A Business Case for Simulation Based Acquisition

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**Supplementary Notes**  

**Abstract**

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12
DoD 5000 and AFI 16-1002 direct the more effective use of modeling and simulation, development of integrated data environments, and its use as a method of management.

Leadership and Program Managers looking for assurance that their investment in SBA will pay off.

Program Managers are looking for direction from either the user or Headquarters to expend funds on M&S and SBA.

- Few are jumping at the chance to be first.

Industry hesitant to move forward without PM concurrence.

- Fear negative influence based upon unproven management approach.

How do we break the barriers to application?
M&S Creates Environment
• During Expeditionary Force Experiment 98, M&S Provided
  • 2,500 Intelligence Messages Per Day
  • 2,106 Mission Updates Per Day
  • 12,677 Enemy Position Updates Every 10 min
  • With an Average of 420 Sorties Per Day
• Without M&S, Systems Could Not Be So Stressed
  • Cost Would be 500 More Controllers ($800K)
  • $8M Per Day to Live-Fly Constructive or Virtual Sorties
  • Return on Investment (ROI) = 60:1 (Estimated)

“Unlike the scripted, paper-driven exercises of the past, computer simulation has become a must. In fact, it may be the only way to represent the complexities of future warfare.” (1998)

Lieutenant General Santarelli, PACAF/CV

Note: Based upon research by Dr Steve Gordon, AFAMS & Mr Marc Erlandson, MSIAC
• Boeing 747 (M&S) versus Boeing 777
  • Shims/Aircraft Reduced from 10,000 to 50
  • Scrap Reduced 30%; Rework Reduced from 30% to 3%

  • Reduced Design Release Time (33%), Design Cost (27%), Manufacturing Cycle Time (19%), Factory Floor Space (20%), Parts Count (24%), and Fasteners (78%)

• Radar Warning Receiver Redesign
  • Traditional vs Concurrent M&S-Supported (96 Man-Months vs 46 Man-Months)

• Reforger Battlestaff Training Exercises in Germany
  • $73.9M in 1988 reduced to $10.5 M in 1993 through the use of M&S

Note: Based upon research by Dr Steve Gordon, AFAMS & Mr Marc Erlandson, MSIAC
How Do We Approach the Business Case

- Do we try to pull together the historical data to show the success of SBA?
  - Never applied SBA fully
  - Yes, we have done M&S, but SBA is more than M&S
  - How do you build a convincing business case based upon incomplete and extrapolated data? – A major challenge

- Do we build the business case through action and success on existing efforts?
  - Requires a program that appears not doable using traditional methods – could mean high risk to SBA
  - Requires a program with great leadership presence /support
  - Requires immediate and continuous business case feedback to show value of the approach
  - Needs to be an effort that the PMs feel will potentially negatively impact them if they don’t participate
Some Potential Efforts & Programs Looking for a New Way of doing Business

- Global Strike Task Force
- The AF’s C2ISR Enterprise Integration
- Future Combat System
- Multi Mission C2ISR Aircraft
- ........
GLOBAL STRIKE TASK FORCE

- Leverages our nation’s technological strengths
- Operationalizes a leading-edge power projection concept
- Rapidly delivers massive firepower effects
- Enables 24 hour-a-day stealth
- Enables full spectrum follow-on forces
- Meets the challenges the future will present

Provides the Nation a new capability
GSTF System of Systems Constellation

GLOBAL STRIKE TASK FORCE

C2ISR elements in an aerospace context → GSTF End States

- Simulation Enhanced Acquisition
- Technology Enablers
- Legacy Systems Transition

- Industry Involvement Pivotal
- System of Systems Integrator
- Teaming Required
Migration Challenge

Multi-Sensor C2 Aircraft

CONOPs
Technology
Cost
Schedule

ISR
C2 / BM

U.S. AIR FORCE

AWACS
JSTARS
Global Hawk
Rivet Joint
ABCCC
Predator
Compass Call
E-6
E-4
U-2
DSP
SBIR
Global Hawk
SBR
Predator
MC2A
Requires an SBA Environment to Build and to Sustain Operations

C2ISR “To-Be” CONOPs
Our Challenge

- We keep looking to the past for ROI success – it may not be there
- SBA implementation success lies in what we do today and the future
- We must step forward now (Industry and Government)
  - We must overcome not invented here to move forward
  - We must find common ground that allows integrated cooperation without giving up competitive edge –
    - Whether it is stds at the infrastructure level,
    - A common methodology for sharing data
    - Level of insight provided
- We have framed the environment through the enablers – we need to start applying and integrating them
- We have efforts and programs that are too complex for traditional acquisition and sustainment methods – GSTF, FCS, MC2A, ……

SBA provides the framework for success