

2018 C2 Summit

Integrity - Service - Excellence

MDC2 Overview

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This Briefing is:
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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



Enhancing Multi-domain Command and Control...Tying It All Together

This paper outlines my third and final focus area, Multi-Domain Command and Control (MDC2). In the first two papers – Revitalizing Squadrons, and Strengthening Joint Leaders and Teams – I laid out how an evolving operating environment demands a renewed focus on developing our Airmen and organizations. The changing national security environment also requires us to examine how we sense, decide, and act rapidly and in concert across all domains – or put it another way, master command and control of the multi-domain battle.

While we dominate the air, space and cyber domains today, our adversaries have invested heavily in technologies to deny us the superiority we have come to rely upon. To counter this, we must integrate our advantages across these domains in new and dramatically effective ways. Linking operations moving at the speed of light with operations moving at the speed of sound requires we bring it all together: the skills of our Airmen, the vision of our leaders, and the audacity and technical innovation found throughout Air Force history.

Multi-domain battle is more than the ability to work in multiple domains. We already do this quite effectively in today's Air Operations Centers. It is also more than operations in one domain supporting or complementing operations in another domain. An advanced multi-domain operating concept (CONOPS) will exploit current and new capabilities as well as integrate joint and coalition capabilities across all military operations. It will allow us to both see more opportunities and generate more options for our nation's leaders. Nominally, as either the Joint Forces Air Component Commander or Joint Forces Commander facilitating a campaign, we will be responsible for the delivery and articulation of joint fires. This responsibility mandates that we master MDC2.

To use a football analogy, we have developed and employed the greatest running attack the sport of football has ever seen. Over time, our opponents adjusted and built their defenses to limit our running-style. Therefore, we must shift to develop a new kind of offense. We will not abandon the run but will enhance our passing game and create a multi-dimensional attack that not only keeps the defense off balance (because we can attack in multiple ways) but also plays at an increased tempo so they will not have time to adjust. We must be able to overwhelm the enemy.

This evolution in our command-and-control capabilities requires new thinking, new training, and perhaps new technologies or new ways to use older technology. We will need to integrate real-time information from a variety of sources – some non-traditional -

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Isn't the Air Force already conducting Multi-domain Ops?

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- 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





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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*



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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**

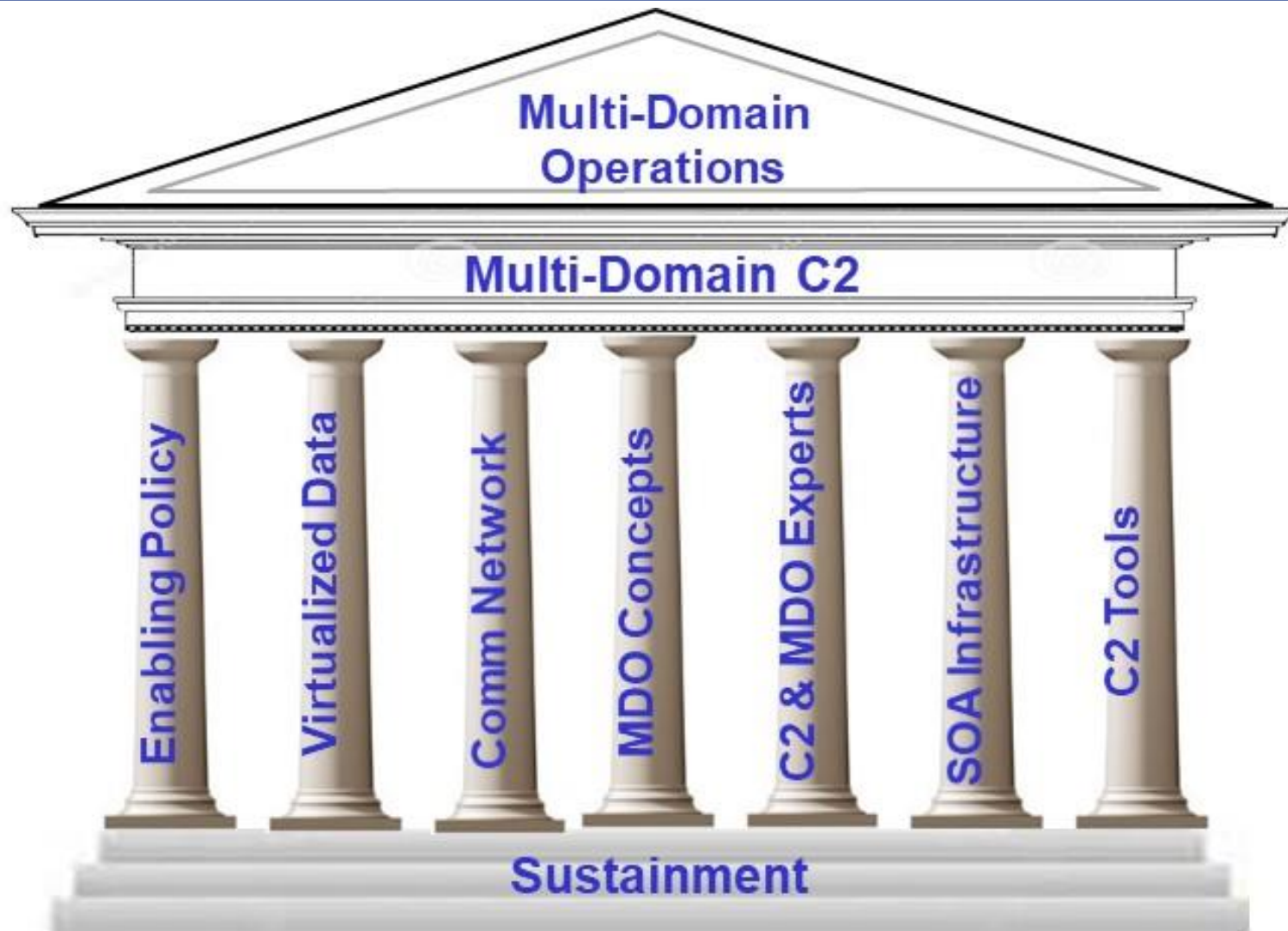
- **C2 Operational Constructs not designed to optimize multi-domain operations**
- **C2 Technology is out of date and less capable of leveraging new technology**
- **C2 Supporting Structures not designed for Multi-domain operations**



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Foundation for Effective MDO



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

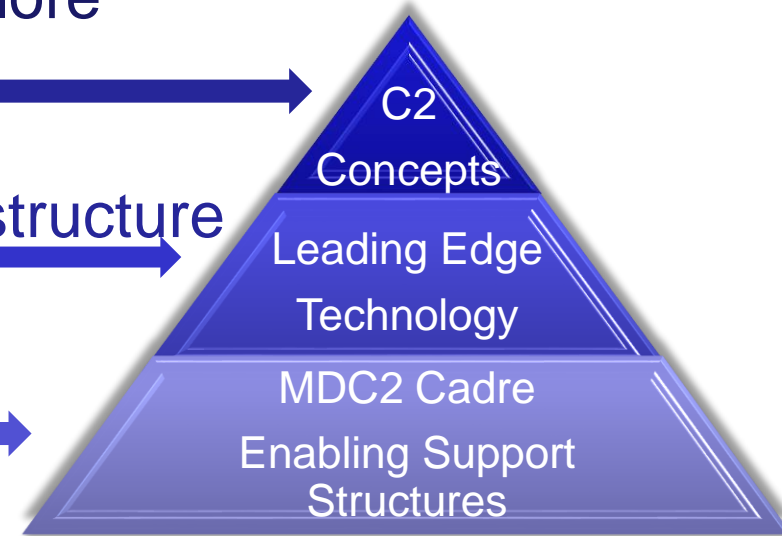
- Exploit purpose-built opportunities to explore enhanced C2 processes and concepts



- 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



Success is about processes not products



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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

Multi-domain Package Commander?

Supported/Supporting arrangements?

Multi-domain Battle Management?

Multi-domain Tasking Cycles?

Execution authorities for synchronized multi-domain fires?

Multiple Ops Floors Sync'd?

Multi-node Collaborative Planning?

Space Superiority as prerequisite?



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Maturing Warfighting Constructs

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Air	Space	Cyber
Air Component Commander - Air Superiority - Air effects for joint fight	Space Component Commander - Space Superiority - Space effects for joint fight	Cyber Component Commander - Cyber Superiority - Cyber effects for joint fight
Area Air Defense Commander - Air Defense Plan - Combat Identification	Space Defense Commander - Space Defense Plan - Combat Identification	Cyber Defense Commander - Cyber Defense Plan - Combat Identification
Airspace Control Authority - "Rules of the Road" - Airspace Control Plan/Order - Deconfliction/Utilization	Orbital Control Authority - "Rules of the Road" - Orbital Control Plan/Order - Deconfliction/Utilization	Cyber Control Authority - "Rules of the Road" - Cyber Control Plan/Order - Deconfliction/Utilization
Air Ops Center - Subordinate Ops Centers - Liaisons - Director, Space Forces - Director, Cyber Forces - Battlefield Coord Det	Joint Space Ops Center - Subordinate Ops Centers (e.g. Missile Warning Center) - Liaisons? - Director, Air Forces? - Director, Cyber Forces - Battlefield Coord Det, - Air Coord Det?	624 Ops Center - Subordinate Ops Centers? - Liaisons? - Director, Air Forces? - Director, Space Forces? - Coordination Detachments?



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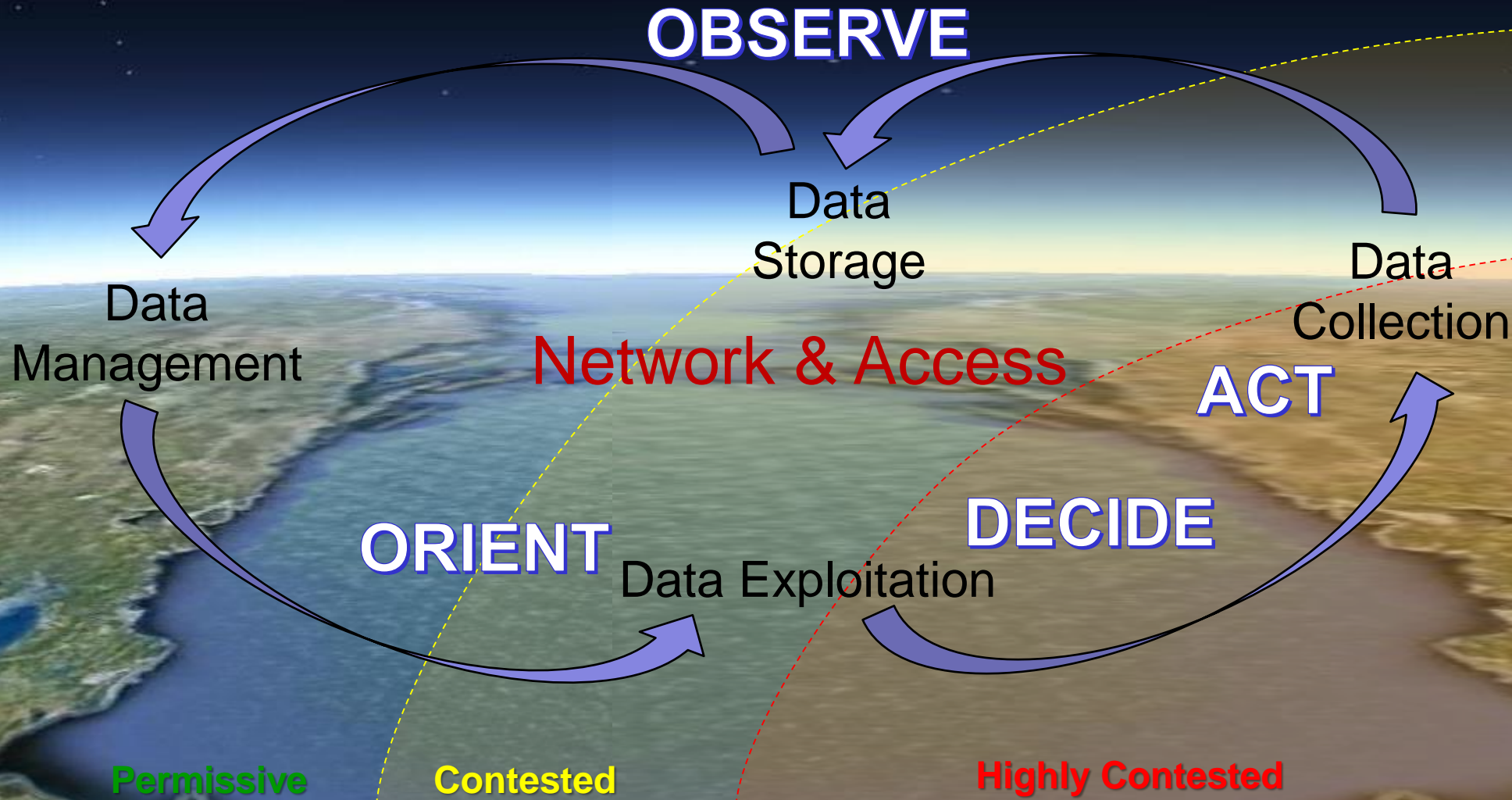
Doolittle Wargame Series

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- **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?

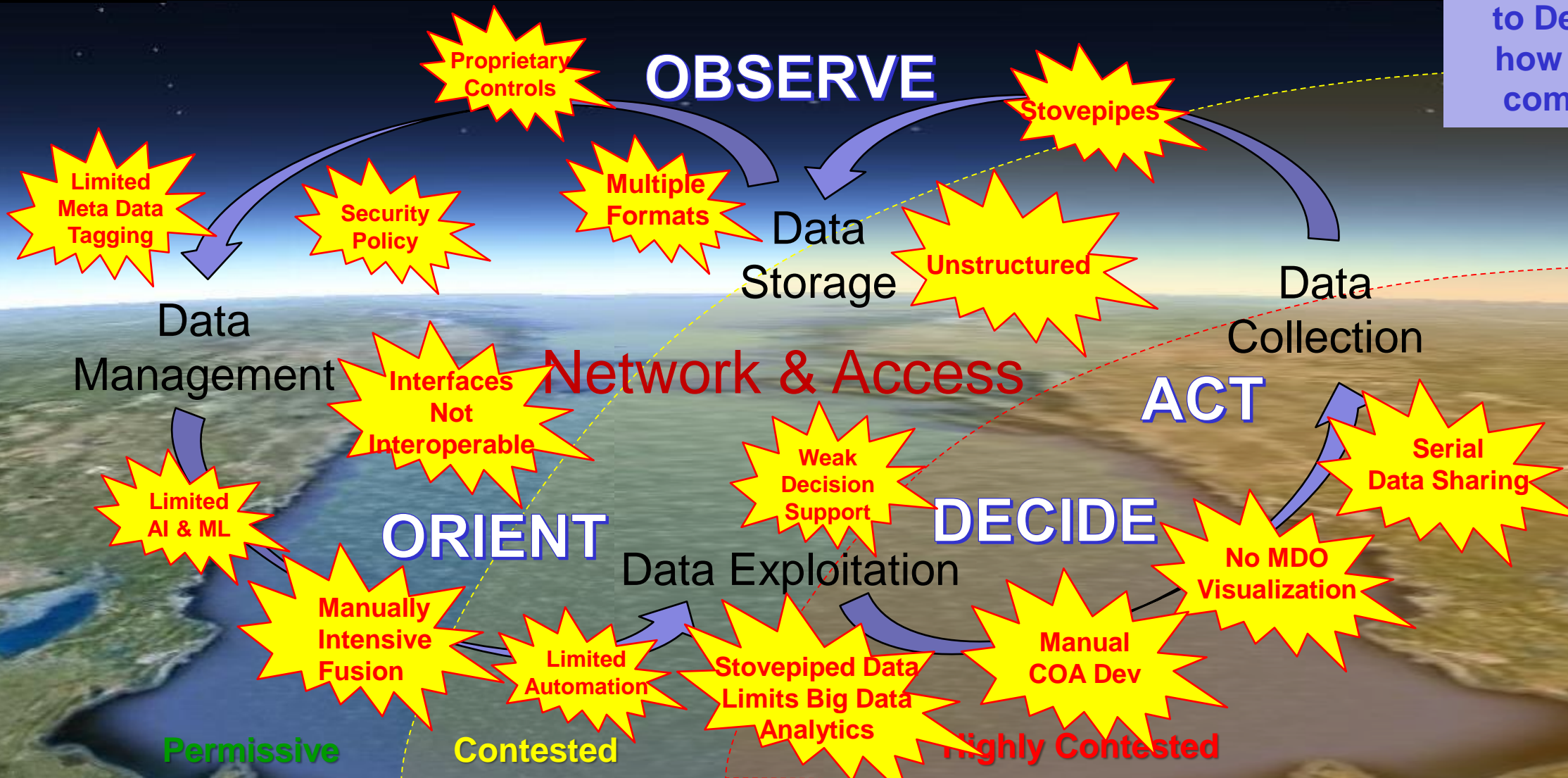


MDC2 Technology-Enabled OODA



Challenges to Compressing OODA

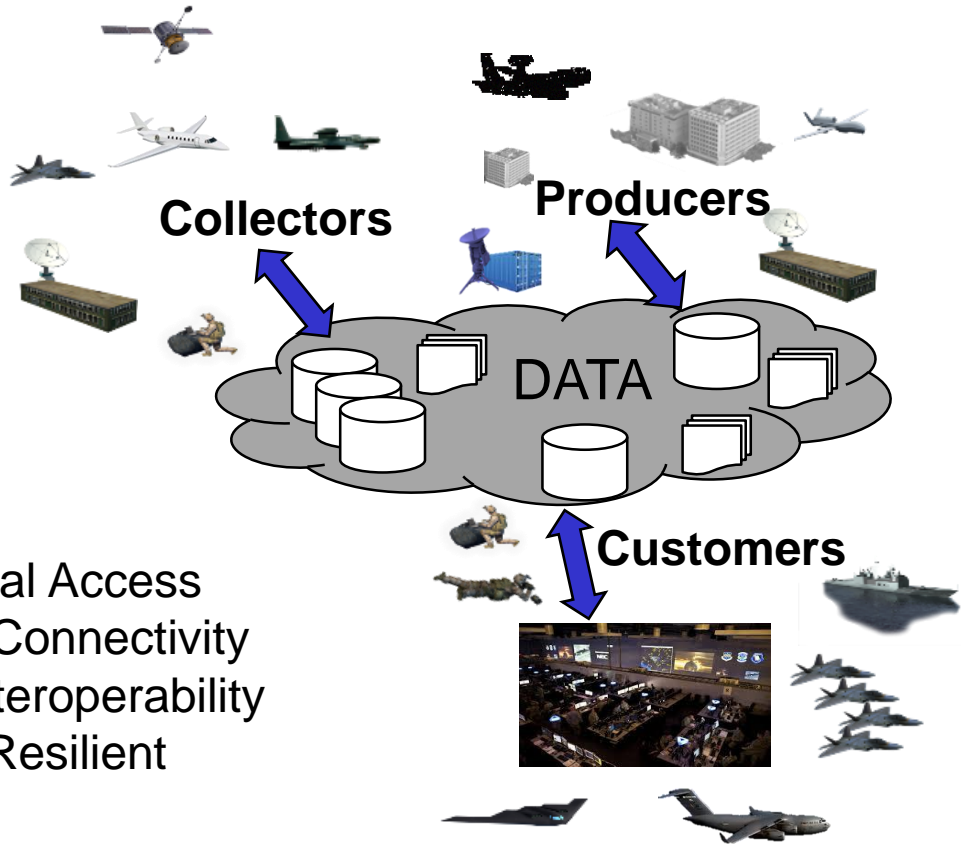
Accelerating Data to Decision is how OODA is compressed





From Vision to Action...

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- Universal Access
- Global Connectivity
- Total Interoperability
- Highly Resilient

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

Challenges to Implementation

- Security
- Latency
- Data access
- Bandwidth
- Network management
- Standards (data, interfaces, etc.)

AF Initiatives Addressing Challenges

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

Must align initiatives to address challenges



Shadow Network

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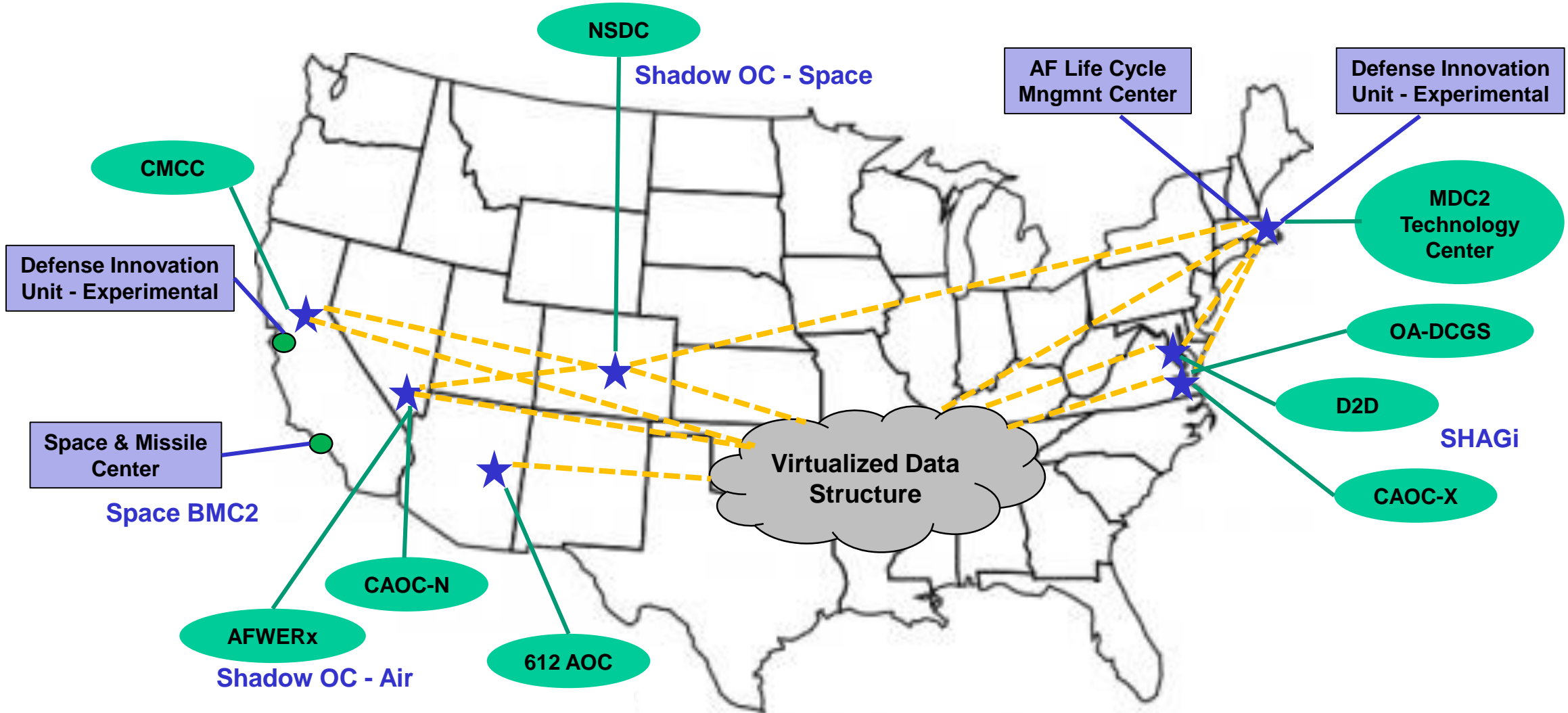
- **Shadow Network is a multi-node network of DevOps environments linked together to experiment for the purpose of addressing Enterprise-wide C2 challenges.**
 - C2 challenges include: security, latency, bandwidth, data access, network resiliency ops, and IT standards.
- **The overarching goal is to 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 formulti-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**



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Shadow Network

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MDC2 Cadre

- **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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New - Old	New - New
<ul style="list-style-type: none"> ■ Processes and org structures are in place to support <ul style="list-style-type: none"> ■ Industrial support ■ CONOPS in place ■ Expertise based on SOP 	<ul style="list-style-type: none"> ■ Processes and org structures are not designed to support <ul style="list-style-type: none"> ■ Industrial support limited (TRL low) ■ No CONOPS (detail low) ■ Very limited expertise (training low)
Seen as low risk but enhancing capability	Seen as high risk & uncertain impacts on capability
Clear linkages to our way of doing business	Less clear how links to our way of doing business
Powerful cultural & institutional inertia	Small group of advocates battling status quo
Seems like responsible use of funding	Seems entrepreneurial & less responsible

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

Questions?

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