MDC2 Overview

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This Briefing is: UNCLASSIFIED
Background

CSAF’s 3rd “Big Rock”
- Multi-domain C2 is key to success in future war
- Connective tissue of joint fight
- Complex and will require a broad effort

Enterprise Capability Collaboration Team to address cross-functional high priority mission areas

Purpose
- Provide an assessment of the Air Force’s Multi-Domain C2 Core Mission
- Offer investment options (materiel & non-materiel) to enhance our capabilities
- Current fight is not preparing us for “high end” fight
- Enhancing old processes/capabilities insufficient
- Set conditions for leap in capabilities
Isn’t the Air Force already conducting Multi-domain Ops?

- Yes, BUT…
  - Manpower-intensive, ad hoc team of planners
  - Primarily surge of coordinated supporting effects
  - Insufficient multi-domain tools
  - Multi-domain stakeholders are disbursed, disconnected and complicated
  - Multi-domain mission data not accessible

- AF Multi-domain Ops must include generation of offensive and defensive effects from air, space & cyber with capability to independently and directly support JFC objectives
Multi-domain Operations (MDO)

- MDO is more than systems in one domain supporting operations in another domain (necessary but not sufficient).

- MDO are *high velocity, operationally agile operations* that present multiple dilemmas for an adversary at an operational tempo they cannot match.

- MDO requires seamless, dynamic and continuous integration of capabilities generating effects in and from all domains... MDC2
Future War and its Challenges

Future conflicts
- Future conflicts will be decided by the side with an information advantage
- We must be postured to respond to relevant information with high velocity decision-making
- We must be able to create complex, simultaneous dilemmas for adversary
- We must have self-healing systems with perpetually optimized operations

Challenges for C2
- C2 Operational Constructs not designed to optimize multi-domain operations
- C2 Technology is out of date and less capable of leveraging new technology
- C2 Supporting Structures not designed for Multi-domain operations
Foundation for Effective MDO

Integrity - Service - Excellence
In order to keep MDC2 perpetually optimized to provide high velocity, operationally agile operations, the Air Force will:

- Exploit purpose-built opportunities to explore enhanced C2 processes and concepts
- Provide them the tools, data and IT infrastructure on the leading edge of technology
- Formally develop an ops-level C2 Cadre and key support structures
Vision of MDO…2030 Vignette

- Suppression of Enemy Air Defenses in a regional conflict
  - Air Force capability to conduct the mission will include air, space and cyber platforms
  - Force package built from on-orbit, digital and airborne capabilities
  - Multiple attack vectors to complicate adversary defense

Support/Supported arrangements?

Multi-domain Battle Management?

Multi-domain Package Commander?

Multi-domain Tasking Cycles?

Execution authorities for synchronized multi-domain fires?

Multiple Ops Floors Sync’d?

Multi-node Collaborative Planning?

Space Superiority as prerequisite?
# Maturing Warfighting Constructs

<table>
<thead>
<tr>
<th>Air Component Commander</th>
<th>Space Component Commander</th>
<th>Cyber Component Commander</th>
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<tbody>
<tr>
<td>- Air Superiority</td>
<td>- Space Superiority</td>
<td>- Cyber Superiority</td>
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<tr>
<td>- Air effects for joint fight</td>
<td>- Space effects for joint fight</td>
<td>- Cyber effects for joint fight</td>
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<thead>
<tr>
<th>Area Air Defense Commander</th>
<th>Space Defense Commander</th>
<th>Cyber Defense Commander</th>
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<tr>
<td>- Air Defense Plan</td>
<td>- Space Defense Plan</td>
<td>- Cyber Defense Plan</td>
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<td>- Combat Identification</td>
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<thead>
<tr>
<th>Airspace Control Authority</th>
<th>Orbital Control Authority</th>
<th>Cyber Control Authority</th>
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<tr>
<td>- “Rules of the Road”</td>
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<td>- “Rules of the Road”</td>
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<tr>
<td>- Airspace Control Plan/Order</td>
<td>- Orbital Control Plan/Order</td>
<td>- Cyber Control Plan/Order</td>
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<td>- Deconflict/Utilization</td>
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<tr>
<th>Air Ops Center</th>
<th>Joint Space Ops Center</th>
<th>624 Ops Center</th>
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<tr>
<td>- Subordinate Ops Centers</td>
<td>- Subordinate Ops Centers (e.g. Missile Warning Center)</td>
<td>- Subordinate Ops Centers?</td>
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<tr>
<td>- Liaisons</td>
<td>- Liaisons</td>
<td>- Liaisons?</td>
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<tr>
<td>- Director, Space Forces</td>
<td>- Director, Air Forces?</td>
<td>- Director, Air Forces?</td>
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<tr>
<td>- Director, Cyber Forces</td>
<td>- Director, Cyber Forces</td>
<td>- Director, Cyber Forces</td>
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<tr>
<td>- Battlefield Coord Det</td>
<td>- Battlefield Coord Det, - Air Coord Det?</td>
<td>- Coordination Detachments?</td>
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Doolittle Wargame Series

- Purpose-built annual event focused on MDC2 Operational Concepts
  - Command Relationships
  - Authorities
  - C2 Procedures for critical functions
  - Employment considerations (Force packaging)
  - Force Presentation considerations

- First event – Fall 2018 (planning conferences beginning in April 2018)
- Location – Maxwell AFB
- Players – mixed team of C2 SMEs from 505th, joint/coalition and AU students (AWC and ACSC)

- Initial Desired Learning Objectives:
  - Are adjustments to command relationships/authorities needed to effectively C2 multi-domain forces?
  - What are the key considerations for force presentation that affect MDC2?
  - What Operational-level TTPs should be employed to optimize MDC2?
  - What are the key considerations for effective execution of multi-node collaboration?
MDC2 Technology-Enabled OODA

- Observe
  - Data Storage
  - Network & Access
  - Data Exploitation

- Orient
  - Data Management
  - Permissive
  - Contested

- Decide
  - Highly Contested

- Act
  -Data Collection
Challenges to Compressing OODA

Accelerating Data to Decision is how OODA is compressed

- Limited Meta Data Tagging
- Security Policy
- Multiple Formats
- Proprietary Controls
- Stovepipes
- Unstructured
- Interfaces Not Interoperable
- Limited AI & ML
- Data Storage
- Network & Access
- Data Collection
- Data Exploitation
- ORIENT
- ACT
- DECIDE
- Limited Automation
- Stovepiped Data
- Limits Big Data Analytics
- Manual COA Dev
- Highly Contested
- Permissive
- Contested
- Serial Data Sharing
- No MDO Visualization
- Weak Decision Support
From Vision to Action…

Challenges to Implementation
➢ Security
➢ Latency
➢ Data access
➢ Bandwidth
➢ Network management
➢ Standards (data, interfaces, etc.)

AF Initiatives Addressing Challenges
➢ AOC Pathfinder
➢ Data-to-Decision
➢ Shadow OCs
➢ Space BMC2
➢ OA-DCGS
➢ CMCC
➢ Talon Thresher
➢ RSpace
➢ Hallmark
➢ AFWERX
➢ C2AOS-C2IS
➢ C3MS
➢ Unified Platform
➢ Project Maven
➢ Combat Cloud
➢ JALN

Universal Access
➢ Global Connectivity
➢ Total Interoperability
➢ Highly Resilient

Everyone can connect, share, & access all data all the time

Must align initiatives to address challenges
Shadow Network is a multi-node network of DevOps environments linked together to experiment for the purpose of addressing Enterprise-wide C2 challenges.

- C2 challenges include: security, latency, bandwidth, data access, network resiliency ops, and IT standards.

- The overarching goal is to solve problems that are inherent to all C2 systems regardless of location or domain they control.

The initial objectives for the Shadow Network are:

1. Mature the Air Force's understanding of virtualized data;
2. Create a scalable operational infrastructure and data architecture;
3. Explore artificial intelligence, machine learning, human-machine teaming & automation
4. Experiment with and explore innovative C2 technologies for multi-domain ops;
5. Experiment with, develop and integrate advanced multi-level security tools and capabilities
6. Experiment and innovate new approaches to software testing and "authority to operate" processes

The Shadow Network will use live data wherever possible and strive to demonstrate proofs of concept that can be readily extended to the real world C2 capabilities.

- It will leverage Agile Acquisition principles to rapidly prototype, field and enhance C2
Cross-flow board-selected officers between 9-12 YOS (11x, 12x, 13x, 17x, 18x, etc.)
  - Assigned to Operational-level C2 AFSC (13O)…retain initial AFSC as secondary

Assignments in AOCs with additional billets in 505th, COMAFFOR, JTF HQ, HHQ staffs
  - Command opportunities for squadron, group and wing (AOCs, 505th CCW)

Convert billets on AOC UMDs and on selected staffs (equal to number of crossflows)
  - Manpower neutral and will phase in based on C2 training pipeline

Eventually ~500x 13O billets
  - Grade break down for O-4/O-5/O-6 is approx. 250/125/25
  - Steady state cross flow ~50x O-4s/year from ~15 feeder career fields
  - Phasing: COD, CPD, SRD, Spec Teams in RAOCs then Functionals AOCs and staffs

SEI for 1C3 career field to indicate those managed as C2 Cadre
## Transition to “New – New” is difficult

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<thead>
<tr>
<th>New - Old</th>
<th>New - New</th>
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<tr>
<td>Processes and org structures are in place to support</td>
<td>Processes and org structures are not designed to support</td>
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<tr>
<td>- Industrial support</td>
<td>- Industrial support limited (TRL low)</td>
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<tr>
<td>- CONOPS in place</td>
<td>- No CONOPS (detail low)</td>
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<tr>
<td>- Expertise based on SOP</td>
<td>- Very limited expertise (training low)</td>
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**Seen as low risk but enhancing capability**

**Clear linkages to our way of doing business**

**Powerful cultural & institutional inertia**

**Seems like responsible use of funding**

**Seen as high risk & uncertain impacts on capability**

**Less clear how links to our way of doing business**

**Small group of advocates battling status quo**

**Seems entrepreneurial & less responsible**

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**Improvement (New-Old) should not be confused with Innovation (New-New)**