



AI Driven Learning - DSAIL

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Overview

Data Science and AI Leadership (DSAIL) Course Overview

Student Capstone Projects

Application: Hap AI Student

Application: Lethal Autonomous Weapons System Doctrine and Policy

DSAIL Overview



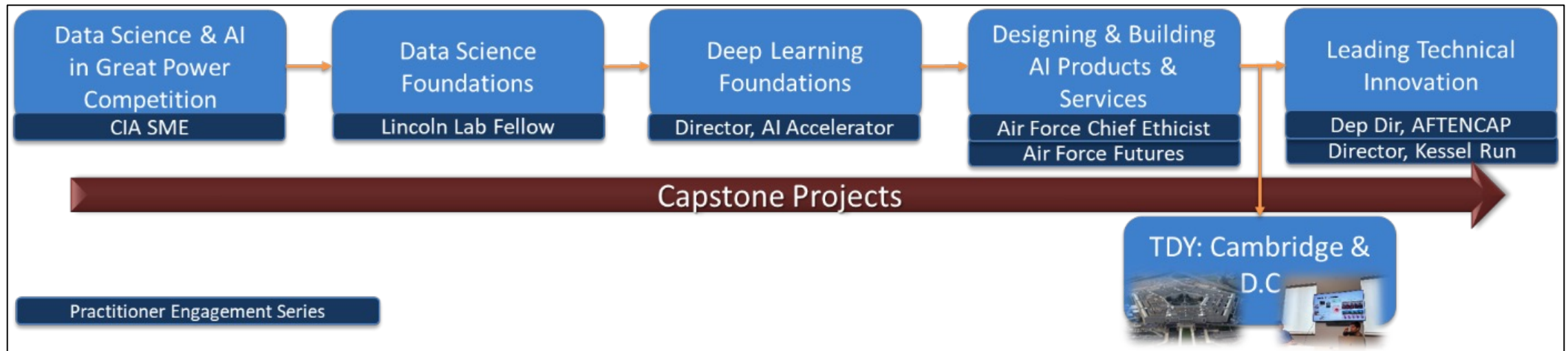
Year Long Specialization
Courses (300 ish hours
in/out of class for students)



7 part time military faculty



Prepares students to lead
teams working on data
science and AI projects in
future assignments



The Air Force requires data science and AI savvy leaders capable of accelerating digital transformation at the operational level

Student Capstones



Projects that span the academic year



Vary wildly in scope and are driven by student engagement and outside stakeholders



Teams of 3-5 students and a faculty advisor



Some cover policy, others design and build models, and some explore the intersection of doctrine and advanced AI technology

Application: Hap AI Student



AI Student – Why?

- Questions to be answered:
 - How does an AI learn from the ACSC curriculum?
 - What is the difference between knowledge and wisdom? Can an AI separate that?
 - What about nuance and critical thinking? Can AI provide, support or enhance that in students?
 - How does an AI provide value to students and faculty?
 - How does an AI enhance and improve educational delivery within AU?
 - Can an AI that has improved educational delivery provide value across the force?



AI Student – Approaches Under Consideration

Three Options – RAG (Easy), Fine-Tuning (Expensive), Agentic (Hard)

RAG – Retrieval-Augmented Generation

- Course content is vectorized into searchable arrays
- Model draws inferences from this indexed content
- Large arrays require summarization within model context limits

Fine-Tuning – Often Confused with RAG

- Retrains model weights on new data
- Computationally intensive and more rigid than RAG

Agentic Approach – Specialized Tools Orchestrated by a Central Agent

- LLMs perform best when focused on specific tasks
- Minerva, Jay Five Ex and Wargame Master (customGPTs) are strong examples of task specialization
- An agent layer directs multiple specialized models to complete a prompt

Commanding Robotic Wingmen:

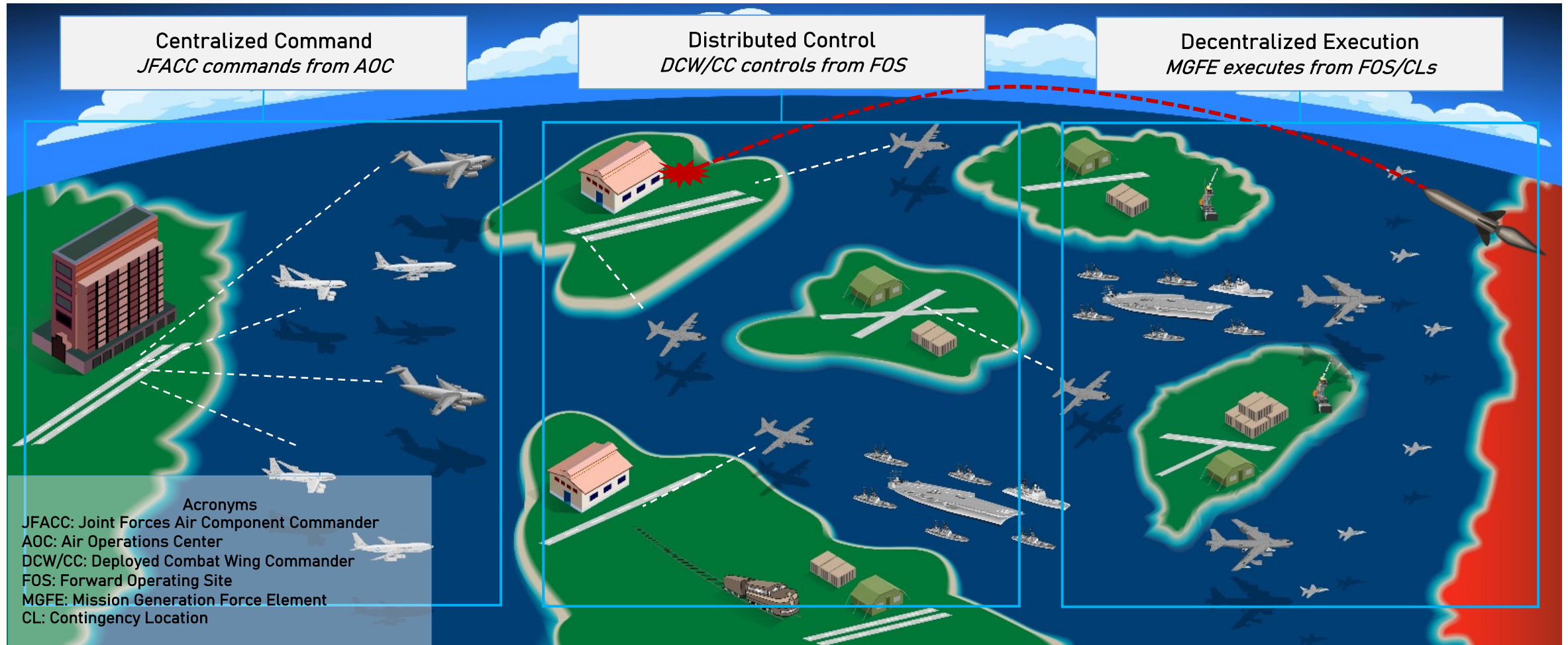
**Conceptualizing Air Force Mission Command of
Lethal Autonomous Weapon Systems (LAWS)**

Maj Christina Hayhurst

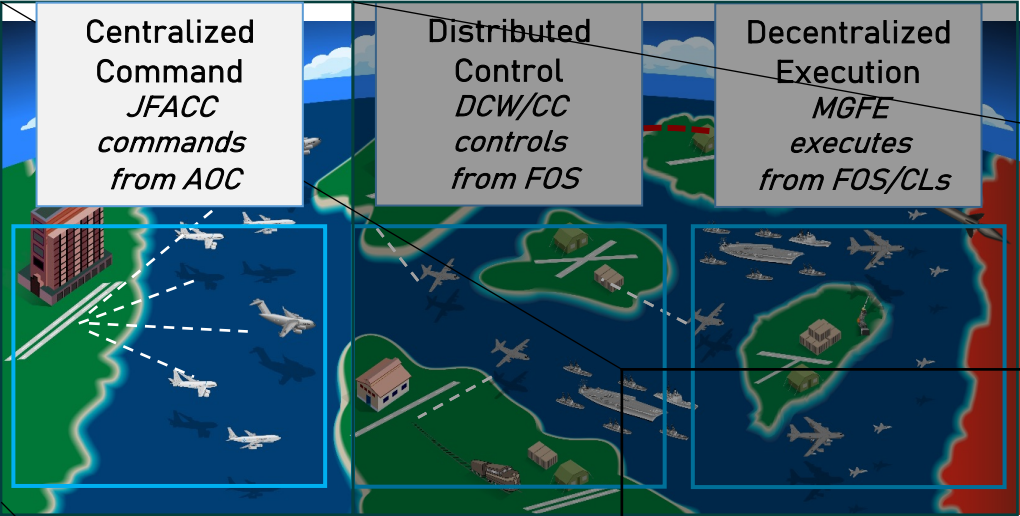
Mission Command of LAWS

- **Mission Command: Air Force C2 by mission-ready units of action (from AFDP 1, 10 Mar 21)**
 - Centralized command / distributed control / decentralized execution
 - Independent research focused on mission command in INDOPACOM's Deployed Combat Wings (DCWs)
- **Future DCWs will include LAWS in the Indo-Pacific theater**
 - Force multipliers that execute digital model of CC intent without loss of human life for decision advantage
 - Air Force LAWS = Collaborative Combat Aircraft (CCAs)
- **Problem:**
 - Air Force has not met unique OT&E requirements for CCA-equipped DCWs deployed to INDOPACOM
- **Thesis:**
 - "To fully leverage CCA-based airpower advantage against the PLA by FY27, the AF should organize, train, and equip its DCW commanders in the current Air Force Force Generation (AFFORGEN) cycle's reset, prepare, and certify phases to establish mission command of lethal human-machine teams by FY27's commit phase."

Mission Command Elements in the Indo-Pacific Theater



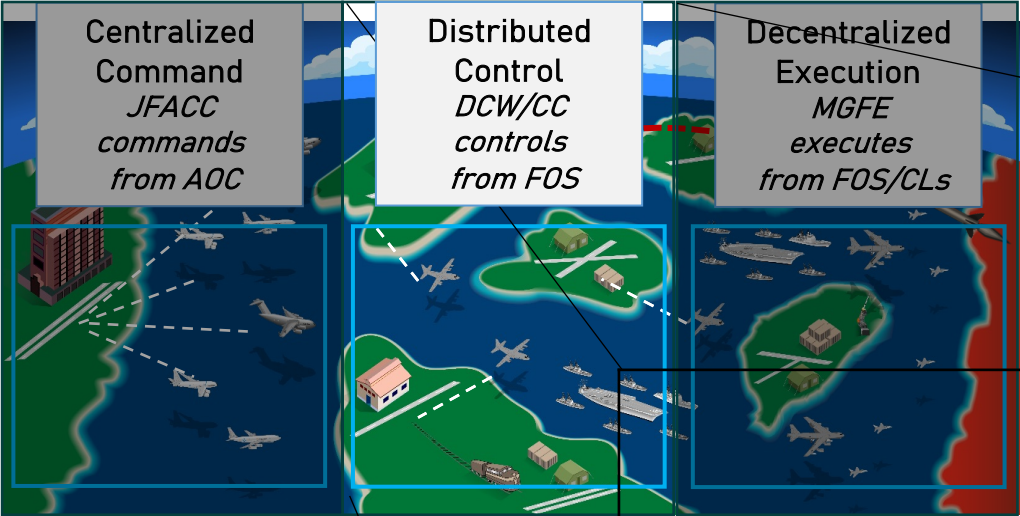
Centralized Command (location: AOC)



Centralized Command Requirements			
	Organize	Train	Equip
JFACC without CCAs	-General staff to support commanders with no guarantee of AI fluency	-LOAC training -Certified on air operations mission	-Standard power requirements to support the Common Operating Picture (COP)
JFACC with CCAs	-Special staff to iterate on CCA models used in the JOA	-Ethics of LAWS use -Certified on CCA data readiness	-Robust power requirements to support AI model training

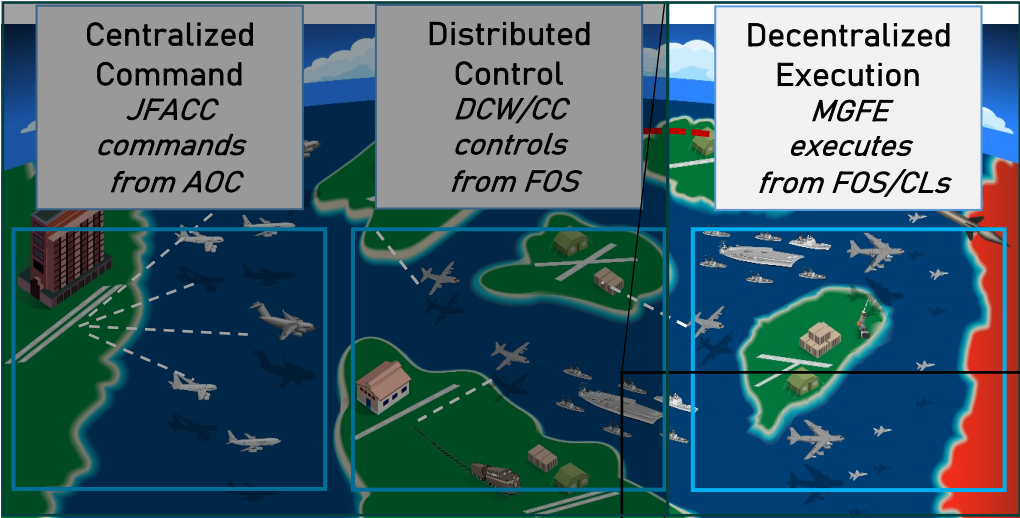
Distributed Control

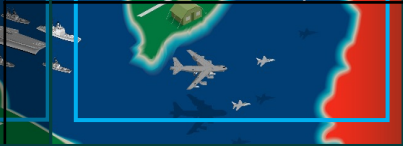
(location: FOS)



	Distributed Control Requirements		
	Organize	Train	Equip
DCW without CCAs	<ul style="list-style-type: none">-TACON over CAF/MAF platforms-A-staff with minimal data/software skills	<ul style="list-style-type: none">-Exercise against contested logistics for CAF/MAF supply and & EW threats to COP	<ul style="list-style-type: none">-Prepositioned maintenance and launch/recovery resources
DCW with CCAs	<ul style="list-style-type: none">-OPCON over CCAs & training data-Talent to update CCA models	<ul style="list-style-type: none">-Exercise against contested logistics for CCA data transfer-LAWS debriefing	<ul style="list-style-type: none">-Prepositioned power generation source for CCA model training

Decentralized Execution (location: Forward Edge)



		Decentralized Execution Requirements		
		Organize	Train	Equip
	MGFE without CCAs	-TACON to use prudent risk to exploit fleeting opportunities	-Certification exercises with CAF/MAF resources executing ACE	-Standard maintenance supplies prepositioned for ACE
	MGFE with CCAs	-TACON to adjust CCA use based on BDA/compromise	-Optimize HMT throughout AFFORGEN to build trust	-CCA sustainment supplies to support forward-edge ACE

Counterarguments

1) LAWS make mistakes

- Problem: Misidentify targets & risk of fratricide
- Solution: Calibrated trust through discrimination tests and clear ROEs

2) LAWS react faster than human intervention

- Problem: Lack context & escalate conflict unintentionally
- Solution: Clear accountability structures in place and "appropriate level of human judgement"

Conclusion

- **CCAs are coming – critical to develop operational construct now before ceding capability to the PLA**
- **Culture must shift in the future to overmatch speed of adversary air operations**
- **Opportunity to lead the joint force in future doctrine of commanding LAWS**

The background is a dark, gradient blue. It features a series of parallel, glowing lines that recede into the distance, creating a sense of depth. The lines are colored in a gradient from bright cyan on the left to magenta and pink on the right. The word "Questions?" is centered in the middle of the image in a bold, white, sans-serif font.

Questions?