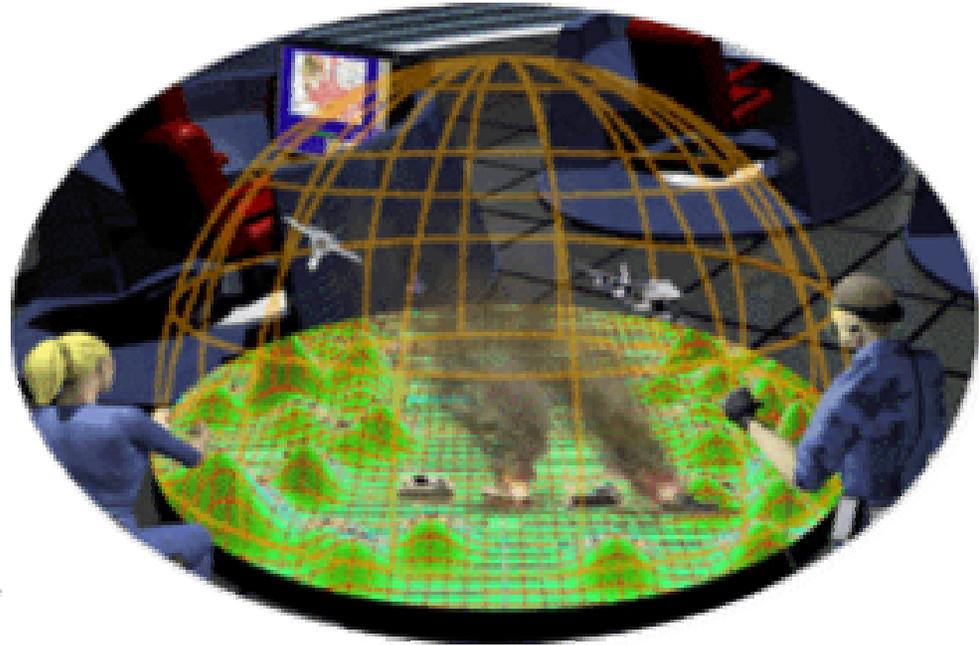






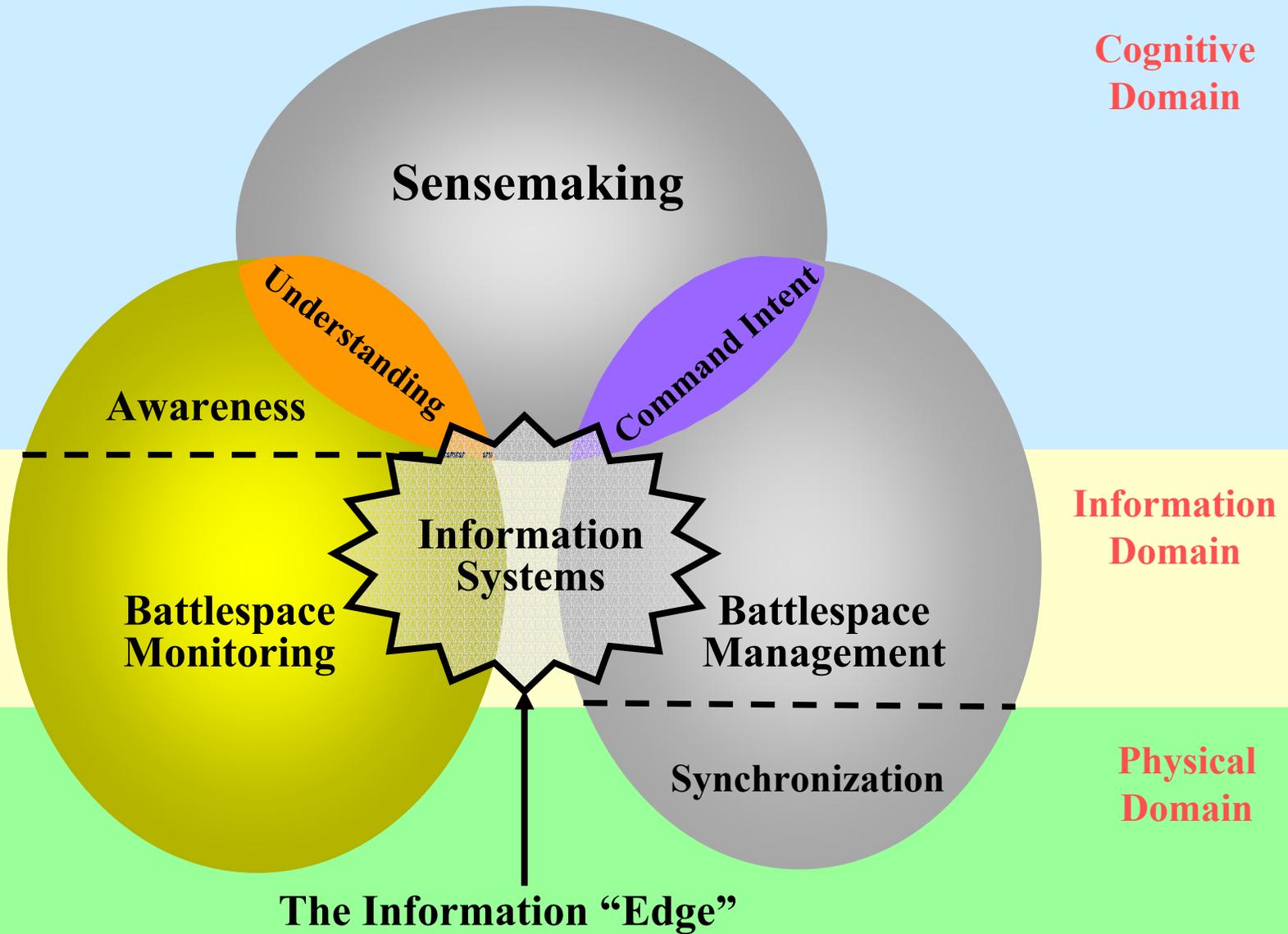
Joint Synthetic Battlespace: Cornerstone for Predictive Battlespace Awareness



**Dr. Paul W. Phister, Jr. P.E.,
Dr. Timothy Busch and Igor Plonisch
Information Directorate
Air Force Research Laboratory
Rome, New York 13441-4514**

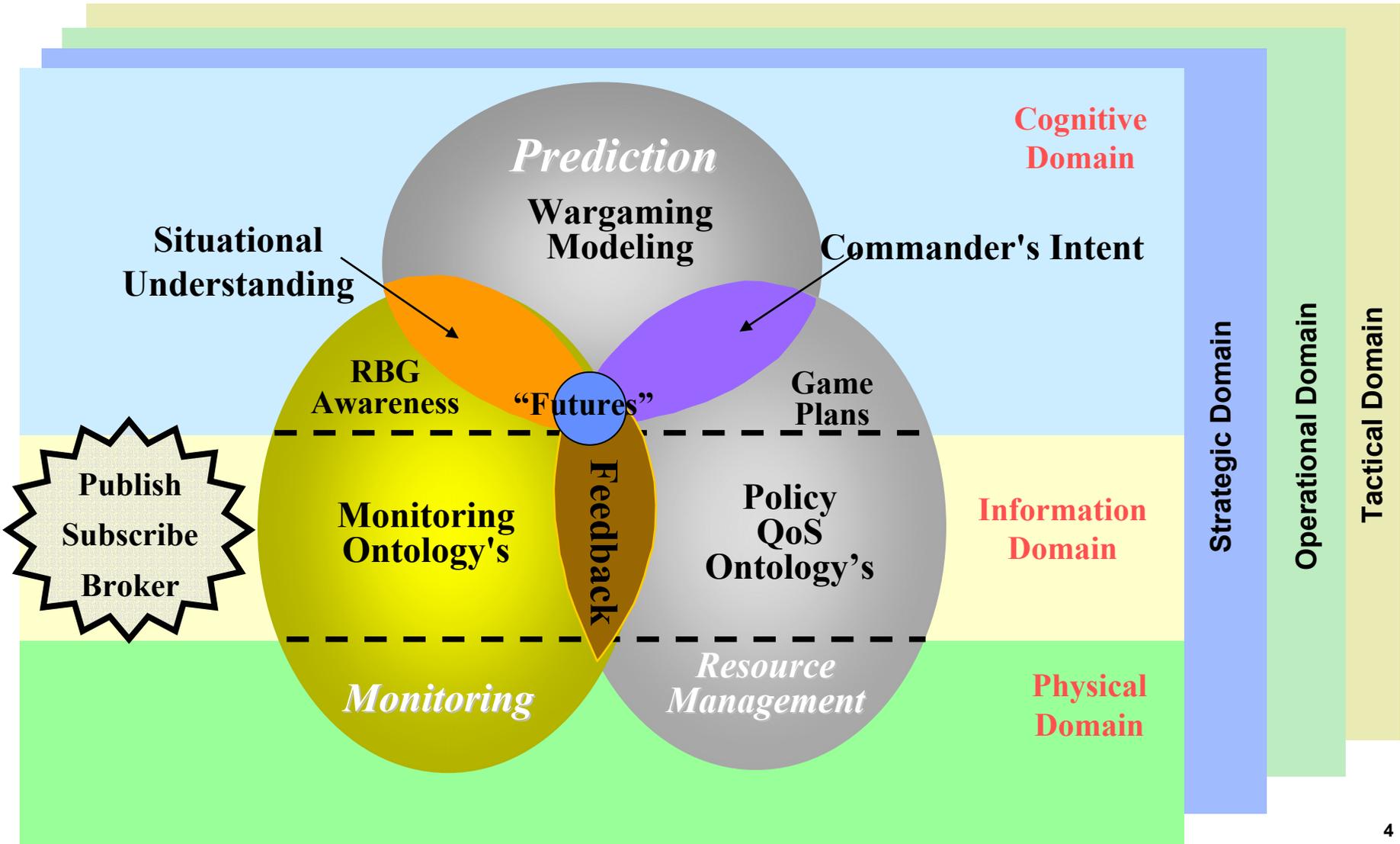


Conceptual Military C2 Operating Environment The "Big Picture"





PBA Conceptual View

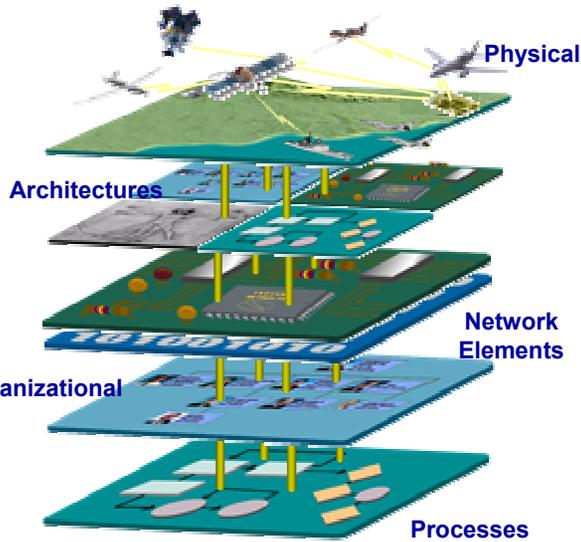




PBA Timeline View

Present

“Intel Focus”



Intelligence Preparation of the Battlespace (IPB)

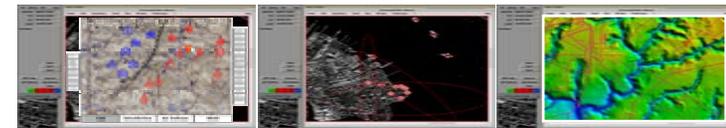
- 1) Define Battlespace Environment
 - 2) Describe Battlespace Effects
 - 3) Determine Adversary COA
 - 4) Evaluate the Adversary
- ISR Management



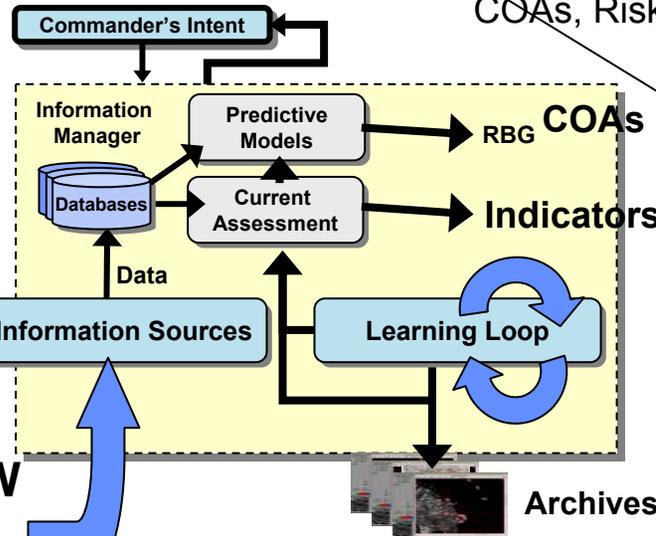
Capabilities
 COA
 Current Assessment

“Futures Focus”

To Intelligently Predict the Future



COAs, Risk, Confidence, Band-for-Buck



Joint Synthetic Battlespace



Joint Synthetic Battlespace is the Commander's “Crystal Ball”



JSB and PBA Challenges



- **Joint Synthetic Battlespace (JSB):**
 - Organizational behavioral modeling
 - Faster than real-time execution
 - Data Mining
 - Distributed Processing/ Distributed Simulation



- **Predictive Battlespace Awareness (PBA):**
 - Direct, with precision, the location, identification/monitoring of all ground, air & space objects and events
 - Direct the collection of physical environmental and social/political/economic information
 - Direct the instantaneous detection of any red, blue, gray operational deviations
 - Full spectrum aerospace vigilance
 - Predictive and precise battlespace understanding
 - Battlespace wide “Effects-Based-Operations”
 - Brilliant Air and Space Operations
 - Dynamic Virtual Checkmating
 - Autonomous Execution with tethered control
 - Adaptive, continuous rolling execution at all levels with both precision and speed
 - Global Warrior Presence
 - Air and Space Information Exchange
 - Brilliant Workflow/Decision Support
 - Knowledge Sharing



Summary



- Successful military commander must be able to live in the future
- Commanders are constantly forming decisions based on:
 - Their current understanding of the world
 - Ability to forecast the outcome of actions being considered
- Experienced tacticians are only able to consider 2 or 3 possible COAs
- Commanders often don't have a good "feel" for the sensitivity of their plans

- PBA, like EBO, has the potential to fundamentally transform how Air Force plans, prepares, trains, and fights.

- Joint Synthetic Battlespace is the key to a successful PBA
- Operationally focused simulation - provides augmented reality for the Commander

**Key to success is the effective merging of JSB into PBA
Provides Commander's with decision-quality "futures"**



Questions?



**"Information superiority
becomes a precondition
for fighting to achieve air
and space superiority,"**

**Lt. Gen. Liu Shun Yao,
Chief, China Peoples Liberation Army Air Force +
28 Feb 2000, AW&ST**

("Chinese War Plans Emphasize Air Force's Offensive Role")