

# **BMDS Test Philosophy To The National Defense Industrial Association**



**DISTRIBUTION STATEMENT A.  
Approved for Public Release  
06-MDA-1983 (26 OCT 06)**

**6 OCT 06**

**Maj Gen Chris T. Anzalone, USAF  
Deputy for Test / Deputy for Integration, Logistics & Fielding  
Missile Defense Agency**



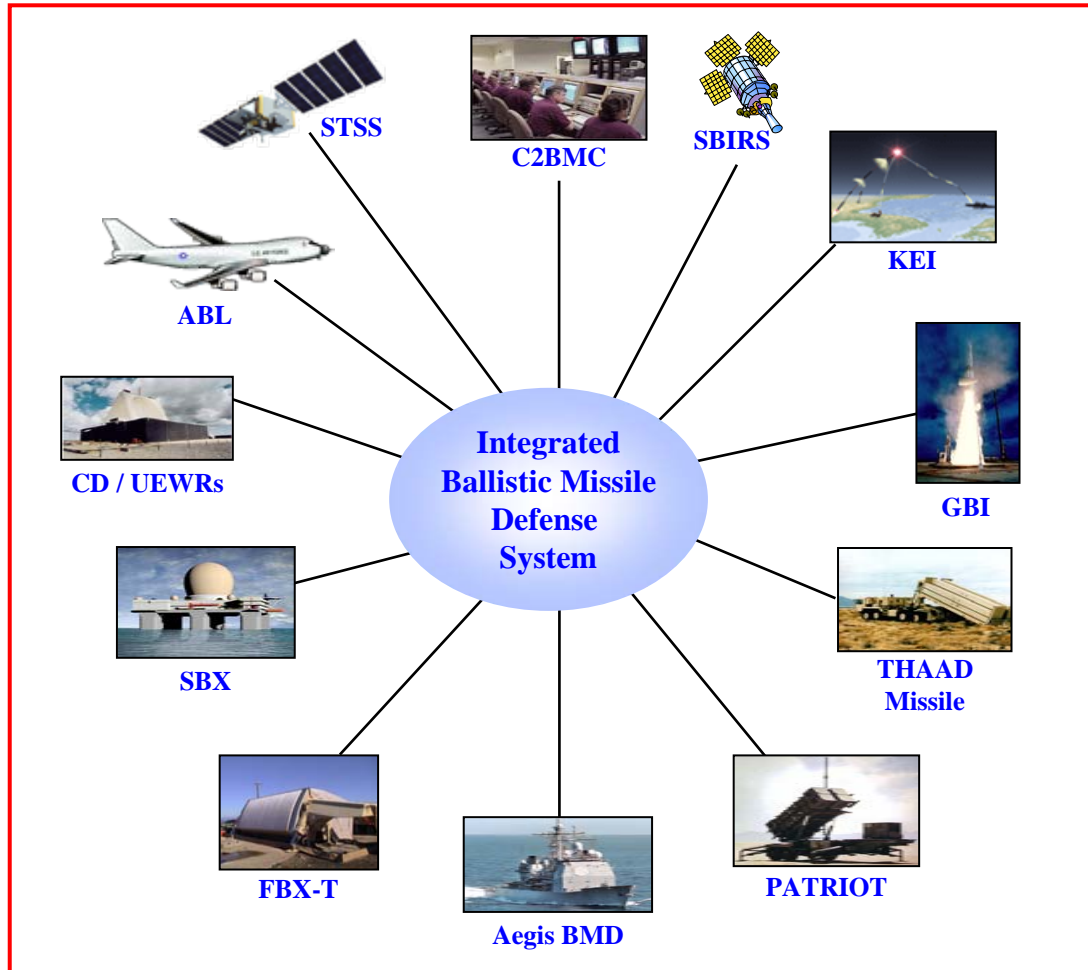
# BMDS Test Environment

---

- **Complex integration of multi-Service components at various levels of system maturity**
- **Engagement space covering air, land, sea, and space**
- **Limited resources and time to conduct extensive ground and flight tests**
- **Leading-edge technology introduces safety and environmental issues**
- **Emerging international interests**
- **Spiral development yielding multiple fielding decisions**
- **Research & Development / future concepts validation tests**



# Strategic Approach Creating “A Single, Integrated System”



**Achieving Synergistic Capabilities From Many Individual Systems !**



# Test Program Philosophy

---

- **Deliberate, rigorous, disciplined technical approach**
  - **Government direction, oversight, and accountability**
  - **Critical feedback to system engineering development**
- **Tight coupling of modeling and simulation (M&S), ground testing, and flight tests**
  - **M&S verified and validated through ground and flight test data**
  - **Ground testing helps to define boundaries of system capability**
  - **Flight test matrix spans the system capability envelope**
  - **System performance verification realized through M&S, ground tests, and flight tests**
- **Flight test planning and mission assurance**
  - **Rigorous control of flight mission configuration**
  - **Series of comprehensive reviews prior to flight missions**
  - **Review panels leverage differing perspectives from highly experienced personnel drawn from a variety of disciplines and organizations**
- **Operational realism instituted in flight testing**
  - **Early OTA involvement in the planning and conduct of each mission**
  - **DT / OT / warfighter feedback critical to engineering development**



# Integrated Test Strategy

- **Ground Testing**

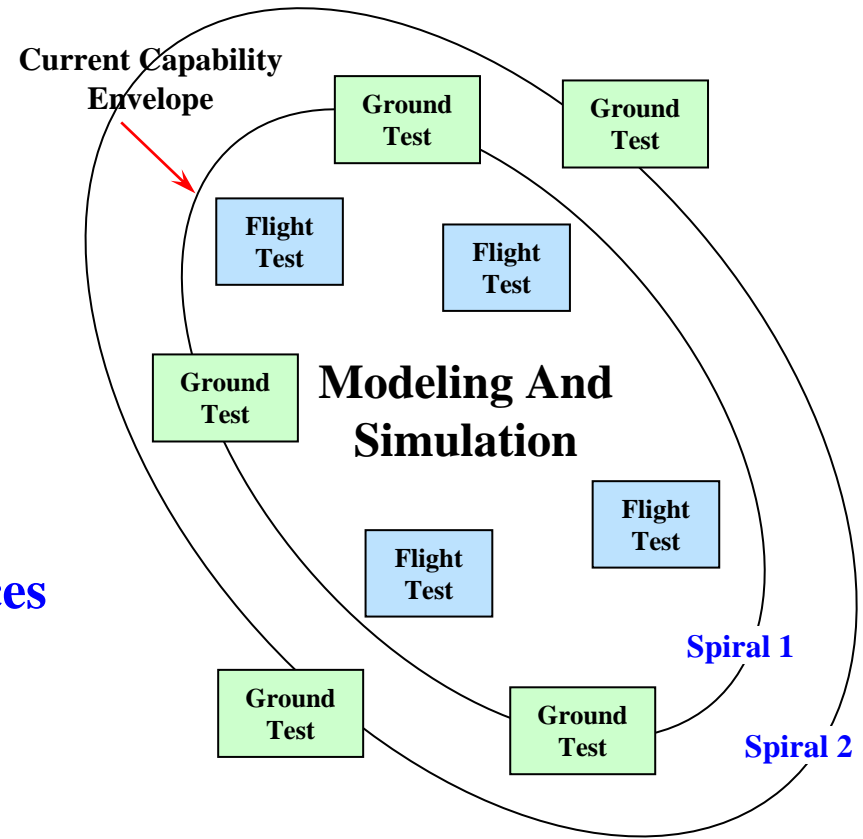
- Tests conditions difficult to replicate in flight
- Tests integrated BMDS
- Validates Modeling & Simulation
- Defines capability boundaries
- Reduces flight test risk
- Provides statistically meaningful number of data points

- **Flight Testing**

- Test to verify, not to discover
- Spans the capability envelope
- Verifies BMDS engagement sequences
- Emphasizes operational realism

- **M&S**

- Assesses capability envelope
- Verifies TBSS requirements
- Anchored with ground and flight test data







# Adding Operational Realism





# In The Last 90 Days 4 For 4 Intercepts

**Midcourse**



- **Aegis BMD, 22 JUN 06**

— *Medium-range target* —

**Terminal**



- **Terminal High Altitude Area Defense, 12 JUL 06**

— *Short-range target* —

**Terminal**



- **Patriot PAC-3, 31 AUG 06**

— *Short-range target* —

**Midcourse**



- **Ground-based Midcourse Defense, 1 SEP 06**

— *Long-range target* —



# Challenges

---

- **Balancing DT / OT testing during spiral development**
- **Addressing multiple combatants issues**
- **Scoping DT / OT testing to support transition to Services**
- **Synchronizing OT events with DT flight tests**
- **Transitioning between concurrent test and operations**
- **Integrating coalition partners into future block test programs as system matures**

# DF / DT Merger





# Initial Mission Analysis

---

## **DT/DF Mission**

**Orchestrate and Synchronize Effort to Integrate,  
Test, and Field the BMDS**

## **Mission Objectives**

- **Reduce cycle time without increasing costs**
- **Deliver an interoperable and sustainable BMDS**
- **Exploit synergistic effects on BMDS performance**
- **Facilitate system trade options**
- **Enable delivery of I-BMDS Blocks, as promised**
- **Organize and shape the workforce to these ends**
- **Sustain and plan logistics**



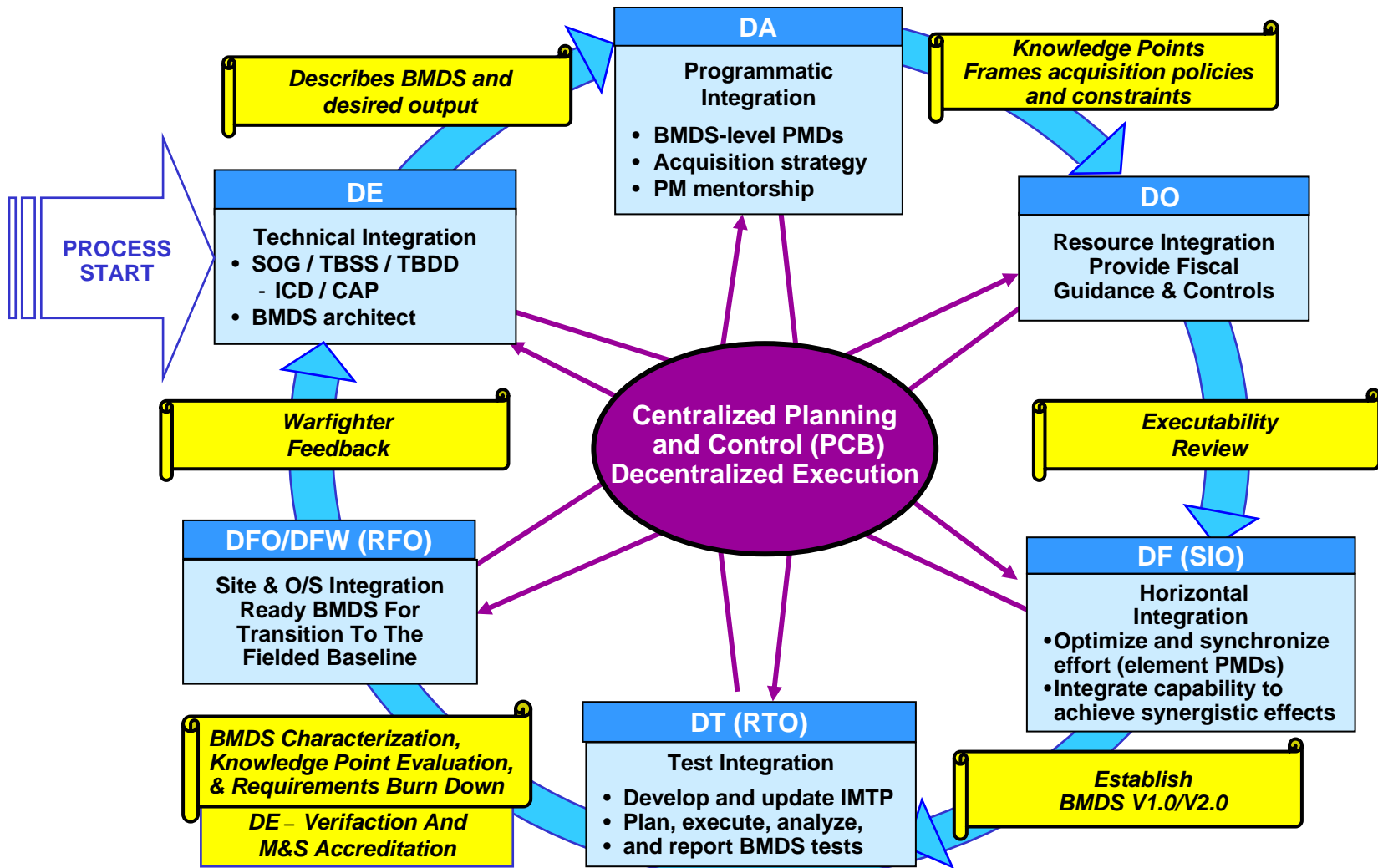
# Integrating Principles

---

- **Integrate early and often**
- **Design in flexibility and agility**
- **Make risk-based trades at the system level**
- **Strong system engineering design as a basis for development**
- **Rigid adherence to Interface Control Documents (ICDs), system specifications, and mission assurance to ensure interoperability**
- **Co-locate like Centers of Excellence (COEs) to optimize resources**



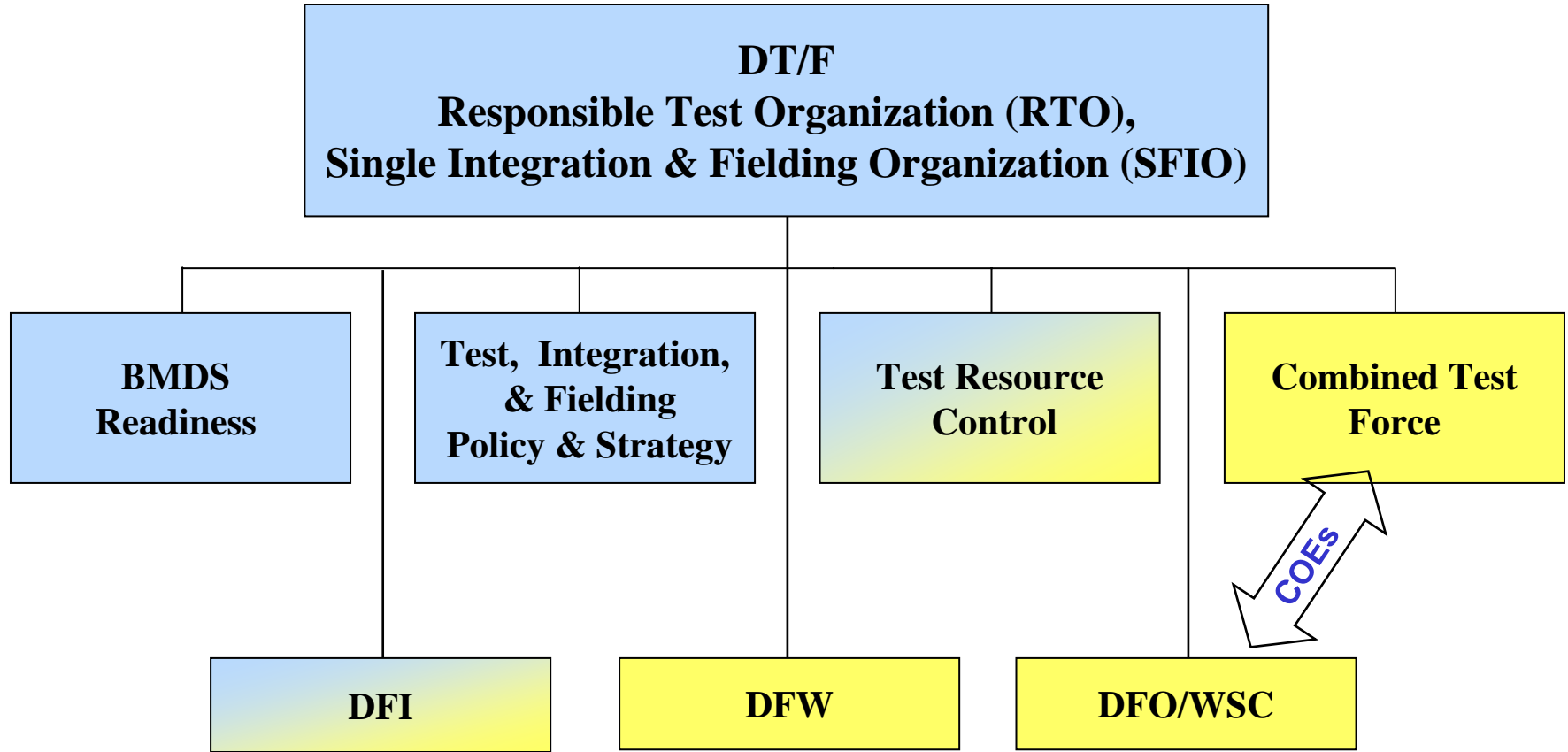
# Integration R Us



**Install and sustain a management structure that facilitates innovation, technical insertion, collaboration and workforce empowerment to optimize the BMDs**



# Merging DT And DF



Centralized planning and control

Decentralized execution



# Proposed Timeline

