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**POC:** B. Wysocki, AFRL

**AFRL**

# AI – Cyber – Information Warfare Convergence

## 2024 CYBER SECURITY DAY

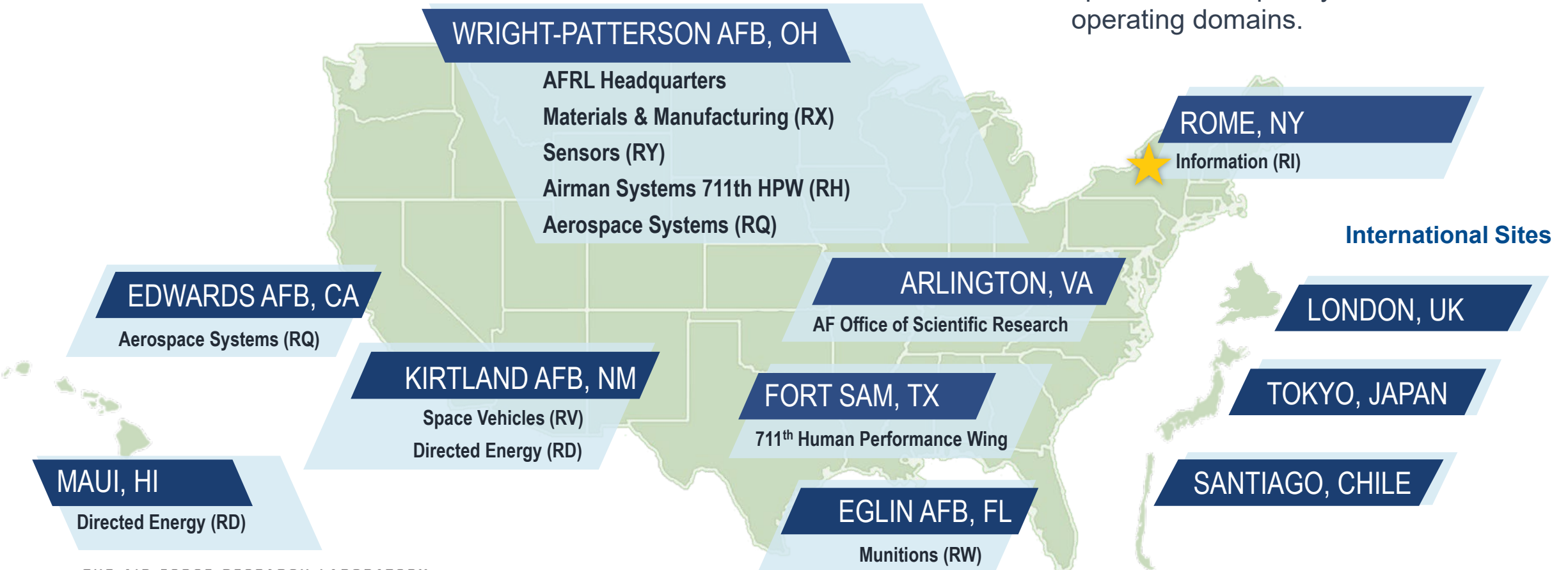
Indiana University of Pennsylvania

Dr. Bryant Wysocki  
DAF Technical Advisor  
Dr. Sarah Muccio  
Deputy DAF Tech Advisor



**MISSION:** We lead, discover, develop and deliver science, technology and innovation for Warfighters.

**VISION:** To arm Warfighters that dominate in time, space and complexity across all operating domains.



## MISSION:

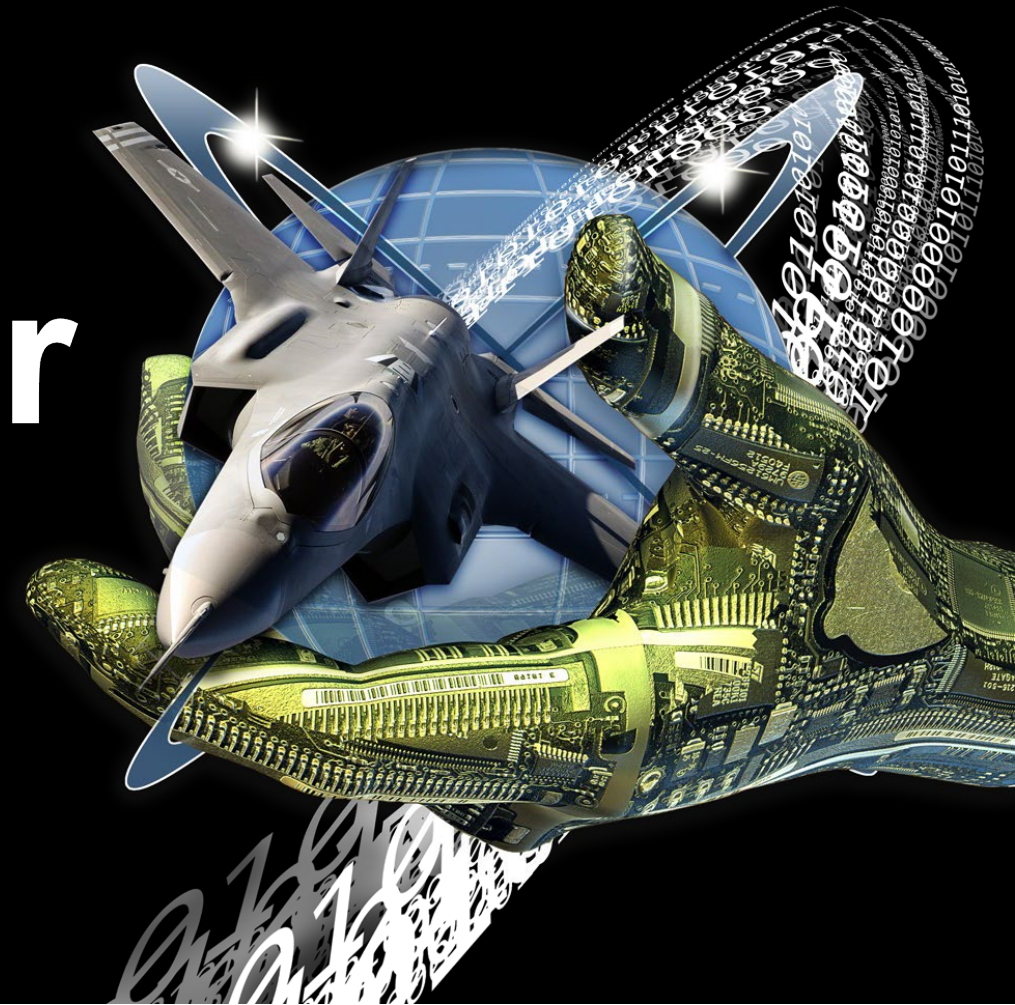
To **EXPLORE**, **PROTOTYPE**, and **DEMONSTRATE** high-impact, game-changing technologies that enable the Air Force and Nation to maintain its superior technical advantage.



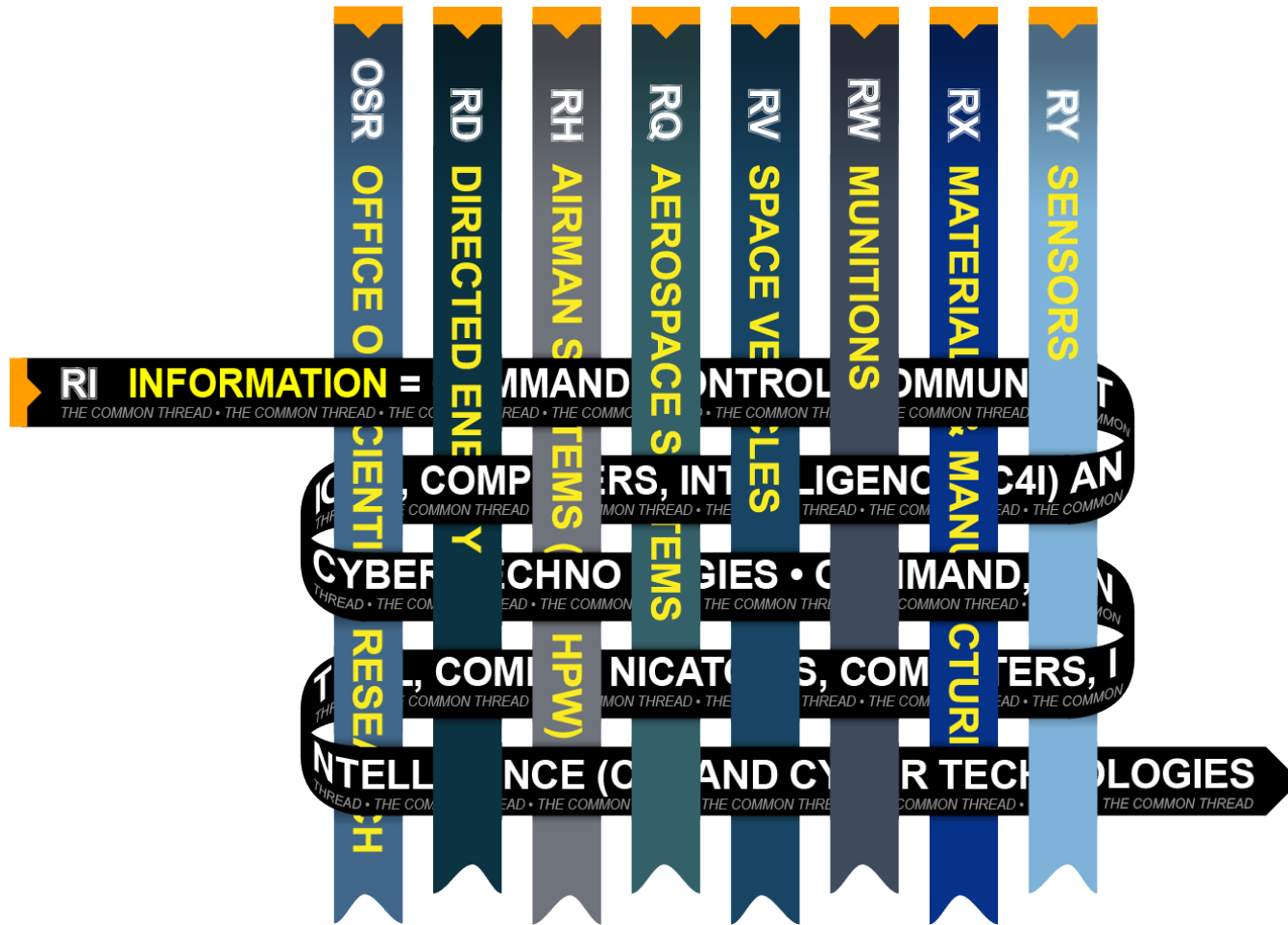
# C4I&Cyber

## VISION:

To **LEAD** the Air Force and Nation in **COMMAND, CONTROL, COMMUNICATIONS, COMPUTERS, AND INTELLIGENCE (C4I) AND CYBER** science, technology, research and development.



# Information Technologies Touch Every Core Mission



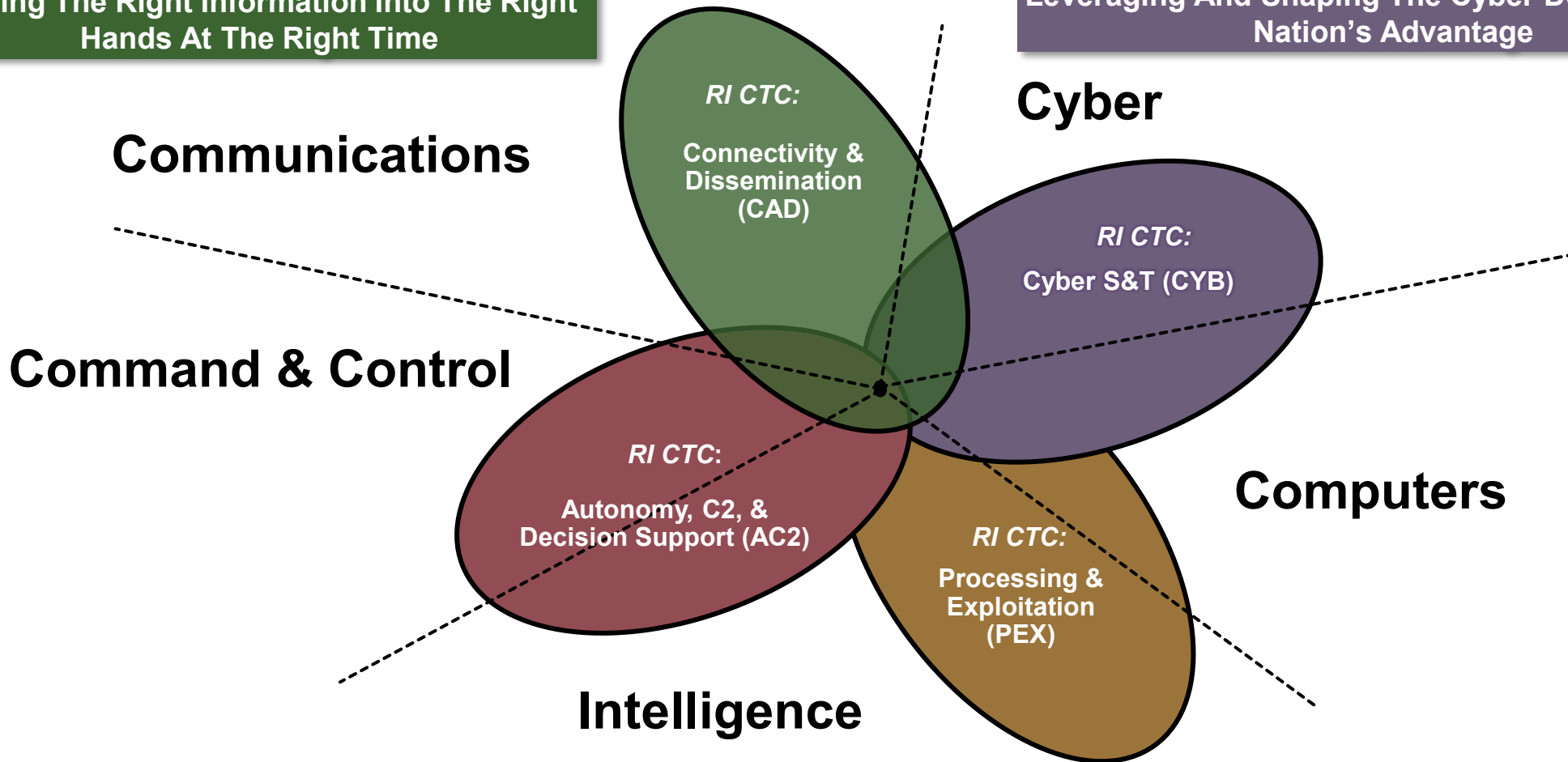
## C4I&Cyber

Command,  
Control,  
Communications,  
Computers,  
Intelligence and  
Cyber

# Information Directorate Core Technical Competencies (CTC)

Putting The Right Information Into The Right Hands At The Right Time

Leveraging And Shaping The Cyber Domain To The Nation's Advantage



Mastering Complexity of Multi-domain Command & Control

Exploiting Computing and Algorithms to Transform Big Data Into Information

# AI in Cyber Warfare



**AI can enhance the capabilities of both defensive and offensive cyber operations**

### Predictive Analytics

- Future attacks based on historical data
- Real-time monitoring
- Proactively strengthen defenses

### Automated Threat Detection and Response

- Monitor
- Detect
- Respond

### Adaptive Cyber Offensives

- Automated vulnerability discovery & exploitation
- Dynamic malware generation
- AI-driven social engineering attacks

# AI in Information Warfare



**Manipulation of information to influence public perception & decision-making, is increasingly driven by AI**



# Deep Fakes

## AI-generated or Real?

Take a look at this image and share whether you think it is generated by AI or not, and how confident you are in this judgment. You have unlimited time to look at the image.

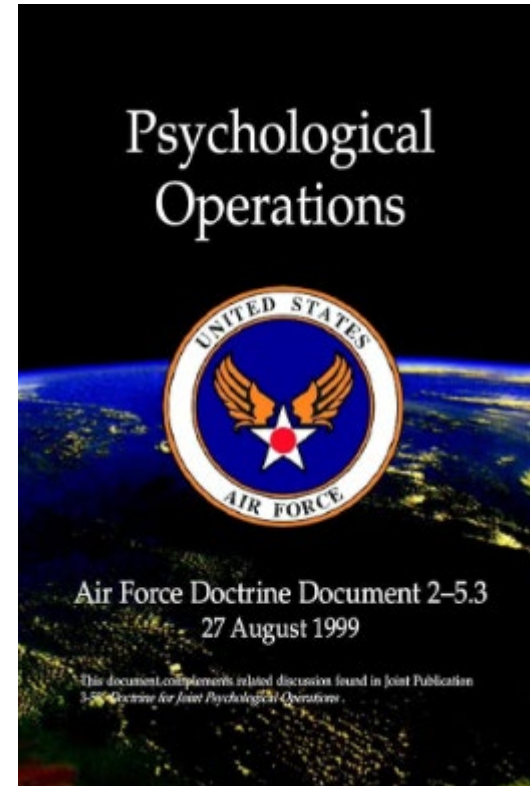
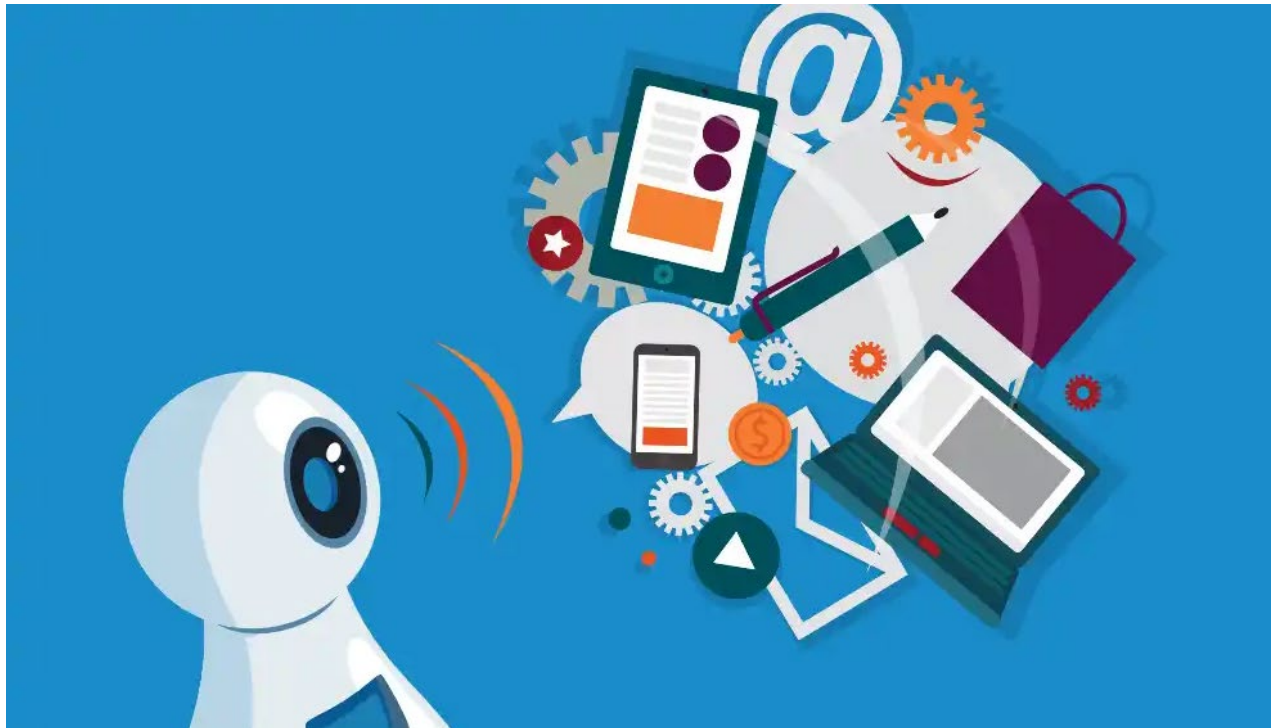


I have seen this before.

- Real: This is a real image.
- Fake: This is a synthetic image generated by AI.

Northwestern  
Kellogg

# Targeted Propaganda and PSYOPS



# Cyber and Information Warfare Convergence



**Bringing technologies to the fight**

# AI-Augmented



### Ethical and Legal Challenges:

- Autonomous decision-making in attack operations
- The spread of deepfakes
- The manipulation of public opinion.



### Increased Complexity of Defense:

- defend spectrum of threats, from advanced cyberattacks to information manipulation
- AI-based countermeasures:
  - AI-driven disinformation detection
  - Automated response systems
  - Target space
  - Attack vectors

### Escalation of Hybrid Warfare:

- Kinetic, cyber, and information operations are combined into a cohesive strategy
- Blur the lines between conventional and non-conventional warfare



## Key Take Away

*Convergence between  
AI, cyber, and information warfare  
signifies a shift towards more  
autonomous, adaptive, and pervasive forms of conflict,  
where control over information and digital infrastructure is as  
crucial as traditional military dominance.*

# INFORMATION DIRECTORATE: C<sup>4</sup>I&Cyber

Global Persistent Awareness

Resilient Information Sharing

Rapid, Effective Decision-Making

Complexity, Unpredictability, and Mass

Speed and Reach of Disruption and Lethality

# Questions



**LEAD · DISCOVER · DEVELOP · DELIVER**



# Image Reference slide

- Slide 6 AI in CW

Image of Robot: "AI in cybersecurity" aibusiness.com 8.11.0222

- Slide 8 AI in IW

Image on left Cyber Warrior: "Cyberwarfare and information warfare..." c4ISRnet.com, 4.25.2017

Image on upper right: "Information Warfare – Modern Diplomacy" moderndiplomacy.eu 3.7.2018

Image on lower right: "Information Warfare in 2021 – Are you protected from cyber attacks? – Connected IT Blog - Community.connection.com 19 Feb 2021

- Slide 9 Deep Fakes

Image of Man: "AI generated or Real?" <https://detectfakes.kellogg.northwestern.edu/> 2022 published

- Slide 10 Targeted

Image of robot thinking: <https://www.geeksforgeeks.org/targeted-advertising-using-machine-learning/Slide 2 - IW> 3.1.2023

- Slide 11 CW IW convergence

Image star exploding: Space Telescope Science Institute Office of Public Outreach Credit: NASA, ESA, and J. Kastner (RIT) <https://singularityhub.com/2024/04/16/exploding-stars-are-rare-but-if-one-was-close-enough-it-could-threaten-life-on-earth/> 4.16.2024

- Slide 12 AI-Augmented

Image of man/night sky: "The Age of AI" <https://www.act.nato.int/article/the-convergence-of-emerging-technologies/> 1.31.2024