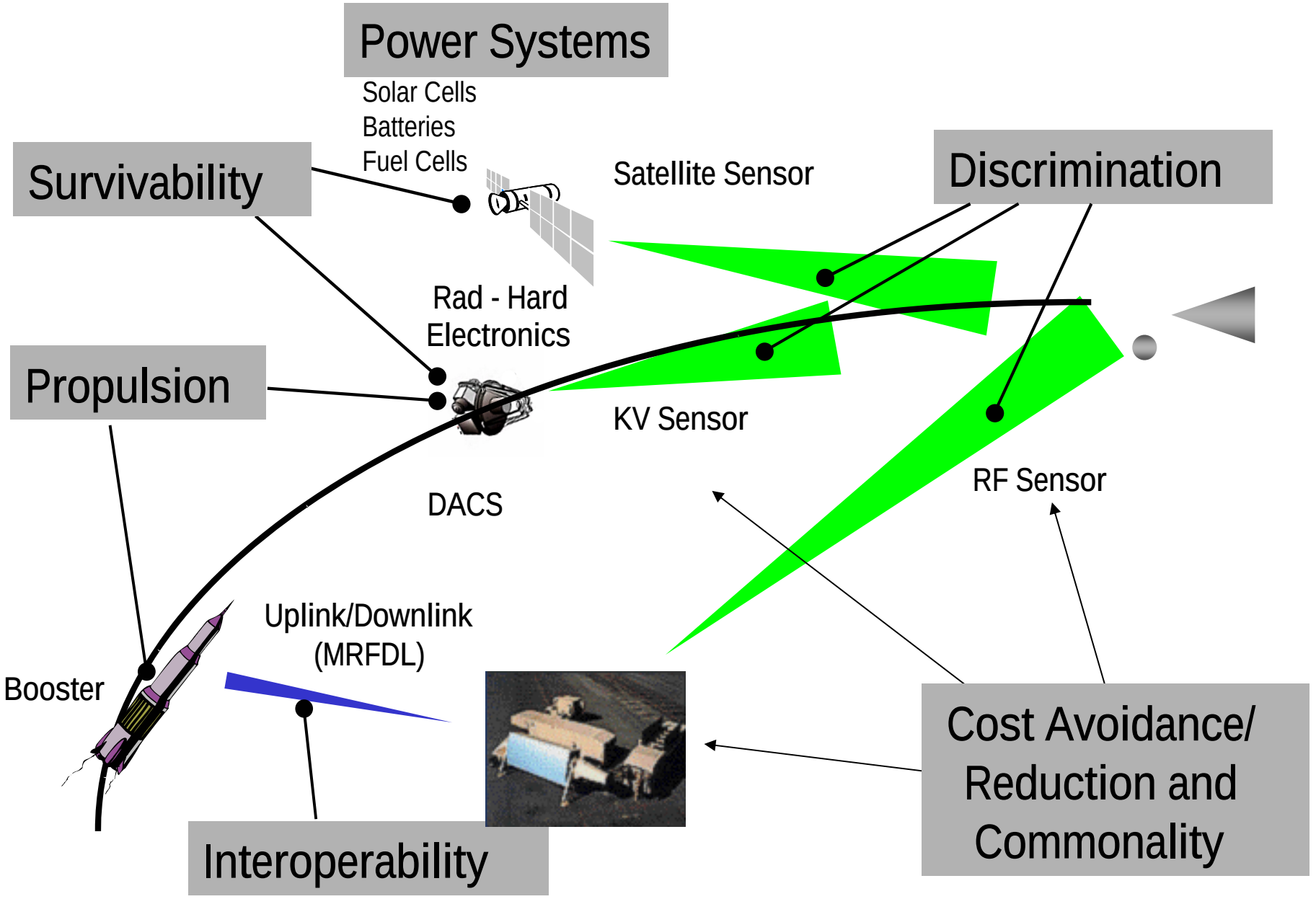
Focused On Leverage / Cost Sharing

Topics:
Innovative Manufacturing Process Improvements

Develop and apply innovative manufacturing processes that improve capabilities, sub-systems and component performance, product quality and reliability, reduce unit costs, reduce cycle time, reduce process variability, and enhance manufacturing yields in these technical areas:

- Advanced Missile Materials and Process Technologies
- Ballistic Missile Defense System Innovative Power Generation and Storage Devices
- Improved Manufacturing Processes for Propulsion Technology
- Innovative Manufacturing Technologies for Low Cost, High Reliability Electronic Packaging
- Manufacturing Technology Innovations for Advanced Electro Optical Components/Systems for Missile Defense Applications
- Mitigating Lead-Free Issues in Electronic Circuit Board Manufacturing and Repair
- Production Enhancements for Integrated Anti-Tamper Technologies

Key Issues


Power Systems
Solar Cells
Batteries
Fuel Cells
Survivability
Satellite Sensor
Discrimination
Rad - Hard
Electronics
Propulsion
KV Sensor
DACS
RF Sensor
Uplink/Downlink
(MRFDL)
Booster
Cost Avoidance/
Reduction and
Commonality
Interoperability

Electro-Optical Components/Systems

- **Identify and develop innovative manufacturing, packaging, integration, and processing technology for developing robust and reliable seeker/sensor components and electro-optical devices for missile defense applications.**
- **Areas of interest:**
  - Materials processing, manufacturing, packaging, or integration of components used for cold shield, thermal vacuum housing, sensor cryogenic interface, integrated dewar assembly, transmission windows and anti-reflective coating in missile interceptor or satellite seeker units
  - Design, packaging, and integration techniques for producing fiber coupled laser diode modules that have high optical coupling efficiency
  - Material processing and manufacturing of highly thermally conductive materials

Power Storage Devices

- **Improve the quality, reliability and producibility of batteries and related power sources, including concentrator solar arrays, through innovative ideas applied in creative ways to accommodate unique MDA system, subsystem and component requirements.**
- **Areas of Interest:**
  - Improved Manufacturing & Production
  - Primary Reserve Batteries for Missile Applications
  - Aerospace-grade Secondary Lithium Batteries
  - Active Primary Batteries
  - Space-qualifiable Radiation Hardened Solar Arrays

Manufacturing Processes for Propulsion Technology

- **Manufacturing improvements for low-cost, high-performance materials and components for solid boost motors as well as solid and liquid divert and attitude control systems (DACS).**
- **Areas of interest:**
  - High temperature ablation-resistant structural materials
  - Structural insulative materials
  - Liquid Propellants

Advanced Missile Materials and Process Technologies

- **Enhance the performance and/or producibility of missile body structures, components and thermal protection systems for implementation into ballistic missile defense (BMD) systems through development or utilization of novel materials and processes.**
- **Areas of Interest:**
  - Kill Vehicles: Components that optimize composite performance to achieve material properties approximating those of beryllium while maintaining or enhancing producibility, reliability, cost effectiveness, and volume/mass efficiency
  - Aerostructures: Lightweight integrated heat shield and airframe designs which enhance the current thermal protection system (TPS) designs and improve insulative performance of the TPS, lightning strike performance and rain erosion performance

Innovative Manufacturing Technologies for Low Cost, High Reliability Electronic Packaging

- **Develop and demonstrate innovative manufacturing technologies, test/inspection procedures, accelerated test methods and/or software tools to mitigate program risk relative to the insertion of low-cost electronic packaging technologies into high performance and high reliability MDA/military systems.**
- **Areas of interest:**
  - Reliability Assessment tools that can accurately predict long term reliability failure mechanisms
  - Test procedures and protocols that will manifest failure mechanisms in realistic test times
  - Application of reliability tools and assessment protocols on new manufacturing processes and microelectronic components to establish long term life reliability
  - Models and tools that establish correlations between application stresses and test methods for low cost packaging technologies
  - Develop cost effective reliability test methods for the application of new electronic manufacturing technologies and application test protocols

Mitigating Lead-Free Issues in Electronic Circuit Board Manufacturing and Repair

- **Mitigate issues in electronic circuit board manufacturing and repair related to lead-free solders and surface finishes.**
- **Areas of Interest:**
  - New and reliable processes for soldering lead-free Ball Grid Array (BGA) electronic components on circuit boards manufactured with tin-lead solder and subsequent reworking circuit boards with BGAs
  - New conformal coating materials to mitigate the risk of tin whisker caused short circuits on electronic assemblies

Production Enhancements for Integrated Anti-Tamper Technologies

- **Develop and implement manufacturing techniques to enhance the integration of Anti-Tamper into the weapons systems or component manufacturing processes.**
- **Areas of Interest:**
  - Seamless integration
  - Reduce time, technical risk, or cost

MDA/DEP Expectations

What MDA/DEP Wants To See In SBIR Responses:

- Demonstration Of New And Innovative Process Technologies That:
  - Reduce Cost,
  - Reduce Manufacturing Cycle Time,
  - Improve Performance, And/Or
  - Improve Reliability
- Technology Roadmaps For Implementing Promising Manufacturing Technology Processes Into Current Or Future Supply Chain
- Plans For Near Term Insertion Into BMD Element Systems, Subsystems, Or Components

Questions

- Questions after August 19, 2007 need to be submitted through the SBIR/STTR Interactive Topic Information System (SITIS) http://www.dodsbir.net/sitis/
- For reasons of competitive fairness, direct communication between proposers and topic authors is not allowed starting August 20, when DoD begins accepting proposals for this solicitation.
- However, proposers may still submit written questions about solicitation topics in which the questioner and respondent remain anonymous and all questions and answers are posted electronically for general viewing until the solicitation closes.
- All proposers are advised to monitor SITIS (07.3 Q&A) during the solicitation period for questions and answers, and other significant information, relevant to the SBIR 07.3 topic under which they are proposing.

BACKUP

Contact Information

- IPT Coordinators:
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  - Barb Foley, MDA/DEP, 703-882-6179, barbara.foley.ctr@mda.mil
- IPT Members:
  - Electro Optics - Steve LeClair, MDA/DEP, 703-340-4369, steve.leclair@mda.mil
  - Power Systems - Sam Stuart, NSWC/Crane, 812- 854-5958, samuel.stuart@navy.mil
  - Propulsion - Greg Stottlemyer, MDA/DEP, 703-882-6321, gregory.stottlemyer@mda.mil
  - Advanced Materials - Eddie Japson, MDA/DEP, 703-882-6313, eddie.japzon@mda.mil
  - Advanced Manufacturing Processes - Steve Linder, MDA/DEP, 703-882-6318, steve.linder@mda.mil
  - Anti-Tamper – Doug Simon, MDA/DEP, 703-882-6211, douglas.simon@mda.mil