



Delivering Transformational Capabilities Through Science & Technology Vanguard

April 2023

Mr. Anthony "AT" Thomas

Chief Engineer, Integrated Capabilities Directorate, Air Force Research Laboratory



The Transformational Challenge





An Enterprise Approach to Delivering Transformation



**GOLDEN HORDE
COLOSSEUM**



**ROCKET CARGO FOR
AGILE GLOBAL LOGISTICS**

Vanguards....

are focused research programs

are limited in time and scope

are high risk by design

*advance emerging weapon
systems and warfighting concepts*

*synergize advanced technology, applied
research, basic research, and
experimentation and prototyping*

*demonstrate the viability
of leap-ahead, integrated systems-of-
systems capabilities to warfighters*



SKYBORG



**NAVIGATION
TECHNOLOGY
SATELLITE – 3 (NTS-3)**



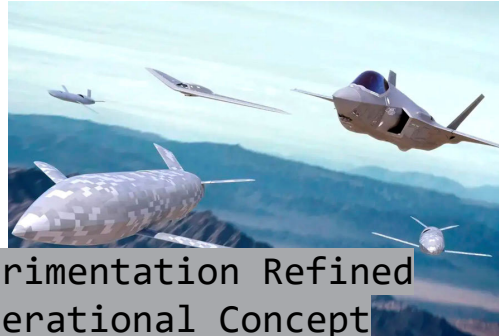
A Vanguard In Action

Advancing Aerial Autonomy & Artificial Intelligence

S&T Defined

Art of the Possible

Autonomous Air Vehicles



Experimentation Refined
Operational Concept
Collaborative Aircraft



Experimentation
Built Confidence
Autonomous Flight

Together Obtained
Buy-In & Ownership

Platform Agnostic & Teaming



Experimentation Refining
Infrastructure & Requirements

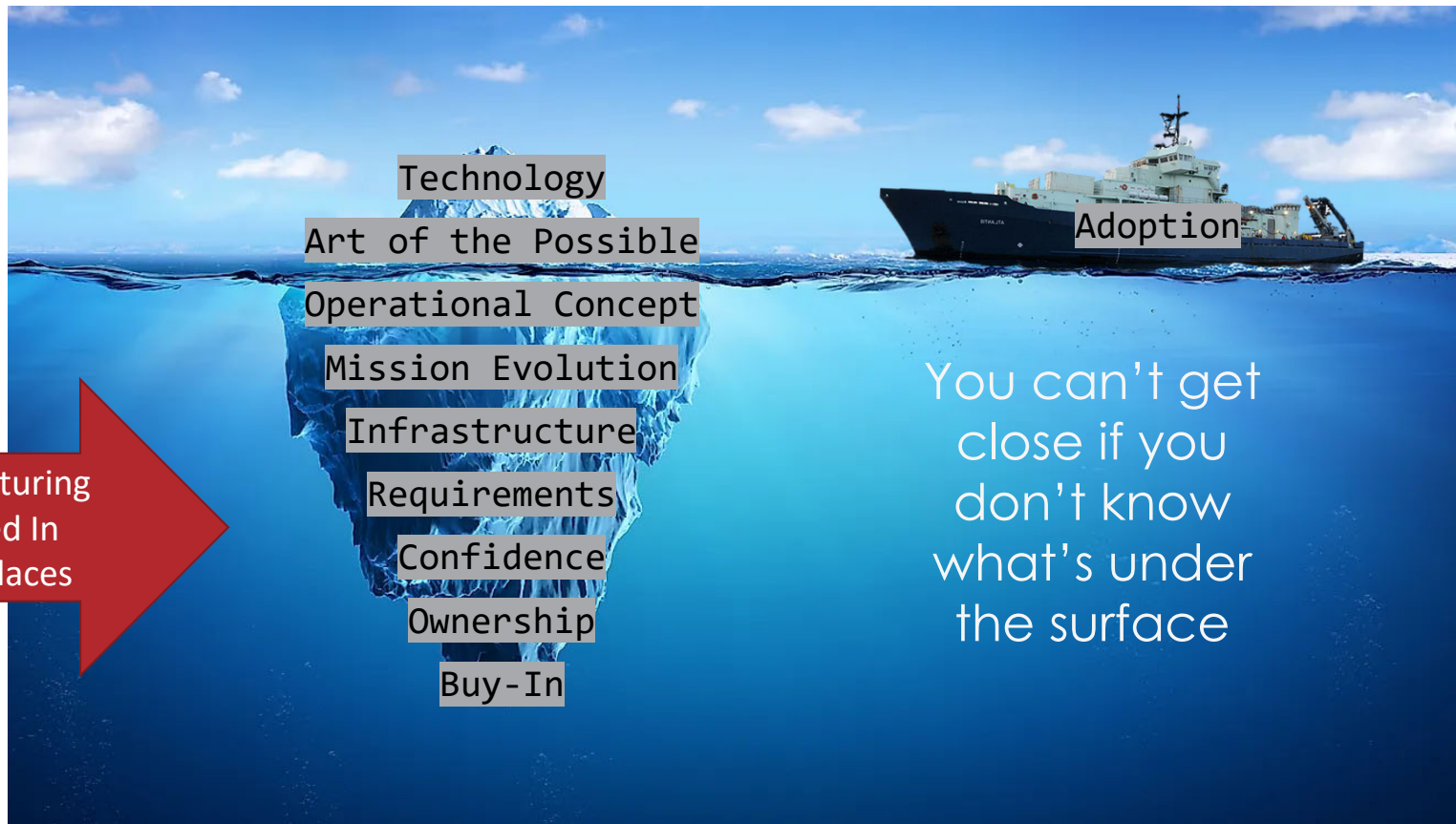
Policy & Tactics



Cross-Agency Partnership
Addressing Adoption Barriers
Accelerated Testing



Enabling Adoption: The Importance of Manufacturing





Opportunities For The Manufacturing Industrial Base

• Learn The Drivers

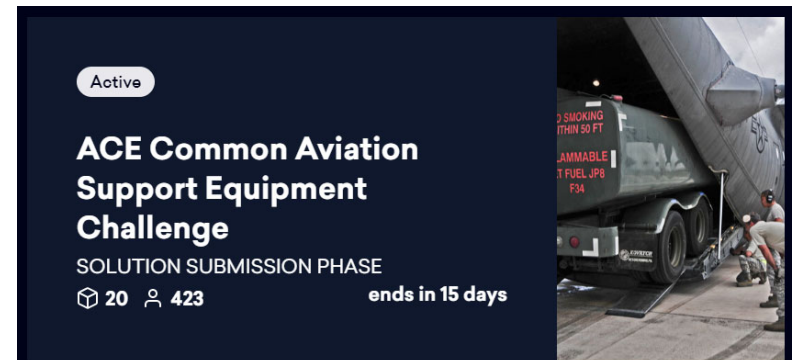
- Vanguarders are Strategy Driven & Threat Informed:
- Participate in our industry events to understand them:
 - Strategic Interchange Meeting (SIM) in Spring
 - Wright Dialogue with Industry (WDI) in Summer

• Help Shape the Pipeline

- Vanguarders are curated from warfighter informed challenge problems
- Participate in open challenges & workshops
 - AFWERX ACE Common Support Equipment Challenge
 - <https://afwerxchallenge.com/>

• Keep an eye out on SAM for solicitation geared specifically towards Vanguarders

- <https://sam.gov/>





Questions