Fusion Warfare: An ISR Perspective

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October 2015

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Why Fusion Warfare?

An approach to maintain our tactical edge across multiple domains in the face of strategic challenges stemming from diverse national security issues and adversary technology advancements
“The Air Force’s ability to continue to adapt and respond faster than our potential adversaries is the greatest challenge we face over the next 30 years.”*

*America’s Air Force: A Call For the Future, July 2014
The National Security Challenge: Diverse Missions & Environments

- Verifying Iranian Nuclear Compliance
- Countering Russian Influence
- Defeating ISIS / AQ
- Monitoring South China Sea Issues
- Defending Our Embassies and the Homeland
The Technology Challenge: Adversary Advancements

Fifth Gen Fighters

Medium & Long-Range SAMs

Advanced Cruise Missiles

Space & Cyber Weapons
Why We Must Act Now

- USAF has been engaged in continuous Phase 0/1/CT/COIN since 1991
- Continued planning against near-peer competitors while conducting Phase 0/1/CT/COIN delayed anti-access/area denial (A2AD) innovation
- Involvement in Syria provides insights on contested, degraded operations (CDO)
What is Fusion Warfare?

Delivering an **asymmetric decision advantage** to tactical, operational and strategic leaders by **integrating and synchronizing multi-source, multi-domain information** into analysis **within a specific time and space dimension.**
Fusion Warfare is…

Harnessing Multi-Source, Multi-Domain Data

Fusing & Analyzing Information in a Collaborative Environment

Discovering National to Tactical Intelligence via a Combat Cloud

Informing Strategic Policy Making

Shaping & Integrating Operational Mission Planning

Driving Tactical Decision-Making

Delivering Asymmetric Advantage in Advance of Real-Time
Understanding Fusion Warfare via the OODA Loop

1. Observe
2. Orient
3. Decide
4. Act

The cycle continues indefinitely.
Current Warfare: Disparate OODA Loops

- National ISR
- DGS
- 4th Gen Aircraft
- AOC
- 5th Gen Aircraft
- Space Ops
- Cyber Ops
Example Vignette: Disparate OODA Loops in Action

Mission: ISR

Challenge:
- National ISR has capability, not AF priority
- DGS has priority, no machine-to-machine input to AOC
- C2 left to human fusing analysis in AOC
Example Vignette:
Disparate OODA Loops in Action

Mission: OCA

Challenge:
- Built as stand alone sensor systems
- Limited coordination w/space or cyber ops
- Intel data not discoverable off-board
- Restrictive access to inflight / post-flight data
Example Vignette: Disparate OODA Loops in Action

Mission: DCA

Challenge:
- C2 Sharing information w/5th Gen
- Limited coordination w/space or cyber ops
- ISR data harnessed during debrief
Example Vignette: Disparate OODA Loops in Action

Mission: SSA

Challenge:
- Priority on tracking objects vs operational activity
- Limited integration into CAF mission planning
- Analysis is human intensive
Example Vignette: Disparate OODA Loops in Action

Mission: OCO / DCO

Challenge:
- Limited AF authorities (ask not task)
- Limited coordination w/AOC or shooters
- Limited information sharing
- Limited integration, capability not understood
Fusion Warfare: Integrated, Focused OODA Loops

National ISR

DGS

4th Gen Aircraft

5th Gen Aircraft

Cyber Ops

Space Ops

AOC Ops
Fusion Warfare Vignette: Integrated OODA Loops in Action

Mission:
Find, Fix, Finish

Success:
- Integrated, operational level mission planning
- Integrated and decentralized execution
- All data discoverable via combat cloud
- “Advance of real time”
Fusion Warfare Vignette: “Advance of real time”

• Last two years
  • North Korea, Iraq, Iran, Syria, Yemen, Ukraine, South China Sea
  • All issues the USAF *MUST* understand

• Colombia
  • Operation Jaque (Jul 2008)
  • Inside the FARC’s OODA Loop
  • Not a single shot fired
  • 3x US Hostages rescued from FARC

• Russia Tomorrow
Need a New Approach to Maintain the Tactical Edge

From “Flying the Black Line” in 1991…

…To Integrated, Multi-Domain Mission Planning & Operations
Achieving Fusion Warfare

- Partner w/ Industry & Academia
  - Combat Cloud / Open Architecture Systems
  - EM Spectrum Advances
  - Coalition Interoperability
- Future Warfare Dialogue
Headquarters Air Combat Command

QUESTIONS?

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