
Integrity - Service - Excellence

***A Business Case for
Simulation Based
Acquisition***



U.S. AIR FORCE

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Lay of the Land

- 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?



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Economics of Modeling & Simulation For Experimentation

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



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Economics of Modeling & Simulation For Acquisition/Training

- **Boeing 747 (M&S) versus Boeing 777**
 - Shims/Aircraft Reduced from 10,000 to 50
 - Scrap Reduced 30%; Rework Reduced from 30% to 3%
- **F-15E Traditional (1992) vs M&S (1997)**
 - 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

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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

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- **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

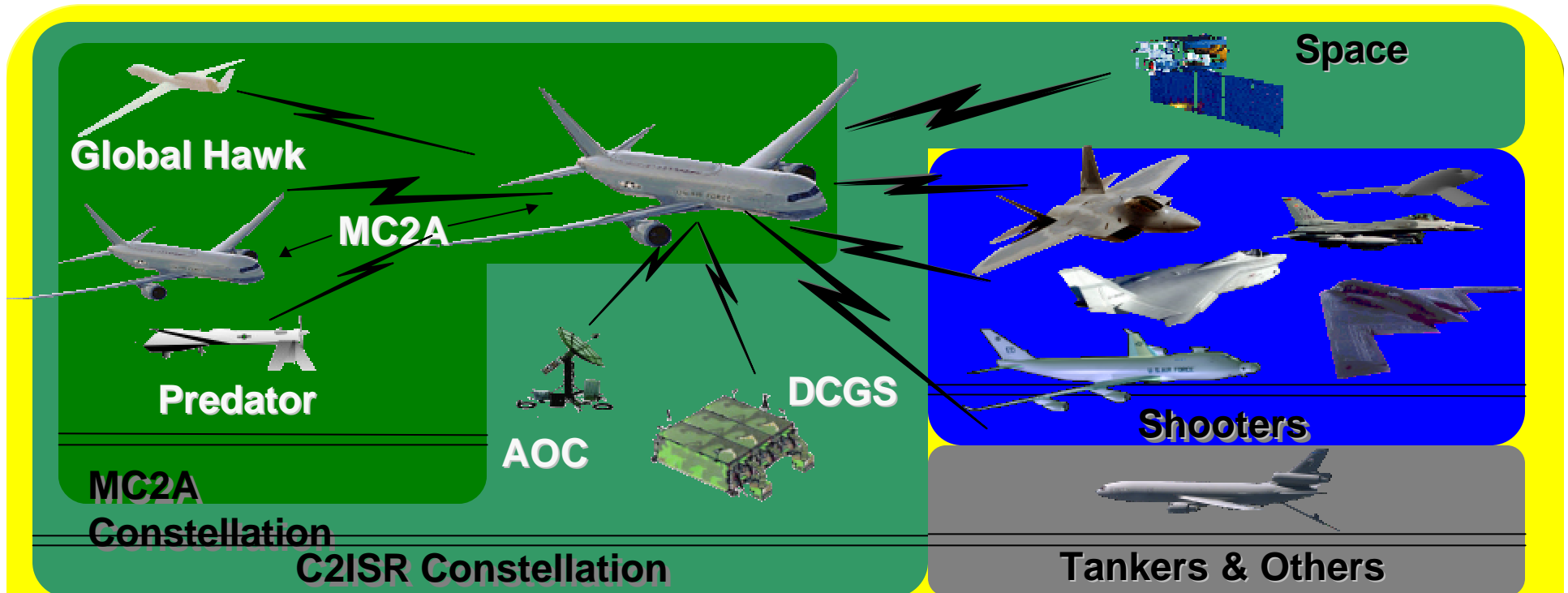
Meets the challenges the future will present

Provides the Nation a new capability



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GSTF System of Systems Constellation



GLOBAL STRIKE TASK FORCE

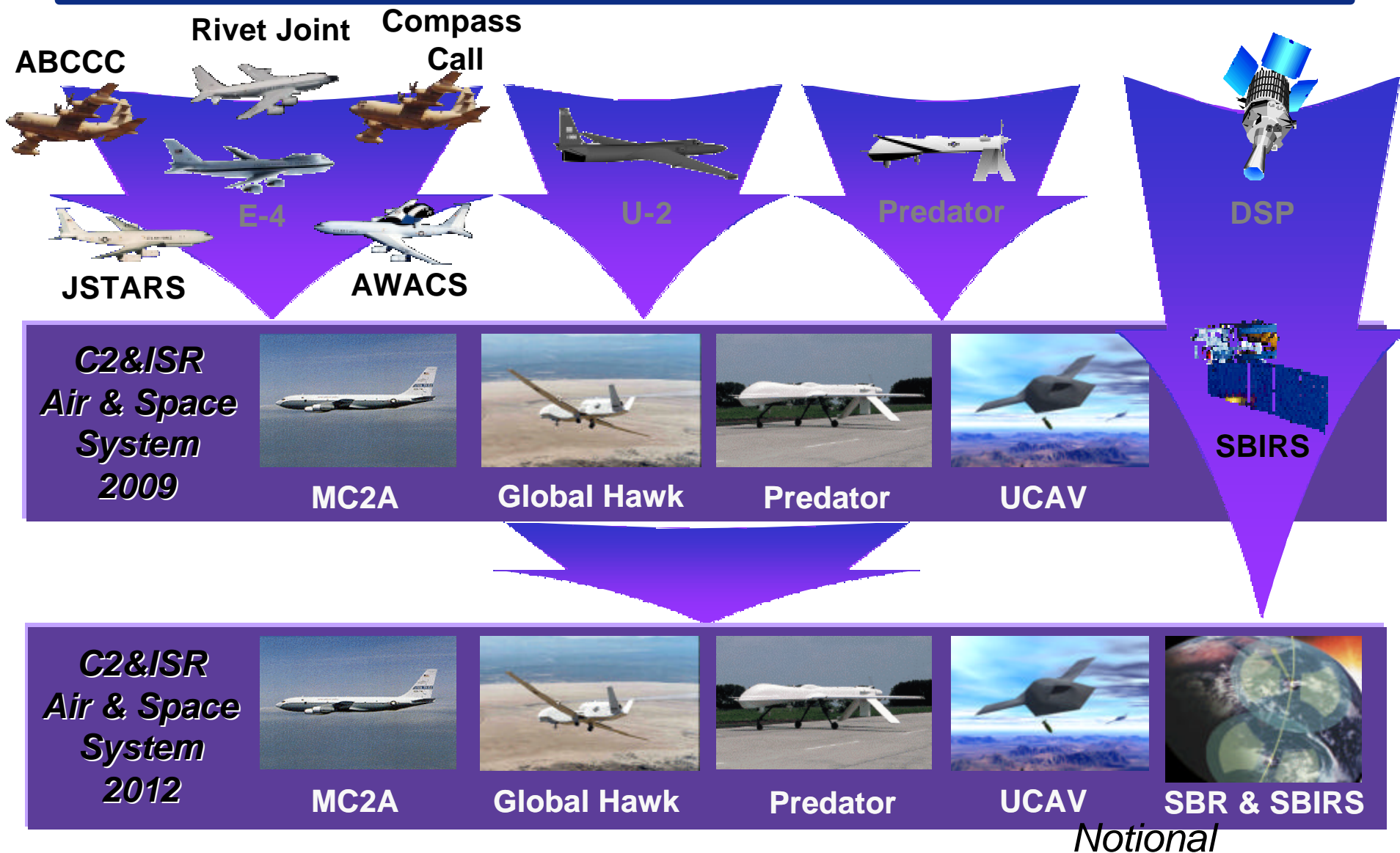
C2ISR elements in an aerospace context → *GSTF End States*

- Simulation Enhanced Acquisition
- Technology Enablers
- Legacy Systems Transition
- Industry Involvement Pivotal
 - System of Systems Integrator
 - Teaming Required



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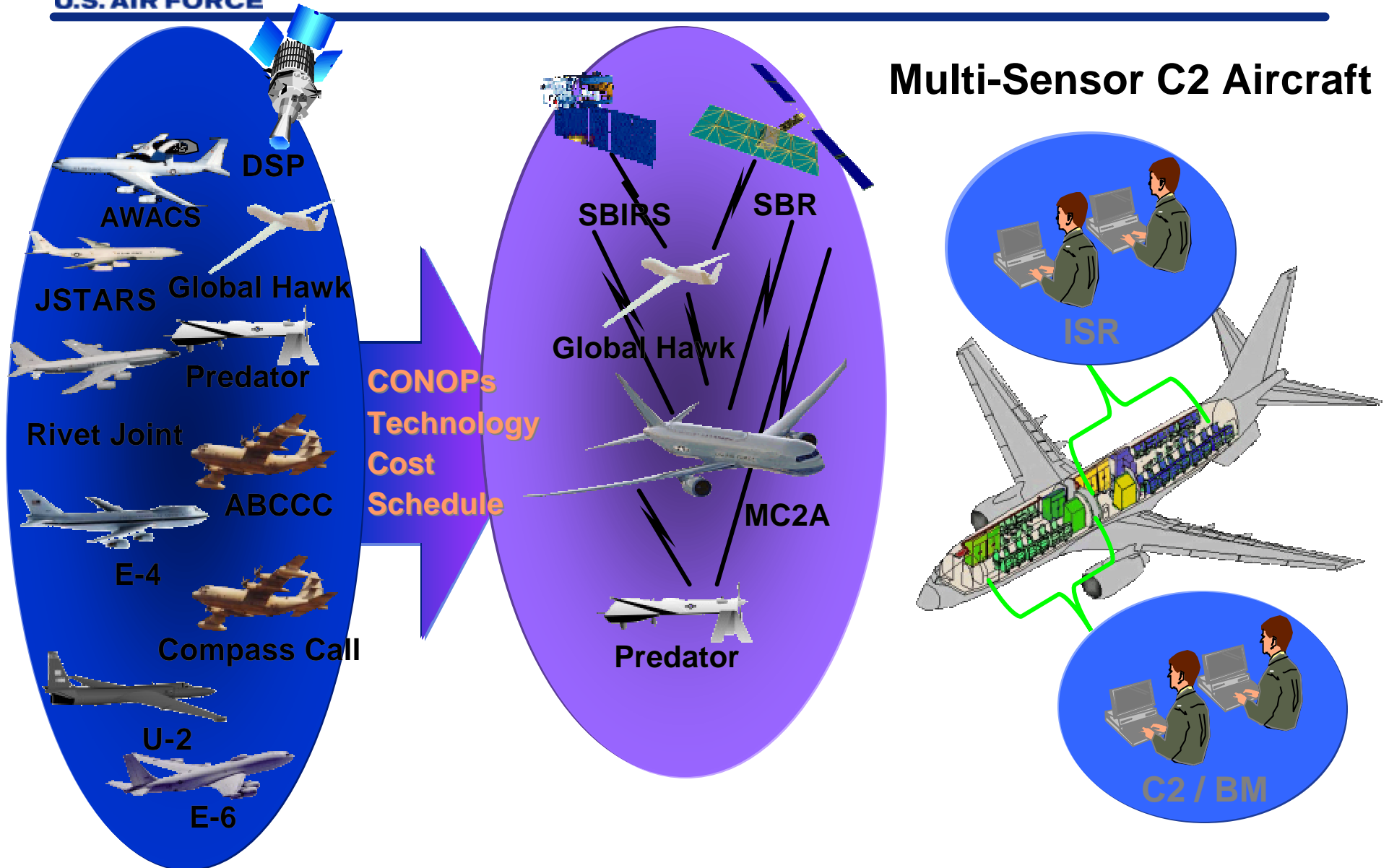
Capability Migration





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Migration Challenge

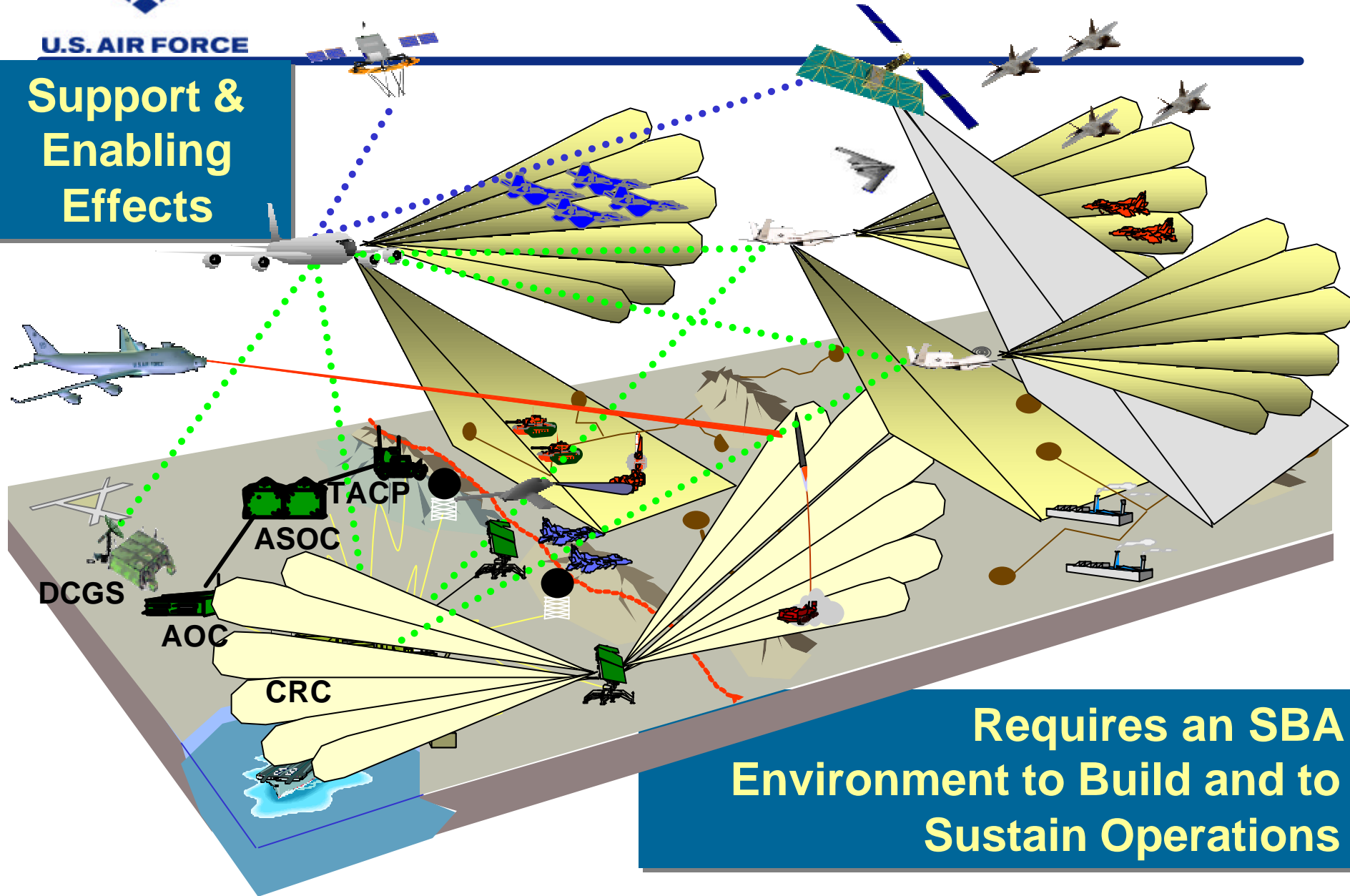




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Support &
Enabling
Effects

C2ISR “To-Be” CONOPs





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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