

RUSI/CGP Conference

**C4ISR Enterprise and MC2C ...
Complementary Enablers for C4ISR Integration!**

“Commanding Air and Space Power”



U.S. AIR FORCE

Colonel “Stormin’ Norman” Sweet
Chief, C2 Enterprise Planning and Integration Div
Deputy SPD, Multi-Sensor C2 Constellation

23-25 September 2002

DSN 478-6420, 781-377-6420

Norm.Sweet@hanscom.af.mil

Integrity - Service - Excellence

Report Documentation Page

Form Approved
OMB No. 0704-0188

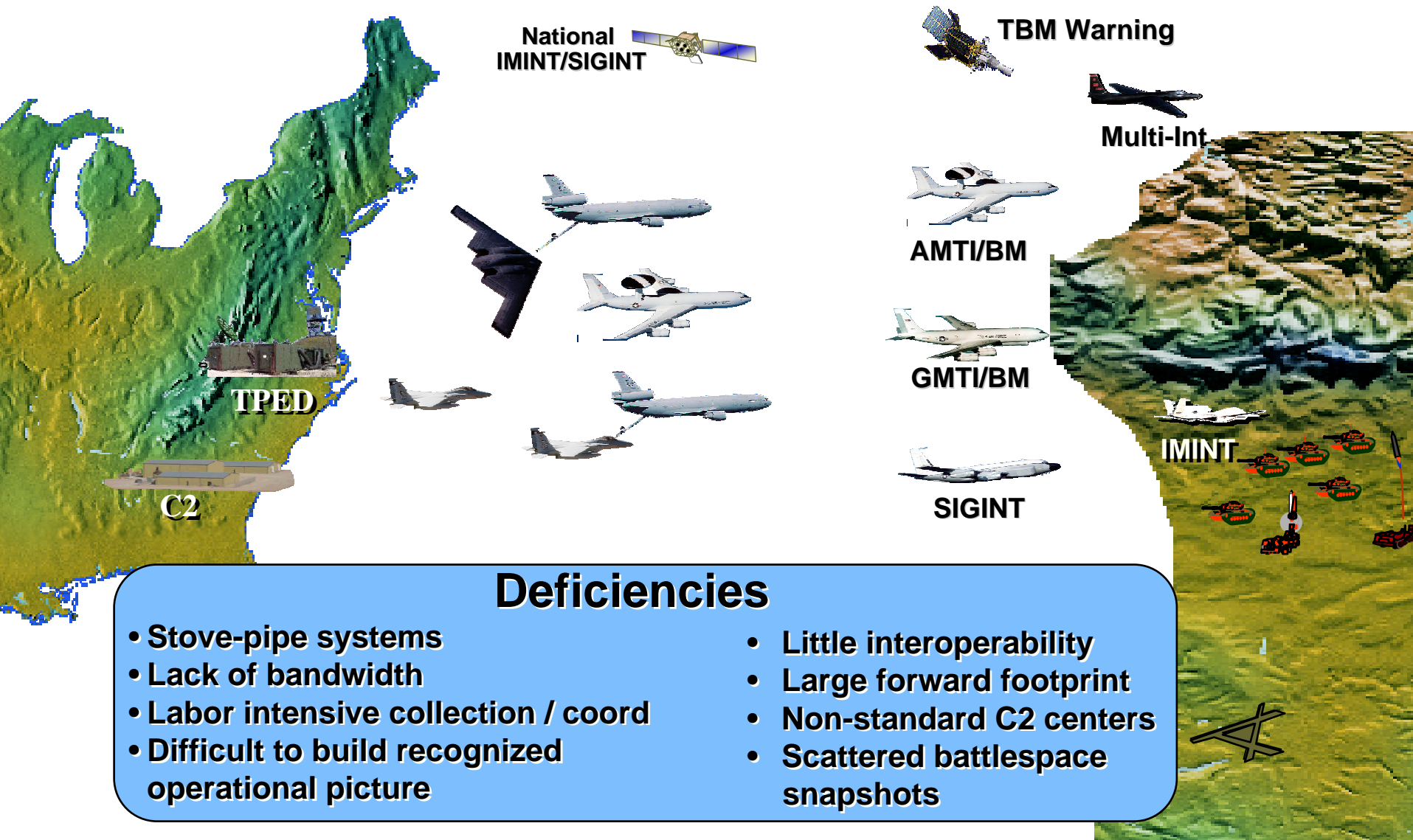
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

| | | | | | |
|--|------------------------------------|-------------------------------------|----------------------------|--|---------------------------------|
| 1. REPORT DATE 23 AUG 2004 | | 2. REPORT TYPE N/A | | 3. DATES COVERED - | |
| 4. TITLE AND SUBTITLE C4ISR Enterprise and MC2C Complementary Enablers for C4ISR Integration! Commanding Air and Space Power | | | | 5a. CONTRACT NUMBER | |
| | | | | 5b. GRANT NUMBER | |
| | | | | 5c. PROGRAM ELEMENT NUMBER | |
| 6. AUTHOR(S) | | | | 5d. PROJECT NUMBER | |
| | | | | 5e. TASK NUMBER | |
| | | | | 5f. WORK UNIT NUMBER | |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Air Force | | | | 8. PERFORMING ORGANIZATION REPORT NUMBER | |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) | | | | 10. SPONSOR/MONITOR'S ACRONYM(S) | |
| | | | | 11. SPONSOR/MONITOR'S REPORT NUMBER(S) | |
| 12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited | | | | | |
| 13. SUPPLEMENTARY NOTES See also ADM001711 Meeting C4ISTAR Requirements: Implementing and Exploiting Technology Solutions., The original document contains color images. | | | | | |
| 14. ABSTRACT | | | | | |
| 15. SUBJECT TERMS | | | | | |
| 16. SECURITY CLASSIFICATION OF: | | | 17. LIMITATION OF ABSTRACT | 18. NUMBER OF PAGES | 19a. NAME OF RESPONSIBLE PERSON |
| a. REPORT unclassified | b. ABSTRACT unclassified | c. THIS PAGE unclassified | | | |

Agenda

- **Operational Reality / Integration Challenge**
- **Air Force Integration Initiatives**
 - **Air Staff (AF/XI)**
 - **Air Force Materiel Command**
 - **Electronic Systems Center**
 - **C4ISR Enterprise Integration Office**
- **Multi-Sensor Command and Control Constellation (MC2C) Program**

Today's Operational Reality



Deficiencies

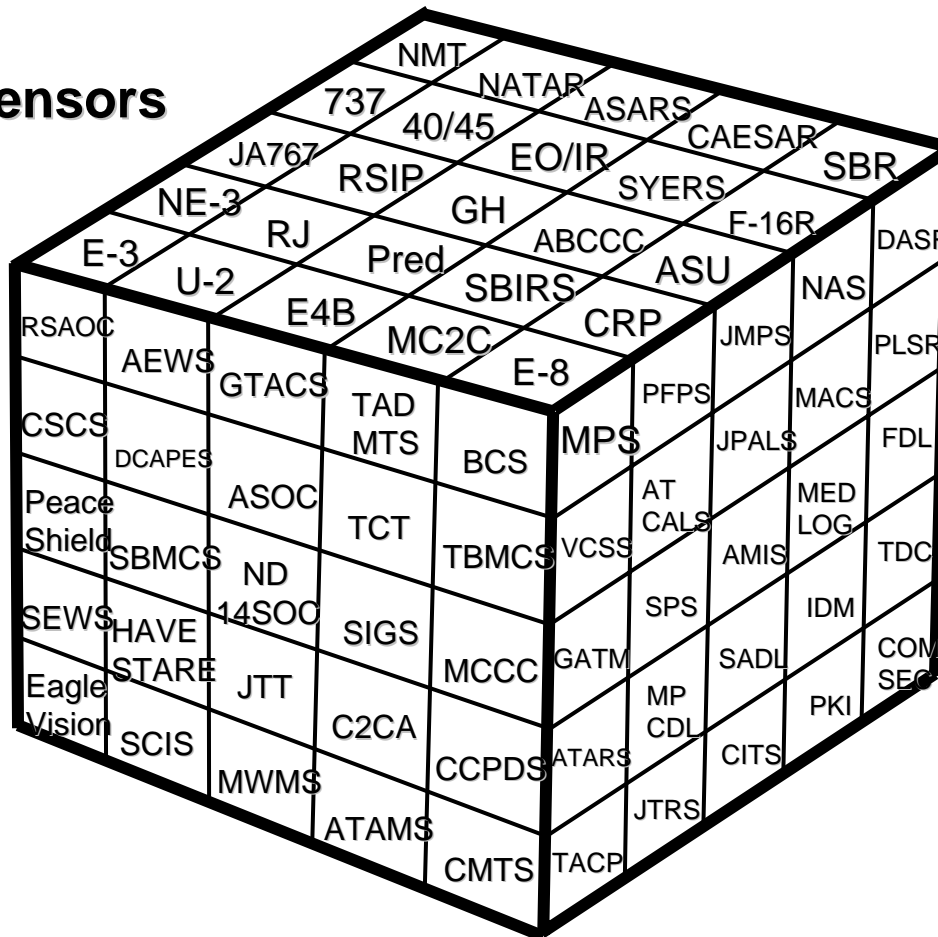
- Stove-pipe systems
- Lack of bandwidth
- Labor intensive collection / coord
- Difficult to build recognized operational picture
- Little interoperability
- Large forward footprint
- Non-standard C2 centers
- Scattered battlespace snapshots

“Data Overloaded, Information Starved”
Scientific Advisory Board (SAB)

C4ISR Integration “The Challenge”

Platforms, Sensors

**Grd Stations
& BMC3**



**Common
Integrated
Infrastructure**

- Comm
- GATM
- Mission Planning
- Force Protection

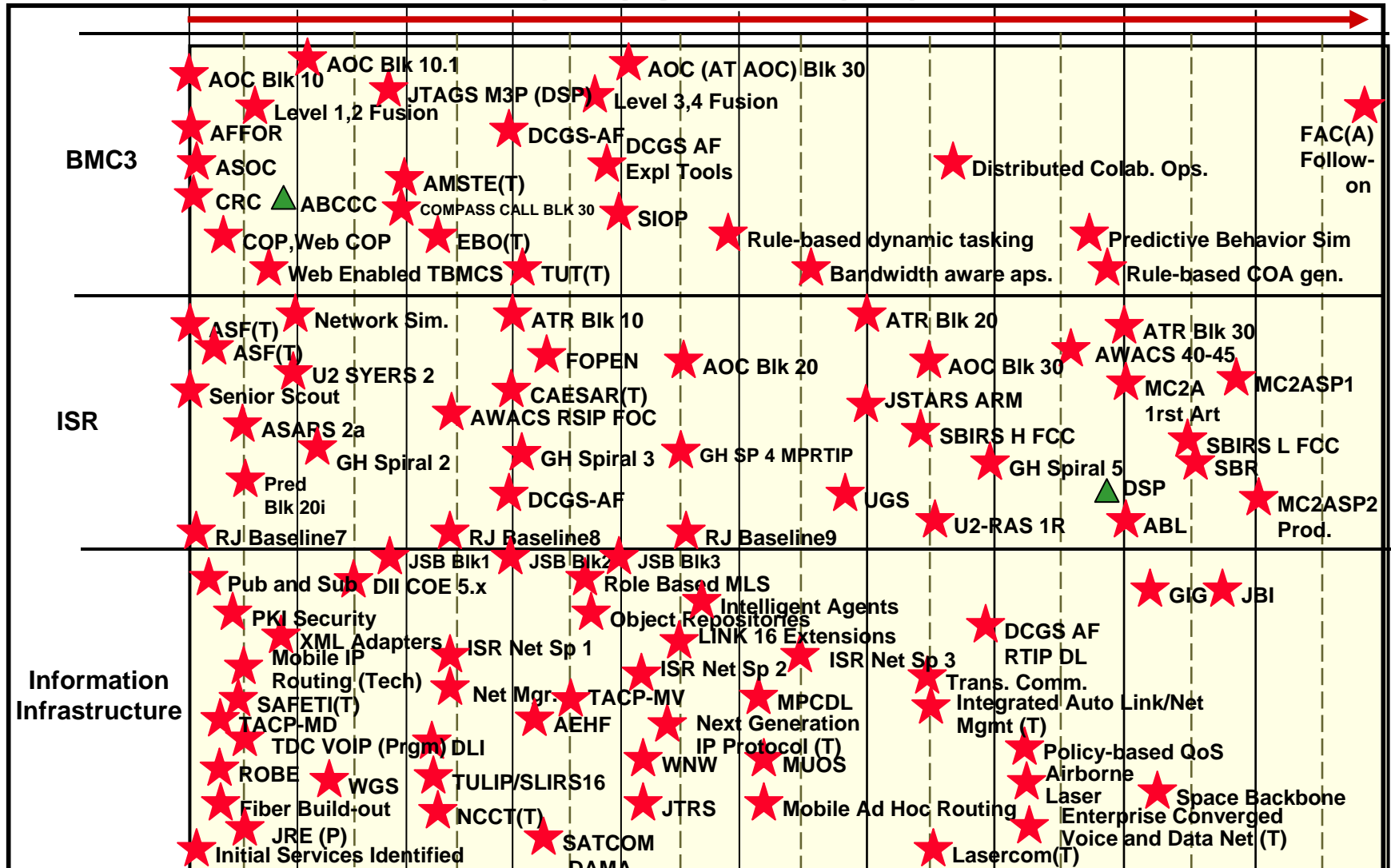
**Different Mixes for Different Task Forces
“Overarching Systems Engineering Required”**



Welcome to C4ISR/Integration

- **Everyone loves integration as long as you integrate with me.**
- **I provide a product and my job is done (but someone else's is just beginning).**
- **Sometimes 4 pieces of information is worse than 1.**
- **Knowing it's coming doesn't help if it's a Tsunami.**
- **Operational Test & Evaluation (OT&E) doesn't occur until it's operating.**

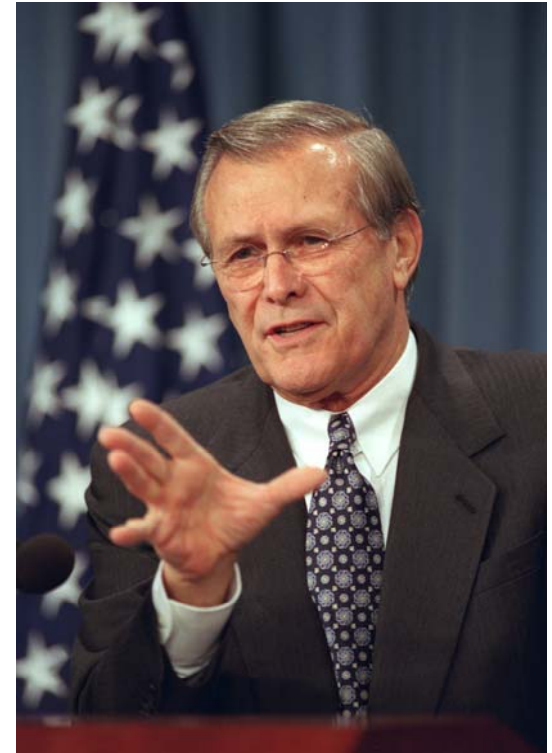
Systems-of-Systems Complexity Makes it Hard



Required: An Integrated C4ISR EI Master Plan

DoD Transformation

- **DOD Goal: Dominating Air, Sea and Land Battlespace**
- **C4ISR Integration one of SECDEF's Top 5 Priorities**
- **SECAF and CSAF are committed to transforming USAF and achieving warfighting integration**



“The development and deployment of a truly modern and effective command, control, communication, and intelligence system is fundamental to the transformation of the US military forces ”
— Secretary of Defense Donald Rumsfeld

SECAF and CSAF on Warfighting Integration

DR. JAMES G. ROCHE
Secretary of the Air Force



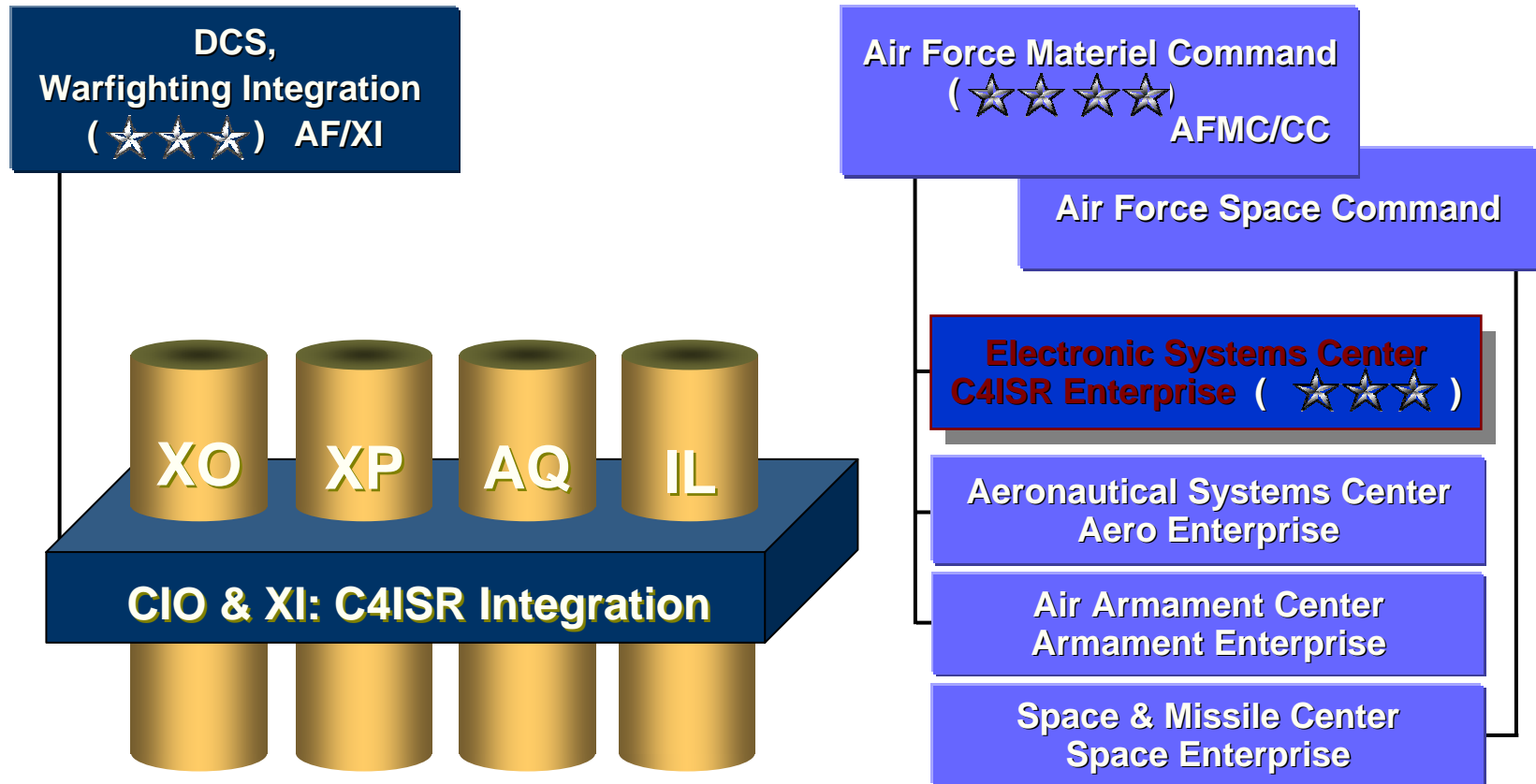
“These changes will best posture the Air Force to enhance our contribution to national security by exploiting the synergies within C4ISR capabilities”

GENERAL JOHN P. JUMPER
Chief of Staff of the Air Force



“Successful operations depend on modernized air and space capabilities to quickly find, fix, track and attack targets...”

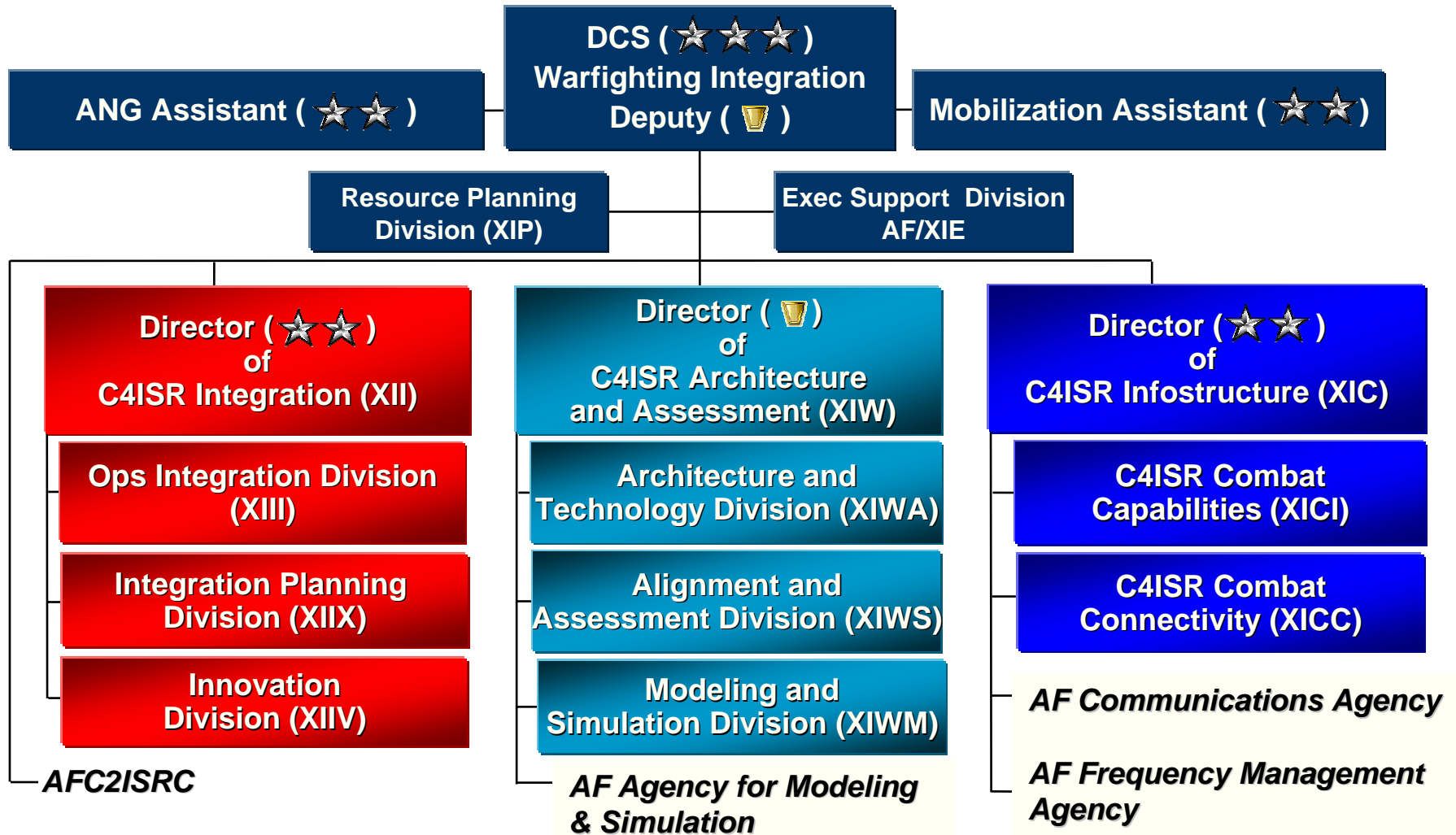
AF Organizations Engaged in C4ISR Integration



Mission: Close the seams in the process between Find, Fix, Track, Target, Engage, and Assess by integration of manned, unmanned, and space systems

AF/XI Organization

Warfighting Integration

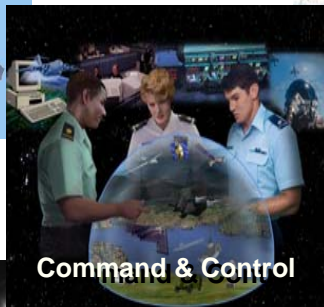


AF / XI Initial Priorities

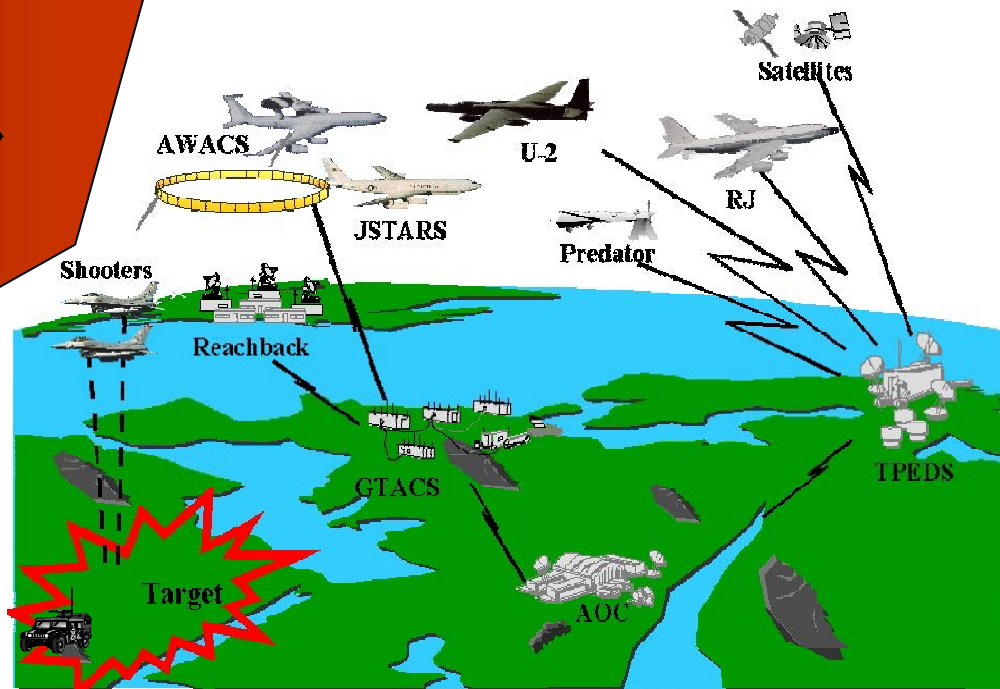
- Produce way ahead for **integrated C4ISR** modernization
 - Develop **roadmaps grounded in an architecture** of integrated operational, system, and technical views
 - Enable integrated C4ISR operations via a **robust comm infostructure**
- Enhance the integration of air and space ISR capabilities
 - Key focus areas: **AOC, MC2C, & DCGS**
- Produce a **modeling and simulation capability for C4ISR**
 - An AF-wide network shared for development, acquisition, training, and operations
- Work with Services, National and Joint communities to **enhance end-to-end integration / interoperability**

AFMC Enterprise Approach

Vision: Technology, Innovation, Interoperability for the Warfighter



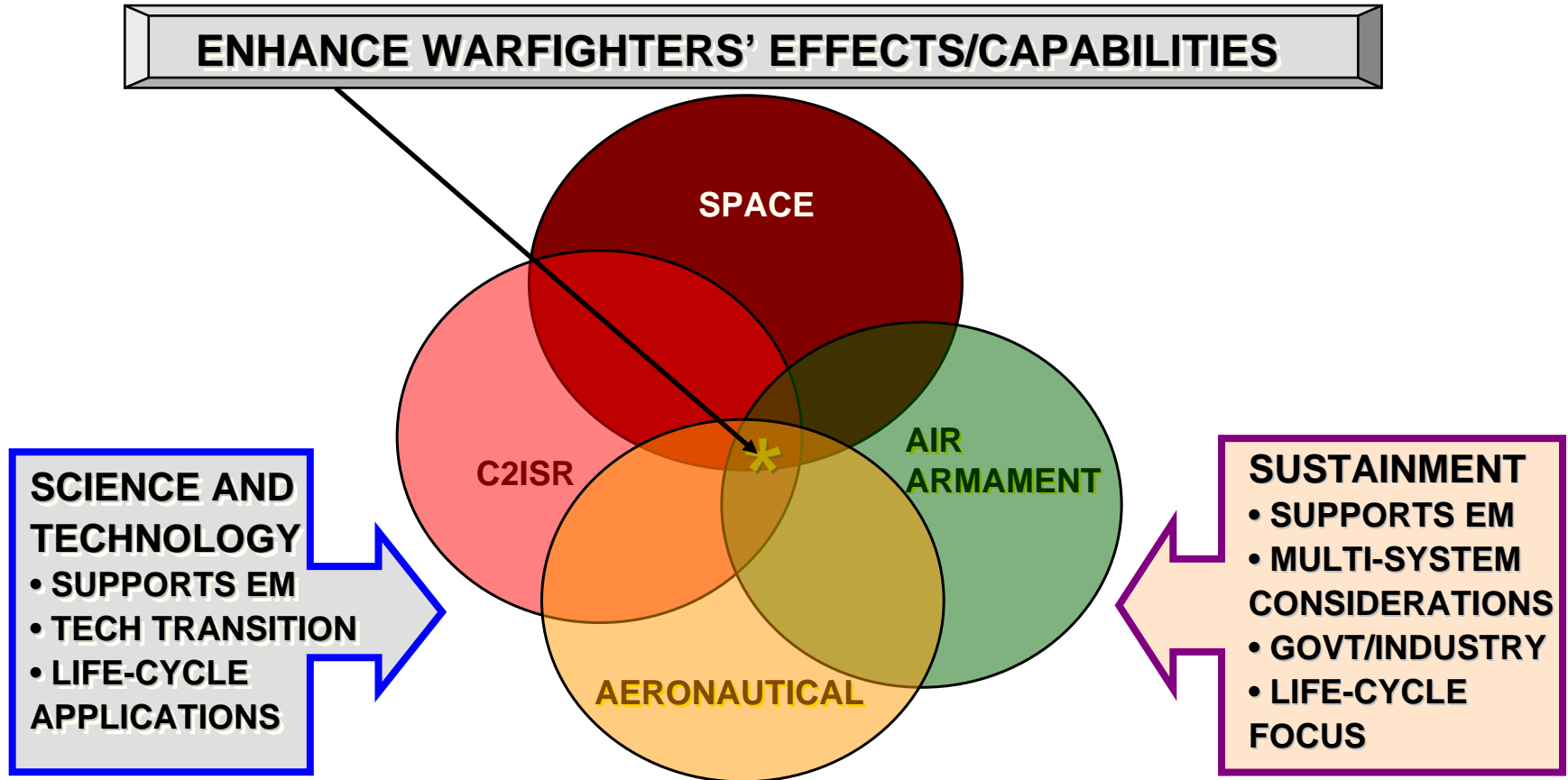
A More Effective Fighting Force



C4 is "cross-cutting" to all of these systems ("horizontally")

Enterprise Management

The Construct

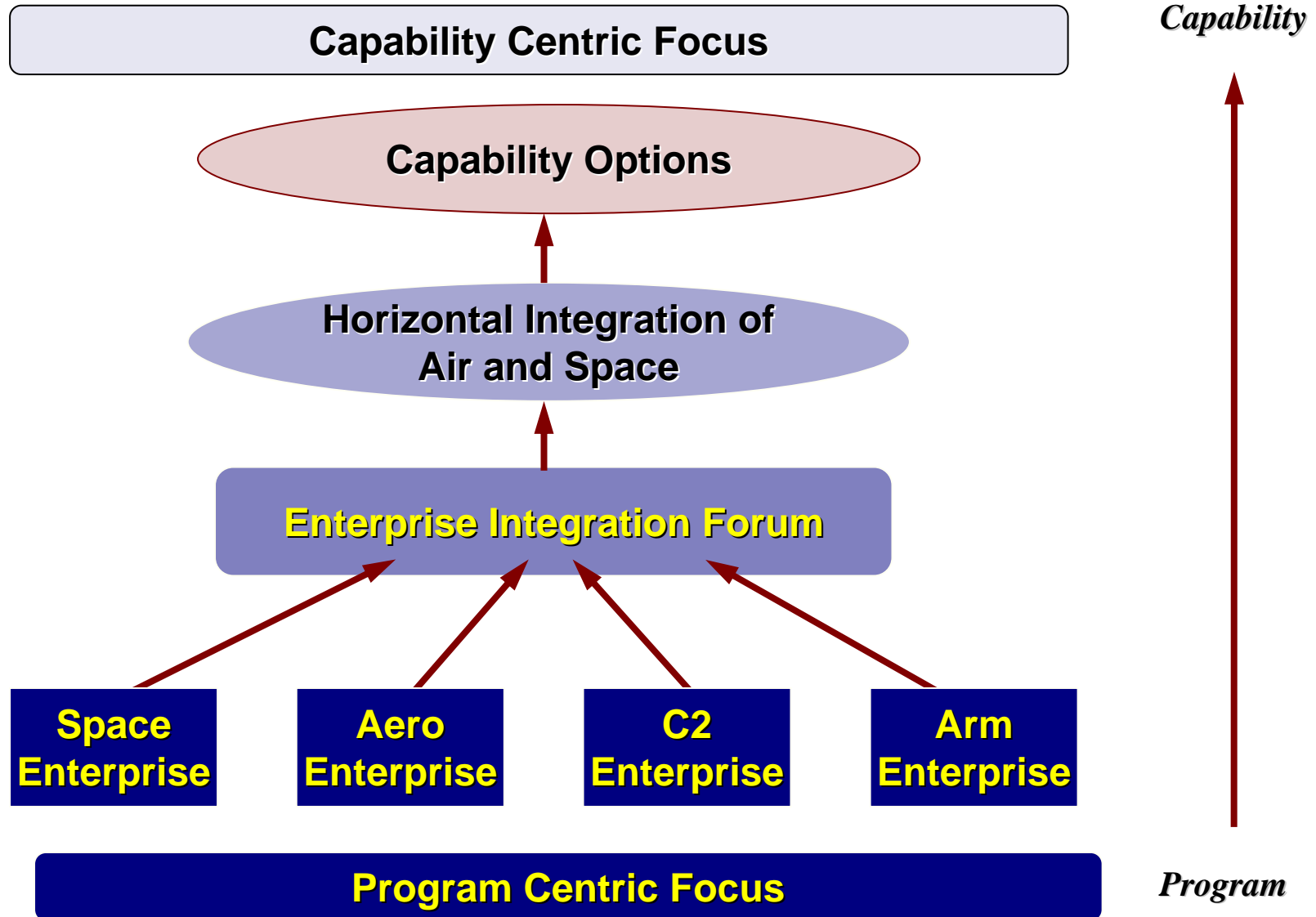


Total Team Effort: Warfighters - PEOs/DACs - EM CCs - ALCs - Test Ctrs - Labs - Industry - Academia - Air Staff

AFMC Enterprise Commanders' Responsibilities

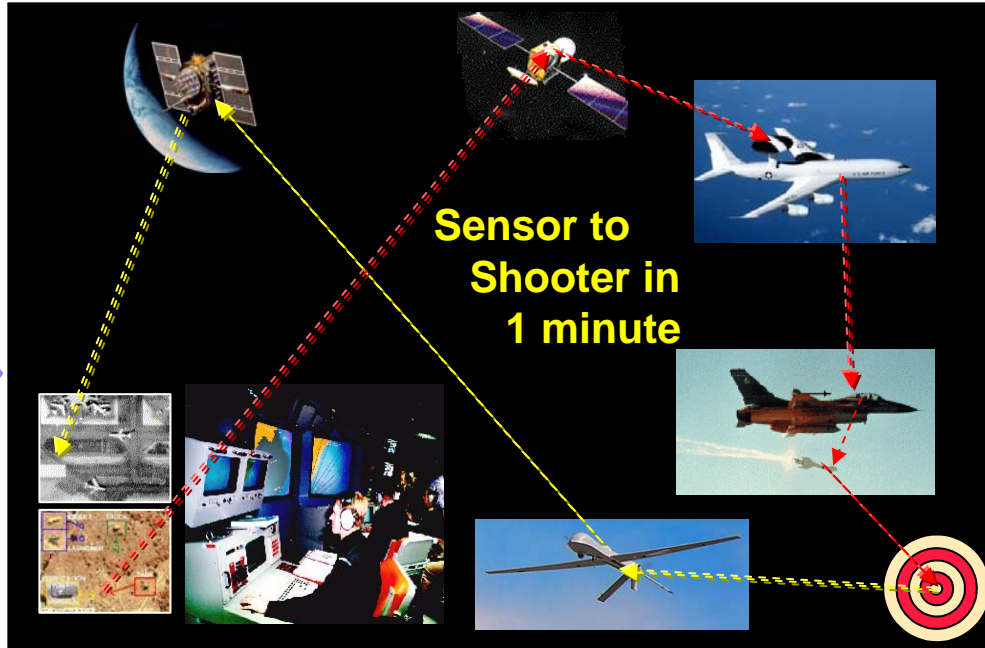
- **Lead the Integration within and across Enterprise**
- **Develop Integration Guidance**
- **Lead Integration Planning and Identification of Required Resources**
- **Ensure Enterprise Systems are Integrated and Interoperable**
- **Ensure Integration Guidance is included in PMDs**
- **Work w/ MAJCOMs to Acquire Appropriate Funding**
- **Track, Assess, and Report Integration Progress**
- **Conduct Enterprise Level Awareness Sessions**

Building to the Future...

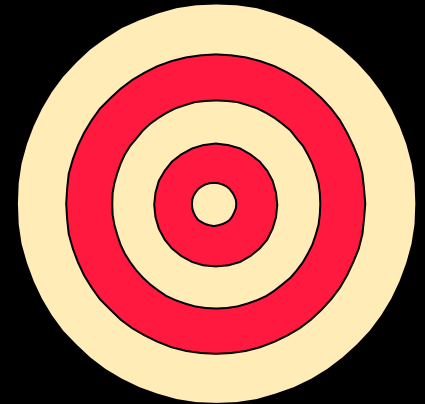


Inter-Enterprise Focus – *Combat Capability* –

**Integrated
Solutions**



Results



Aeronautical

C2

*Enterprise
Integration
Council*

Air Armament

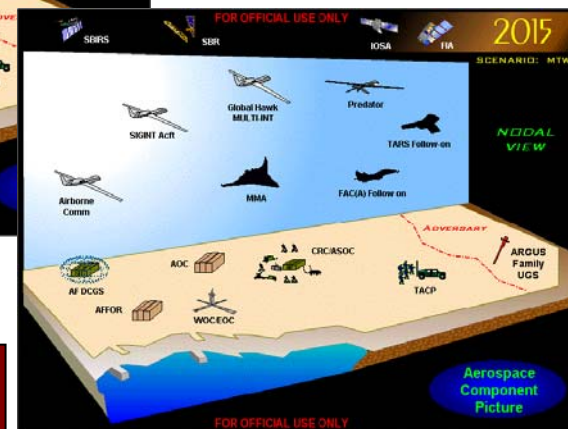
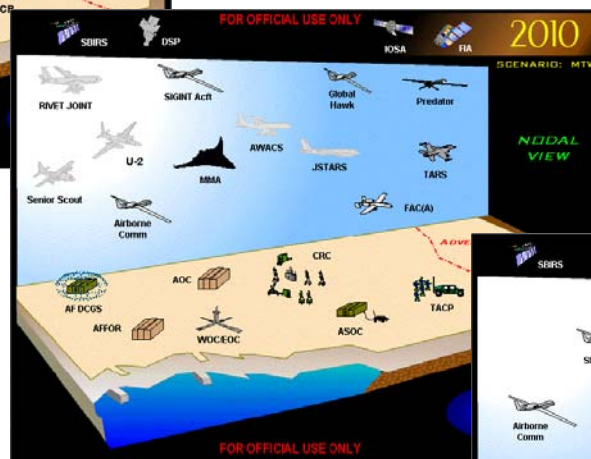
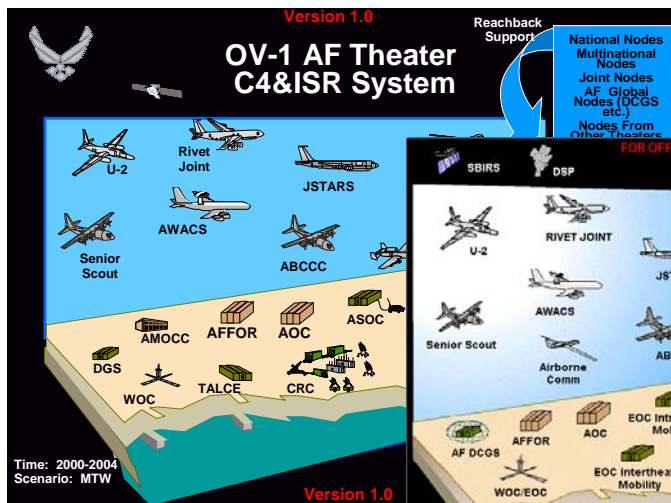
Space/Missile

ESC/CX: C4ISR Enterprise Integration Office

“Change Agent”

Mission

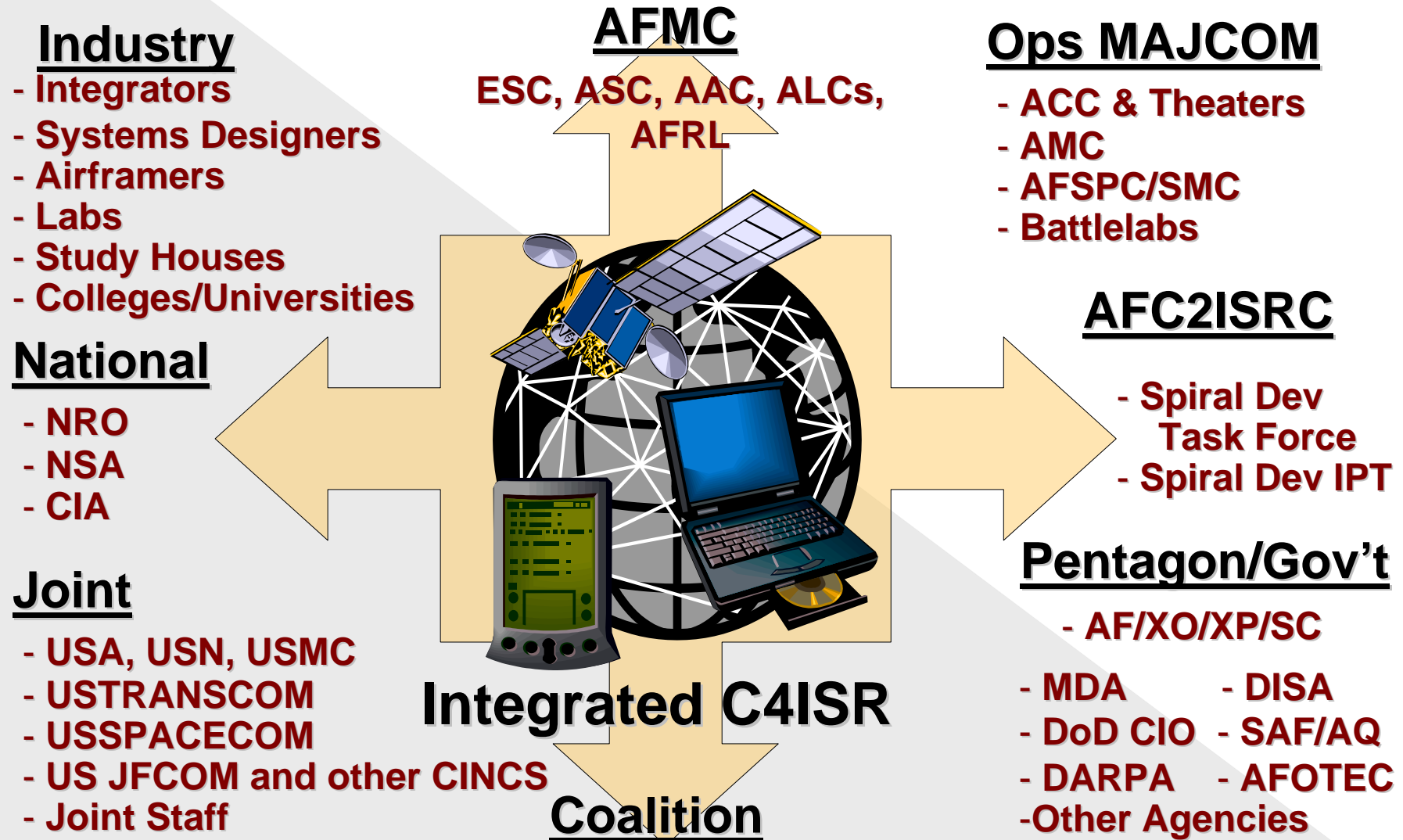
*Lead the
Integration, Development,
Certification, Deployment &
Sustainment*



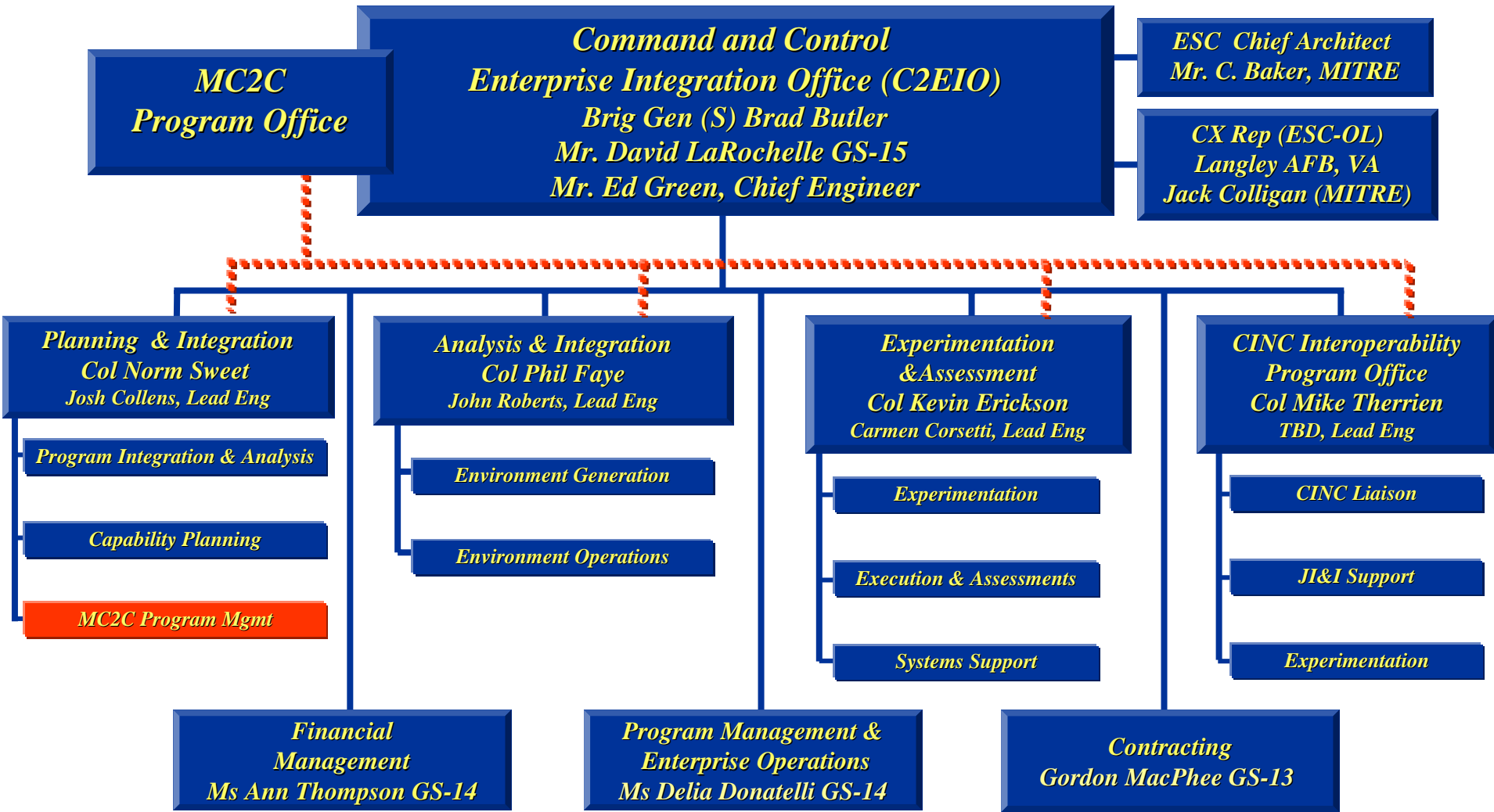
*of the
Air Force,
Joint, and Alliance
C4ISR Enterprise System*

*Lead and enable the transformation and
cultural change for integrating AF C4ISR Systems*

Partnering for C4ISR Enterprise

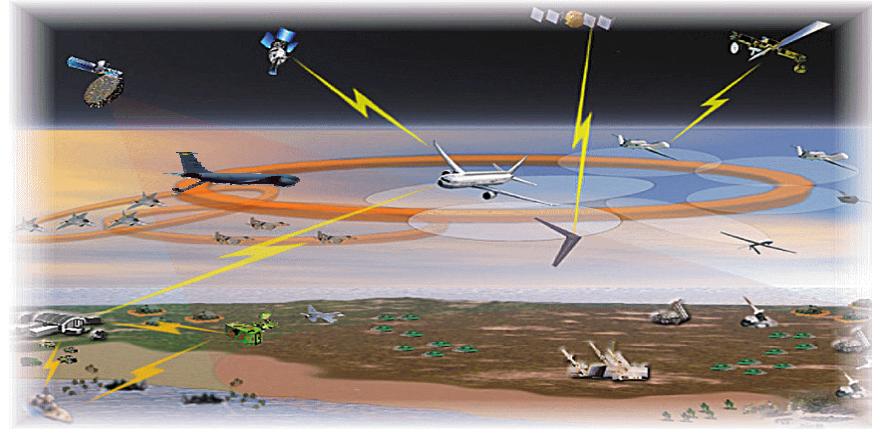


ESC/CX Organization



MC2C Defined

- **The MC2C is a:**
 - Network-Centric
 - Peer-Based
 - Family of Systems



- **Providing a decision-quality information exchange environment, with capabilities fielded on**
 - Modernized Legacy C2ISR Systems
 - New Commercially Derived Manned Aircraft (MC2A)
 - Unmanned Aerial Vehicles (UAVs)
 - Space-Based Systems
 - Supporting Ground C2 & Nodes

Air Force Horizontally Integrated C2ISR Vision

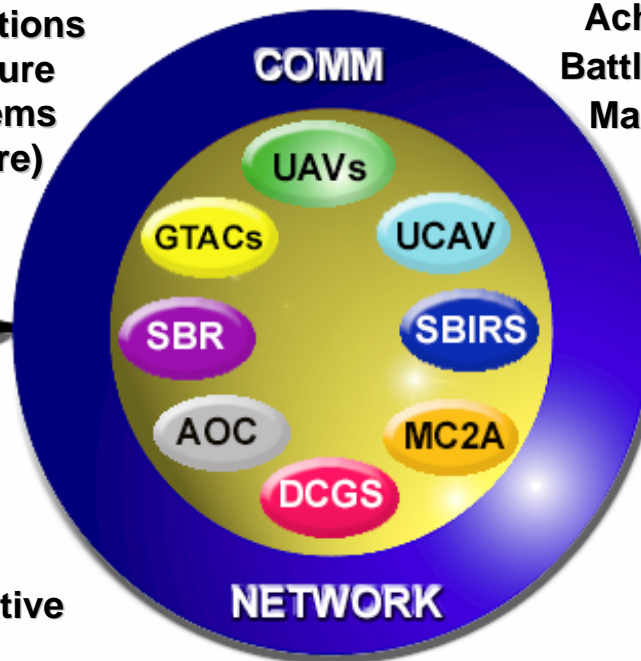
Current Constellation



Multi-Sensor C2 Constellation (MC2C)

Concept of Operations
C2ISR Architecture
Integrated Systems
(Legacy & Future)

POC/Representative
Capabilities



Achieving Predictive
Battlespace Awareness
Machine-to-Machine
Interfaces



Integrated Capability

GMTI AMTI ELINT COMINT MASINT IMINT HUMINT BMC3

Architectures, System of System Engineering, to Achieve Interoperability Across Service, Agency, Joint, Coalition Systems Enabling Integrated & Interoperable Warfighting Capabilities

Focus on Warfighter Outcomes

- *All encompassing Horizontal/Vertical Integration Interoperable*
- **Network** centric
- **Bandwidth** on demand
- **Machine-to-Machine** Dialog
- **Near zero** latency
- **Onboard** control and product exploitation
- **Functionality** to prosecute time sensitive targets
- **Open** systems architecture
- **Joint/Coalition** Interoperable



*Family-of-Systems Approach for
Air/Space/Ground & Manned/Unmanned*

Addresses Operational Deficiencies Today!

Task Force Focus

“CONOPS-Driven Roadmaps”



Global Power



Global Reach



Global Vigilance



Air & Space Expeditionary Forces CONOPS

**Global Strike
Task Force
CONOPS
(Anti-Access)**

**Homeland
Security
Task Force
CONOPS**

Global
Mobility
Task Force
CONOPS

Global
Response
Task Force
CONOPS
(Anti-Terrorism)

Nuclear
Response
Task Force
CONOPS

**Space
C2ISR
Task Force
CONOPS**

C4ISR Is An Enabler For All Task Forces

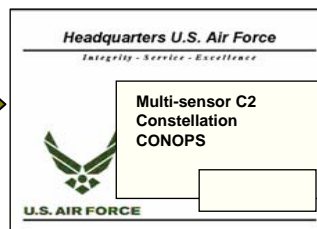
Capability-Focused Planning and Assessment Process

Task Force CONOPS

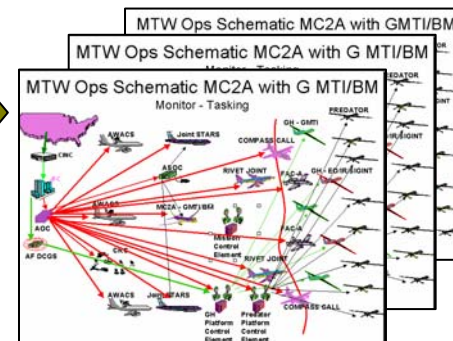


- Air & Space Expeditionary Task Force
- Global Strike Task Force
- Homeland Security Task Force
- Global Mobility Task Force
- Nuclear Response Task Force
- Global Response (Anti-Terrorism) Task Force
- Air & Space/C4ISR Task Force

MC2C CONOPS

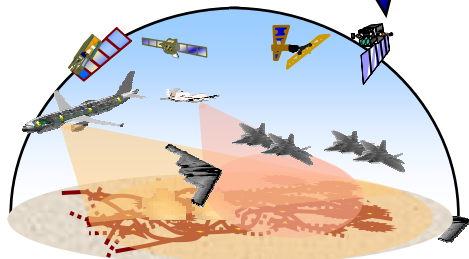


MC2C Architecture: Ops/System/Technical

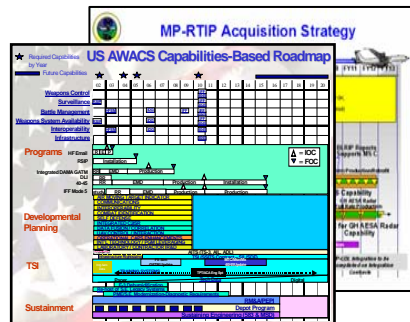


CONOPS & Architecture Assessments Supported by Distributed Networked Facilities And Advanced Simulation Environments

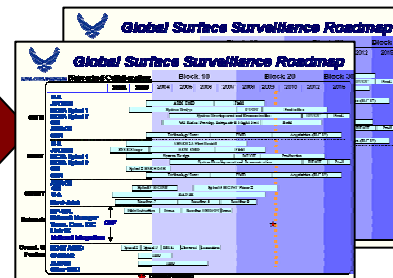
Integrated Capabilities



Program Roadmaps



Capability Roadmaps



Integrated Investment Roadmaps

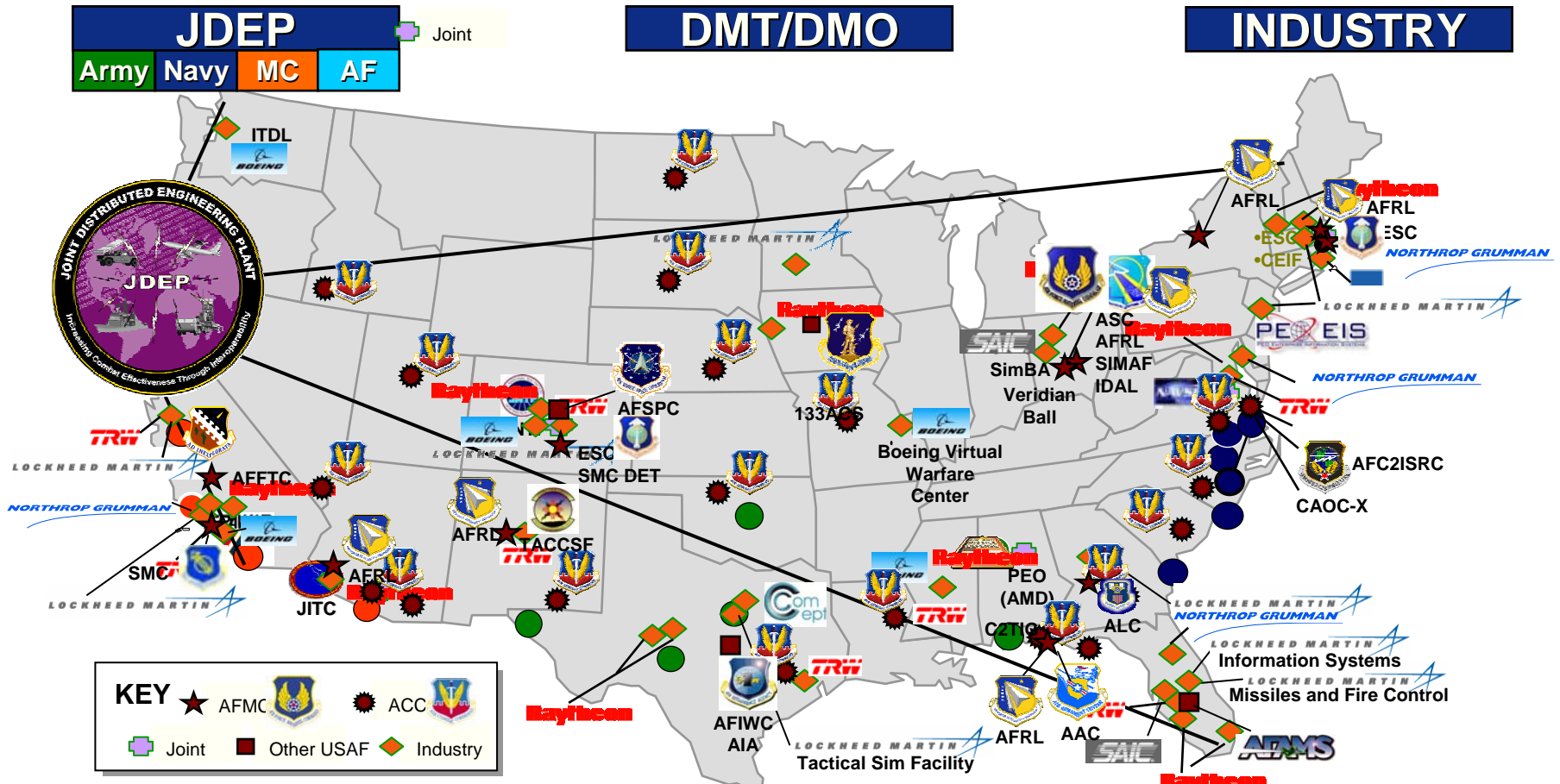


MC2C Focus Areas

- **Systems Engineering and Architecture – *Industry Teaming***
 - Provides the Ops, System and Technical views and analysis/roadmaps
 - Guides the investment of C4ISR efforts
- **Infrastructure**
 - Network across government-industry facilities and aircraft (JDEP)
 - Common modeling and simulation architecture (JSB)
 - Diamond Matrix extensions
- **Horizontal Integration Enablers**
 - Vetted, lucrative near-term initiatives that demonstrate military utility and cut across system, funding, and/or organizational boundaries
 - Such as:
 - Network Centric Collaborative Targeting Integration
 - Air-Space C2 Integration
 - Enhanced BMC3 Functions (ISR Manager)
 - Data Link Infrastructure-Improved UAV Control
 - Communication projects

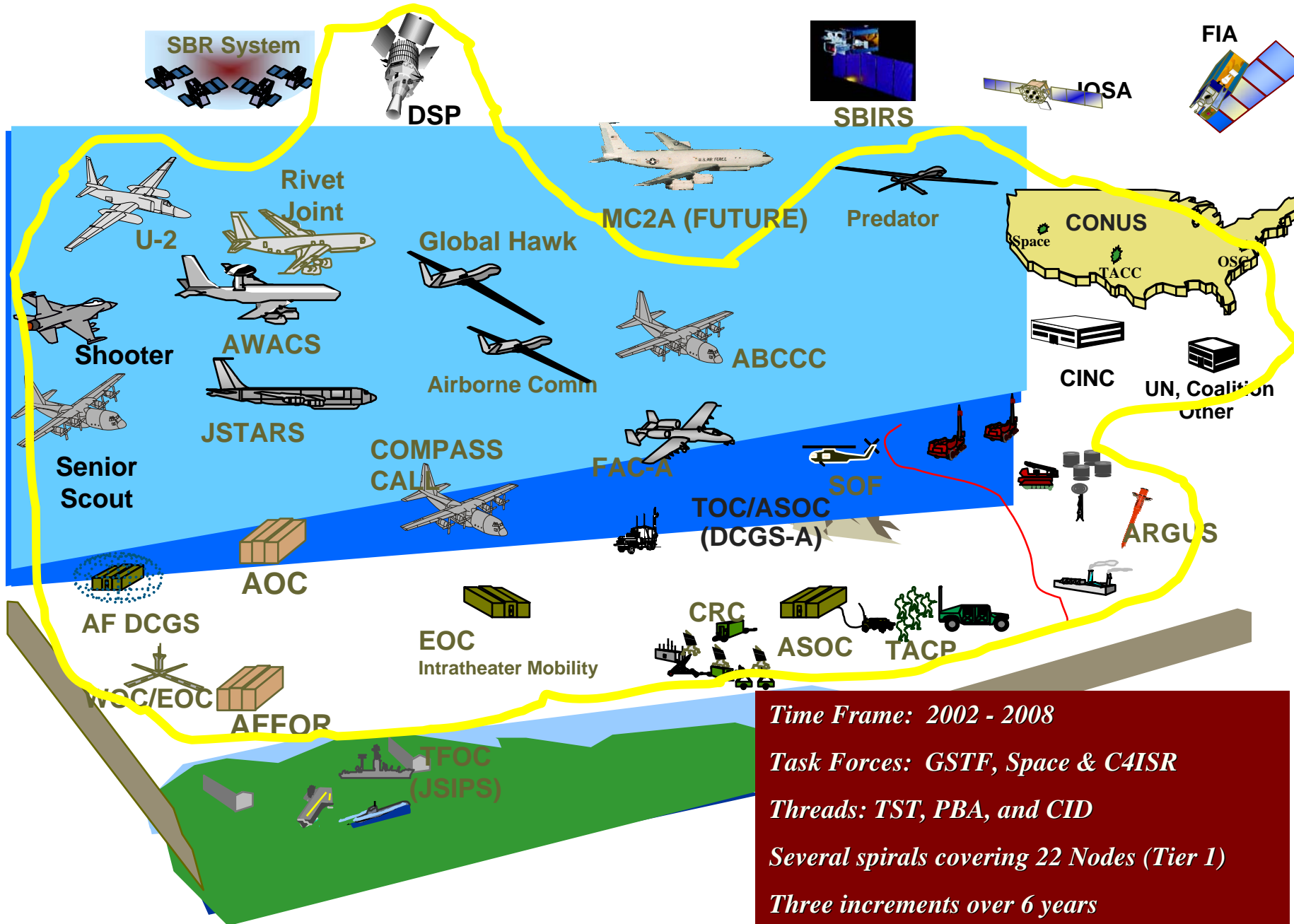
Modeling & Sim (JSB) for C4ISR

Government – Industry Partnership



**A Scalable National Resource of Facilities
 Enabled by a Common Simulation Architecture**

Near Term Scope: MC2C Nodes

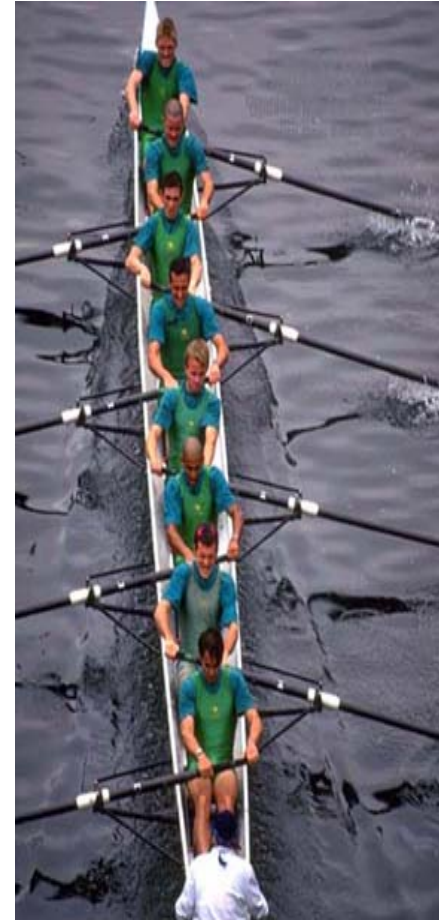


MC2C Issues

- **FY03 Congressional language**
 - **Unconstrained horizontal integration activities**
 - **FY03 funding status determines scope of effort and acquisition strategy**
 - **Paul Revere Testbed funding in FY03/04**
- **FY04 & beyond - No programmed funding**
- **Joint horizontal integration activities lacking focus**
 - **Each service active in integration program(s)**
 - **Potential way-ahead using operational architectures**

Summary

- **C4ISR Enterprise Integration is Working**
 - **MC2C Focus is Complementary – Leads the Way!**
- **Air Force seriously committed to new approach**
 - **Effects-based acquisition and fielding of integrated C4ISR capabilities**
 - **Organizational adjustments occurring at every level : Air Staff, MAJCOMs, ESC, CX**
- **Expanding Partnerships across C4ISR**
 - **AFMC and Air Force-Wide Effort**
 - **Links to Joint & Coalition**
 - **Links to Industry and Other Government & Academia Agencies**



Enterprise Integration is a TEAM effort!