Thoughts on…

Next Generation Acquisition Model

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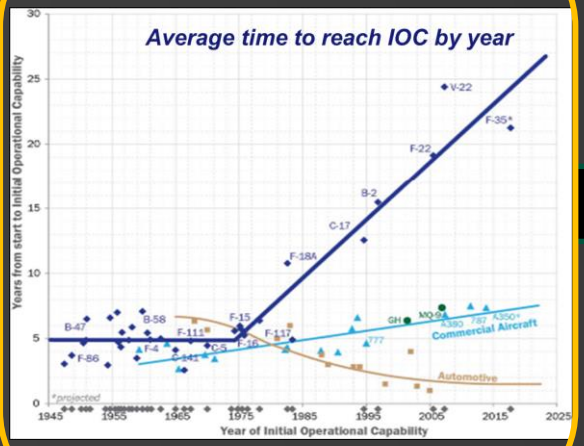
Agile Acquisition –> Next Gen Acquisition Model

Why

US fielding timelines for new capabilities have increased dramatically while our adversaries have outpaced us.

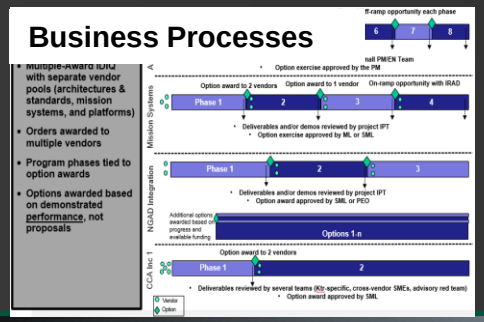


1. Defense Acquisitions Annual Report - June 2020 (GAO-20-439)
2. Galston, William, Stepping Up the Tech Fight Against China, Wall Street Journal – March 2021)

What

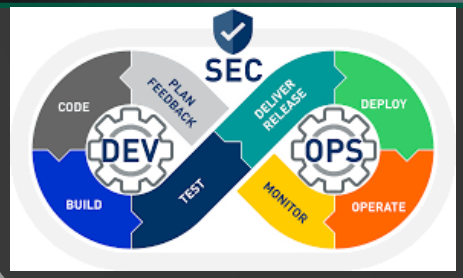
Next Generation Air Dominance (NGAD) Family of Systems (FoS)

Business Processes



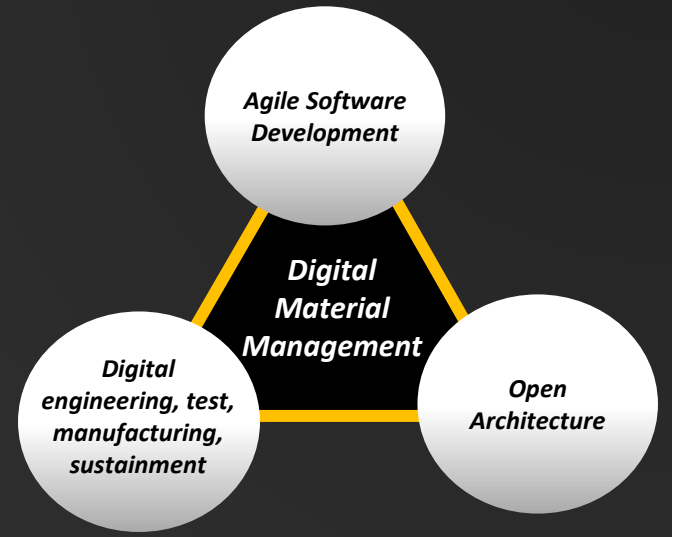
Platform *artist notional rendering

Software Products



Open Architecture

How



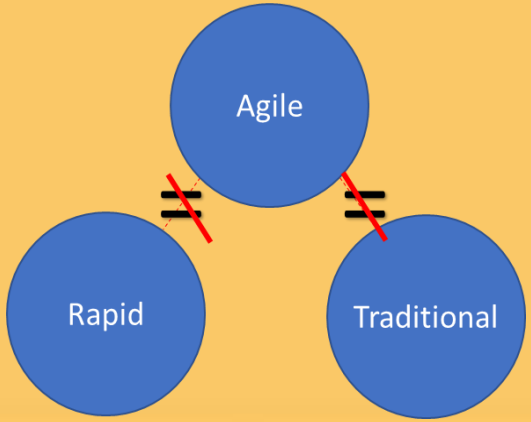
- **Test & Experimentation Infrastructure**
- **Digital Infrastructure**
- **Industry Competition**

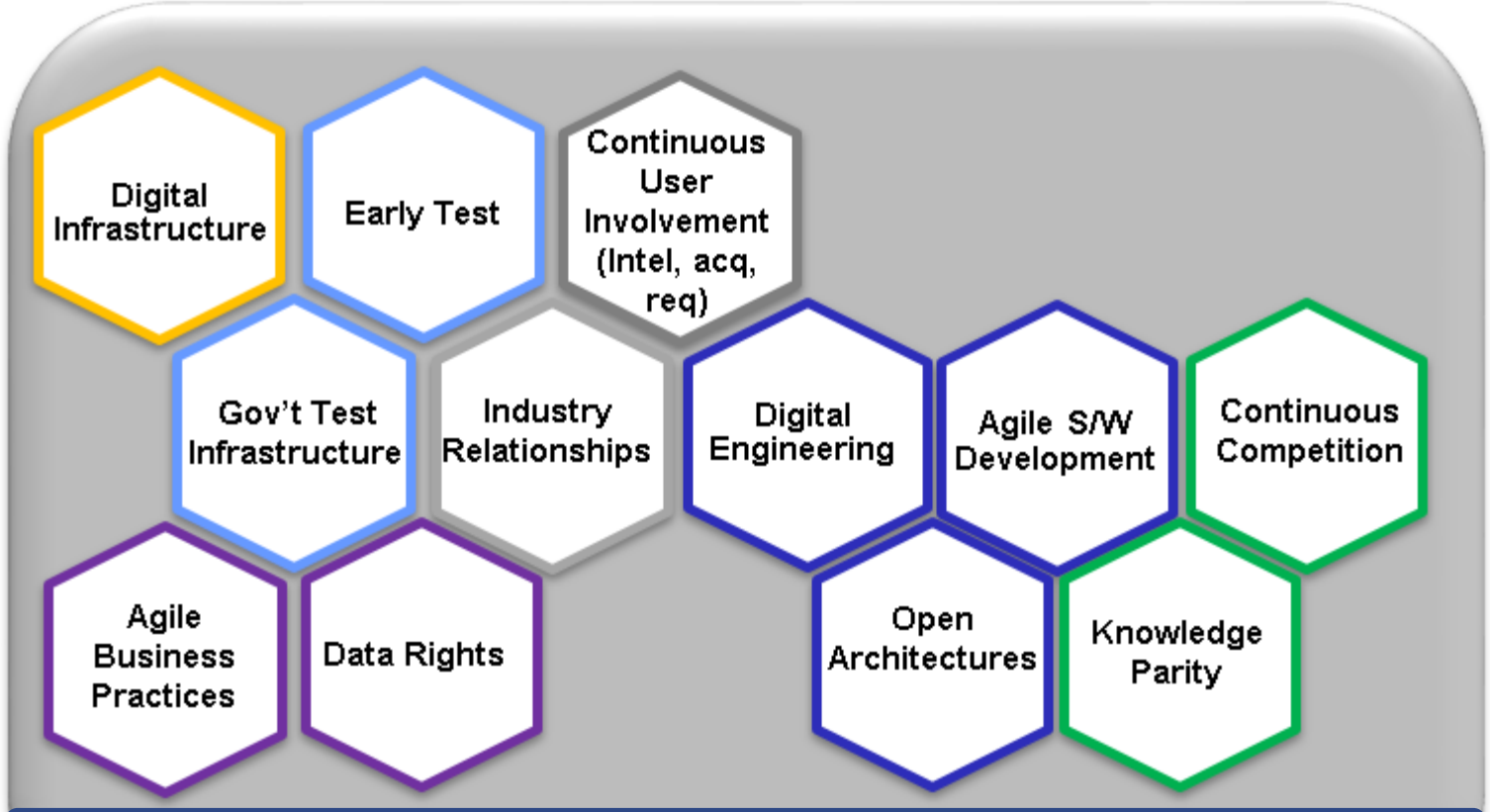
Agile Acquisition –> Next Gen Acquisition Model

Agile Acquisition is:

- Acquisition approach that allows for maximum flexibility to make decisions with best info possible
- Accommodate new information or changing threat

Agile Acquisition is not:





Foundational Elements of Agile Acquisition

A Powerful Paradigm Shift…Not Simply an "Acquisition Reform" Effort

Next Gen Acquisition Model

Transparency and Communication

- Industry
- Intel
- S&T
- Test
- Operator
- Acquisition
- Sustainment
- International

Government-Owned Open Architectures and Standards

- Avoid vendor lock
- Open, common interfaces
- "Marketplace" of vendors and compliant hardware and software solutions

Key Principles

1. **Early and continuous stakeholder collaboration in shared digital environment**
2. **Attribute-based requirements refined over time w/ data & analysis**
3. **Agile Acquisition Strategy: flexible, incremental approach built on open architectures**
4. **Mobilize industrial base, promote collaboration across marketplace**

Agile Business Practices

- Contract Structure
- Supports Agile Acquisition Strategy
- On- and off-ramps
- Government Leverage

Sustained Competition

- Motivates industry to bring talent and best performance
- Promotes favorable cost schedule, and performance
- Leverages multiple vendor pools and increments
- Taps traditional and non-traditional vendors; best-of-breed solutions

The NGAD FoS Acquisition Strategy was Built upon the Foundation of this ADO Acquisition Model

One Team, One Fight

Transparency & Communication

Lead MAJCOM

SAF/AQ

Industry Partners

Intel

Program Office

Test

Sustainment

S&T

“Lanes are for Losers”

Intentional enterprise integration and teaming…on <u>common Infrastructure</u> and a <u>Shared Digital Environment</u>

Attributes-based requirements means <u>stakeholders must be more hands-on</u> over time…design trades, feedback, refinement, etc.

Early and Continuous Stakeholder Collaboration in Shared Digital Environment

Key Principles

Dev → Ops

Prime Contractor Development Network

- Organic networks across industry
- Government access enables real time information flow and knowledge parity

Government DEVOPS Network

- USG owned, common environment for software development
- Supports large amounts of code running continuously

Government Ops Network

- Common architecture and ground segments decrease mission data timelines
- Enables flow of software to insert capabilities and outpace threats

Considerations for Digital Infrastructure:

- Create a culture of compliance for standardization, data rights, and transparency
- Maximize interconnectivity between the USG and industry
- Prioritize the developmental aspects of the networks as they are more complex
- Utilize peering solutions to gain knowledge parity ➔ be one USG/CTR team
- Plan for flexibility when it comes to network capability (e.g., Cloud, PL-3, etc.)
- Ensure that you have the Cyber Security and IT professionals to deliver

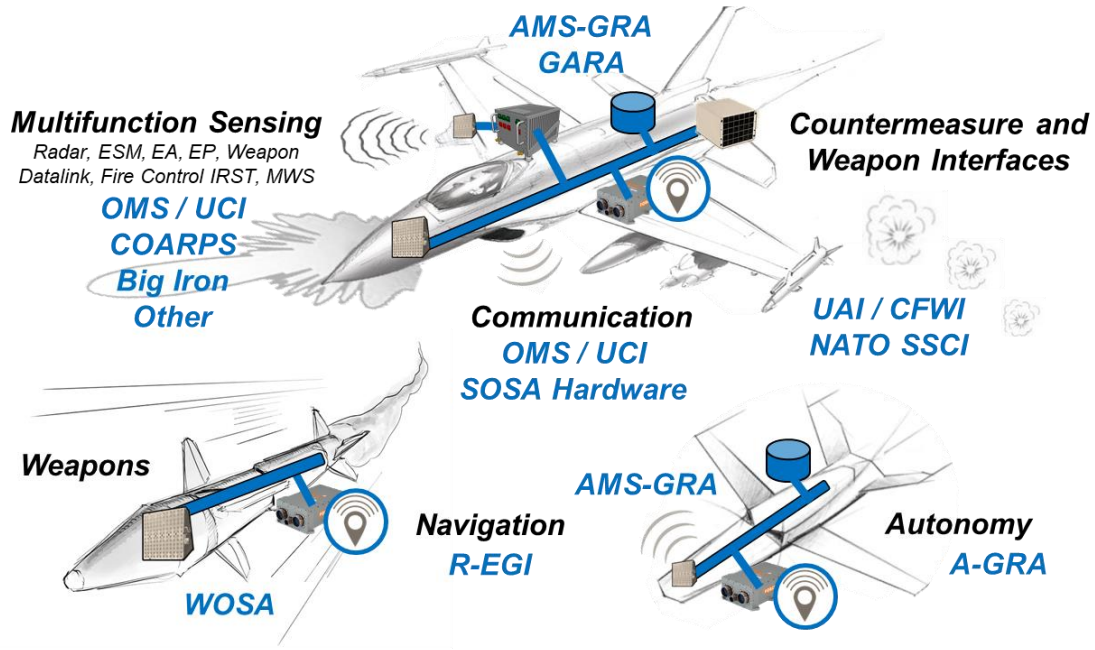
Broader Look at Architectures & Standards

Mapping MOSA Ecosystem

Government Owned Open Architectures

Candidate GRAs
GARA – OMS-based Gov't Ref Arch
AMS-GRA – Agile Gov't Ref Arch
A-GRA – Autonomy Gov't Ref Arch
W-GRA – Weapons Gov't Ref Arch
Candidate Open Standards
OMS – Open Mission Systems
UCI – Univ C2 Interface
UAI – Univ Armament Interface
CFWI – Common Flex Wpn Interface
WOSA – Weapons Open Sys Arch
Big Iron – EW open architecture
R-EGI – PNT open architecture
COARPS – Radar open architecture
SOSA – Sensors Open Sys Arch
SCARS – Simulator open architecture
Others – FACE, CBM+, ground sys

Kinetic Fires Grid
Led by AFADSC iPEO



How are component technologies integrated?

- **Black-box subsystem integrated in vendor locked OFP**
- **Black-box subsystem integrated in Open Gov't Ref Architecture**
- **Open subsystem integrated in vendor locked OFP**
- **Open subsystem integrated in Open Gov't Ref Architecture**

<u>Objective</u>: Identify the right candidates architectures and standards to synchronize management under ADSC iPEO and realize tailored implementation informed by mission and lifecycle ROI

Business-case, Capability-case, Agility-case

Key Note: GRAs & standards will be applied across multiple AFMC centers, military services, industry teams… …will be comprehensive across Warfighting Grids, but will not be "mutually exclusive"

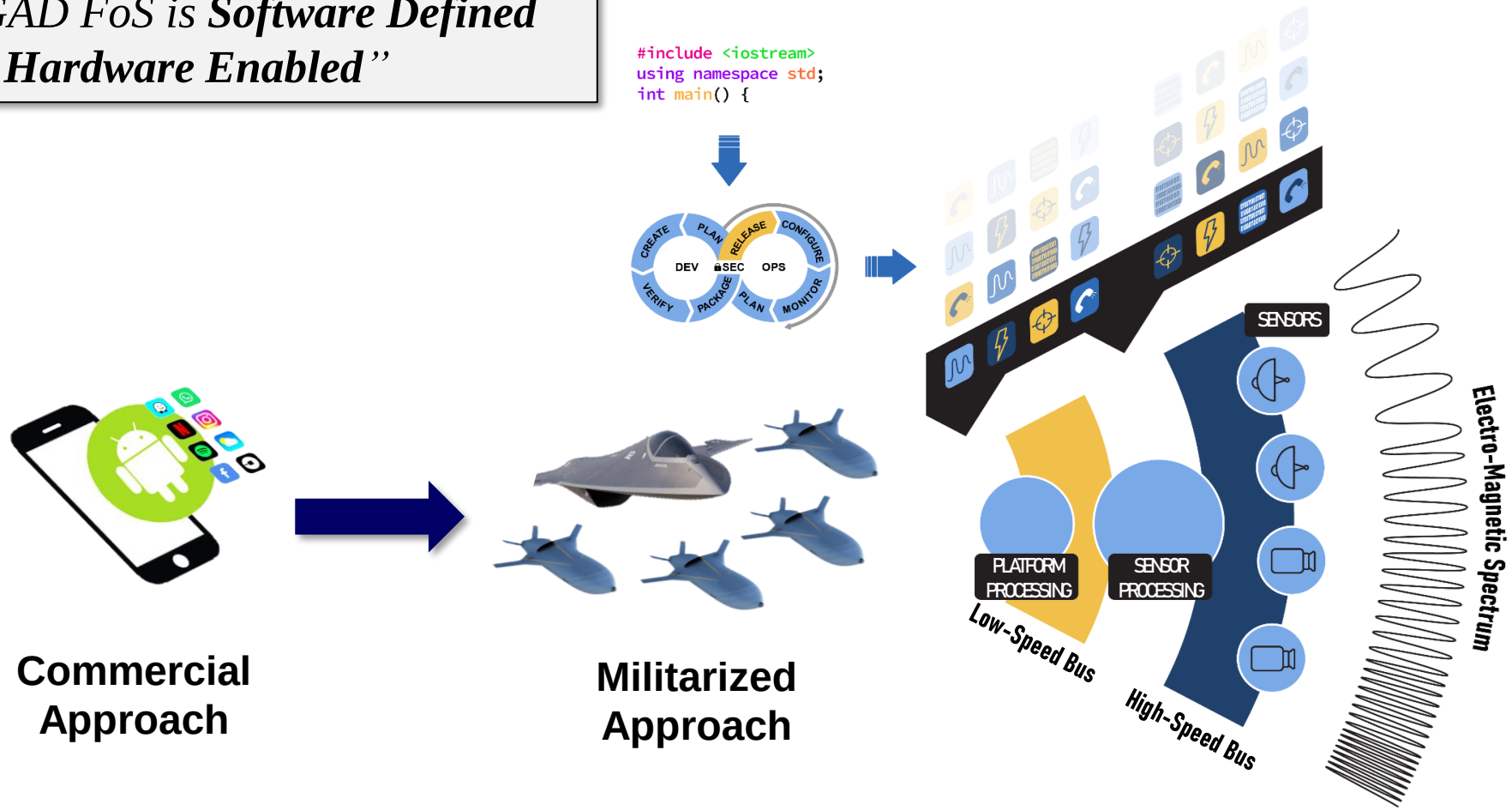
Open Architectures

Agile Mission Suite (AMS) Government Reference Architecture (GRA)

Government Owned Open Architectures

- AMS GRA is:
  - Adaptable, Modular, and Expandable architecture
  - Developed, Integrated, Tested, Verified CI/CD Pipeline
- AMS GRA enables:
  - **Decoupled SW from HW**
  - **Mission Systems isolated from safety of flight / flight critical subsystems**
  - Government owned "Sensor-to-Glass"
  - Not vendor lock, interfaces are open and common
  - Minimizes Airworthiness impacts to deploy new capability
  - "Marketplace" of Software and Hardware vendors

*"NGAD FoS is **Software Defined and Hardware Enabled**"*



Commercial Approach

Militarized Approach

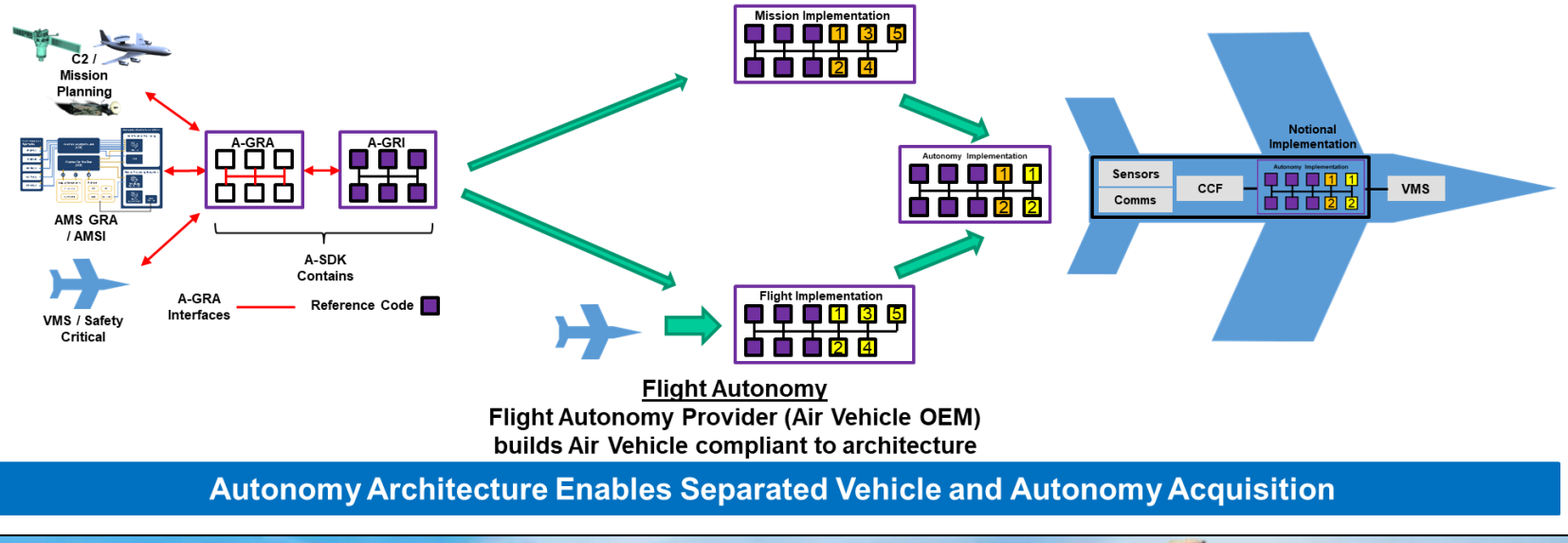
Open Architecture Ensures NGAD FoS can Respond to Dynamic Threat Environment at Speed Of Software

Open Architectures

Autonomy Government Reference Architecture (A-GRA)

Government Owned Open Architectures

- A-GRA is:
  - Adaptable, Modular, **Autonomy Architecture extensible to multiple platforms & missions**
  - **Affordable and scalable**
- A-GRA Enables:
  - Not vendor lock, interfaces are open and common
  - Minimizes Airworthiness impacts to deploy new capability
  - **"Marketplace" of autonomy vendors**
  - **Common user experience**
  - **Reduced manpower and logistics footprint**



A-GRA avoids vendor lock, enables rapid iteration, is extensible to other platforms, and underpins interoperability

Broader Look at Architectures & Standards

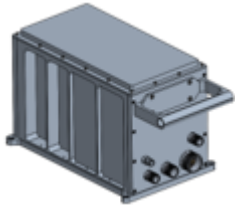
Spectrum of Open Architecture Implementation

Government Owned Open Architectures

F-15E Platform

Modifications can be federated or implemented within a vendor-locked legacy system

R-EGI on F-15



Open architecture subsystems can be integrated into a vendor-locked OFP

F-22 CCA Control

A hybrid approach may use a narrow open architecture enclave within a vendor-locked system

Future Program

Future systems may integrate open subsystems into an open GRA

How are component technologies integrated?

- **Black-box subsystem integrated in vendor locked OFP**
- **Black-box subsystem integrated in Open Gov't Ref Architecture**
- **Open subsystem integrated in vendor locked OFP**
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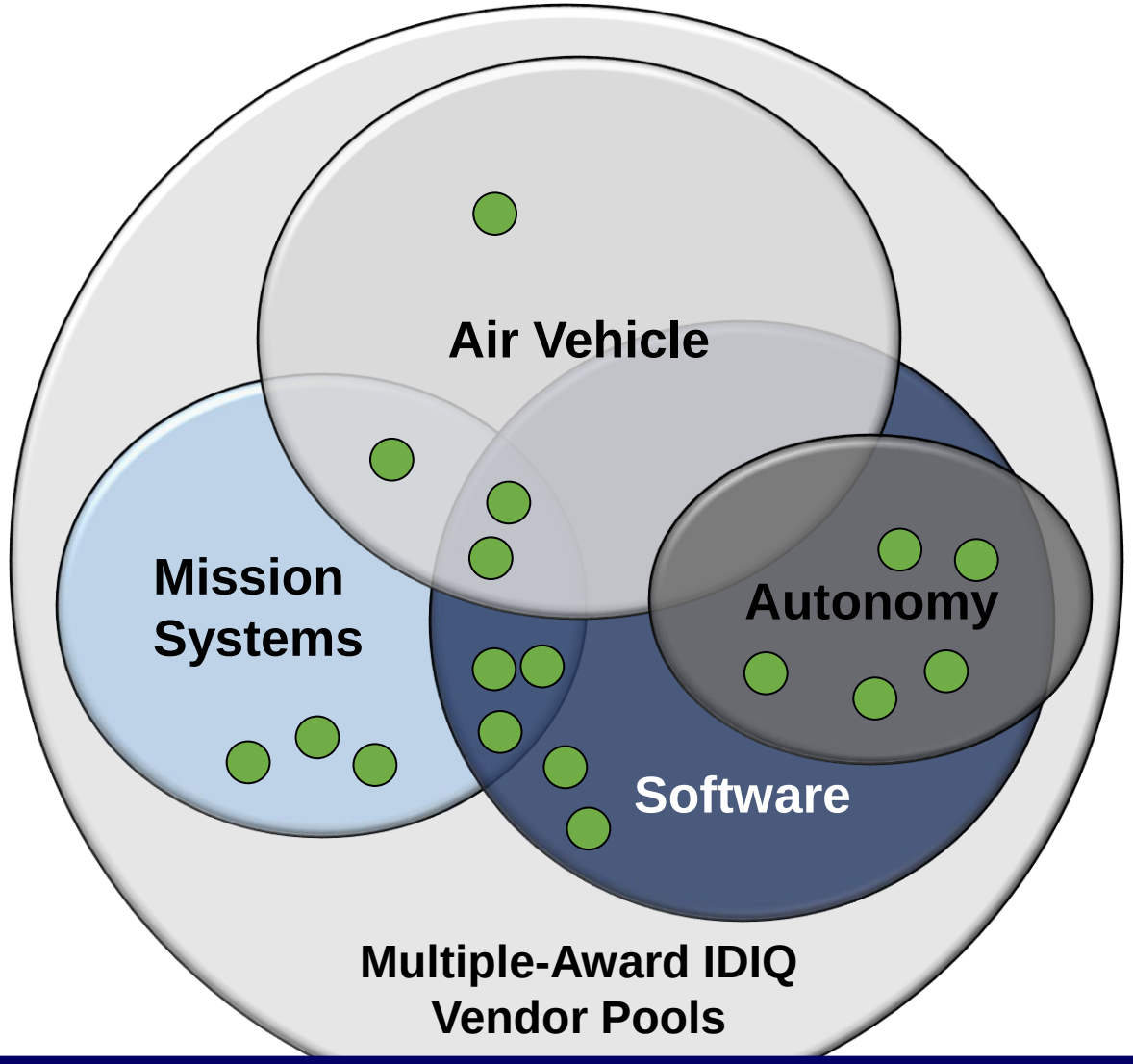
iPEO will consider a range of implementation options according to lifecycle ROI analysis

Unlocking Sustained Competition

Sustained Competition

Sustained Competition

- Open architectures unlock competition from traditional DIB, non-traditionals and direct innovation from AFRL and tech base performers >> best of breed solutions
- Persists across multiple vendor pools, programs and increments
- Motivates industry to bring their best talent
- Promotes favorable cost, schedule, and performance



Vendor Pools

- Flexible Contractual decision space
- Marketplace for industry partners to contribute within their specialty
- Simultaneously promotes agility, inclusivity and competition

Note: Architecture adoption is critical to building a thriving marketplace >> must provide vendors in pools with opportunity to win business, not just one major contract award every 5 years.

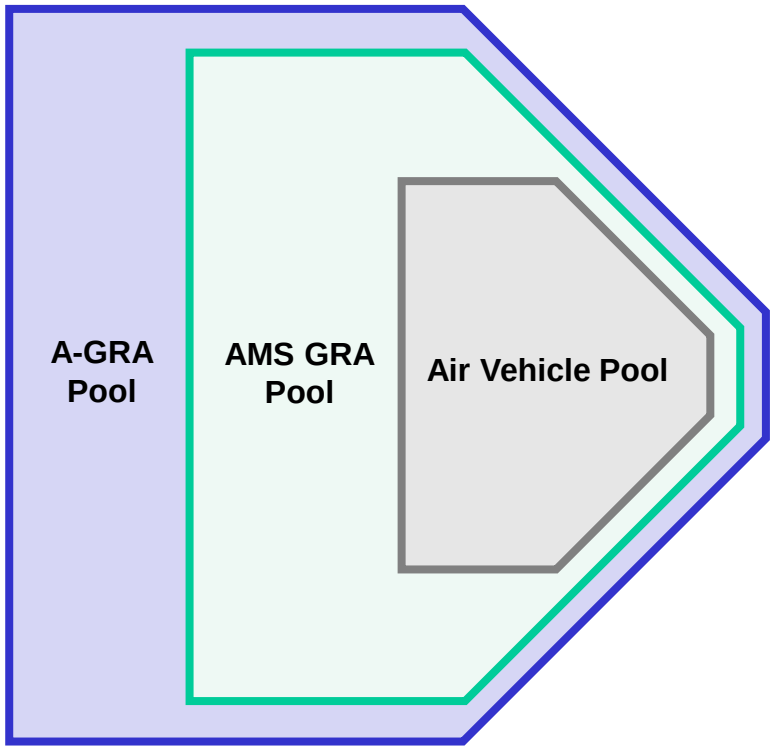
Vendor Pools (Built on Open Architectures & Marketplace Framework) Drive Agility, Inclusivity & Sustained Competition

Agile Contracting

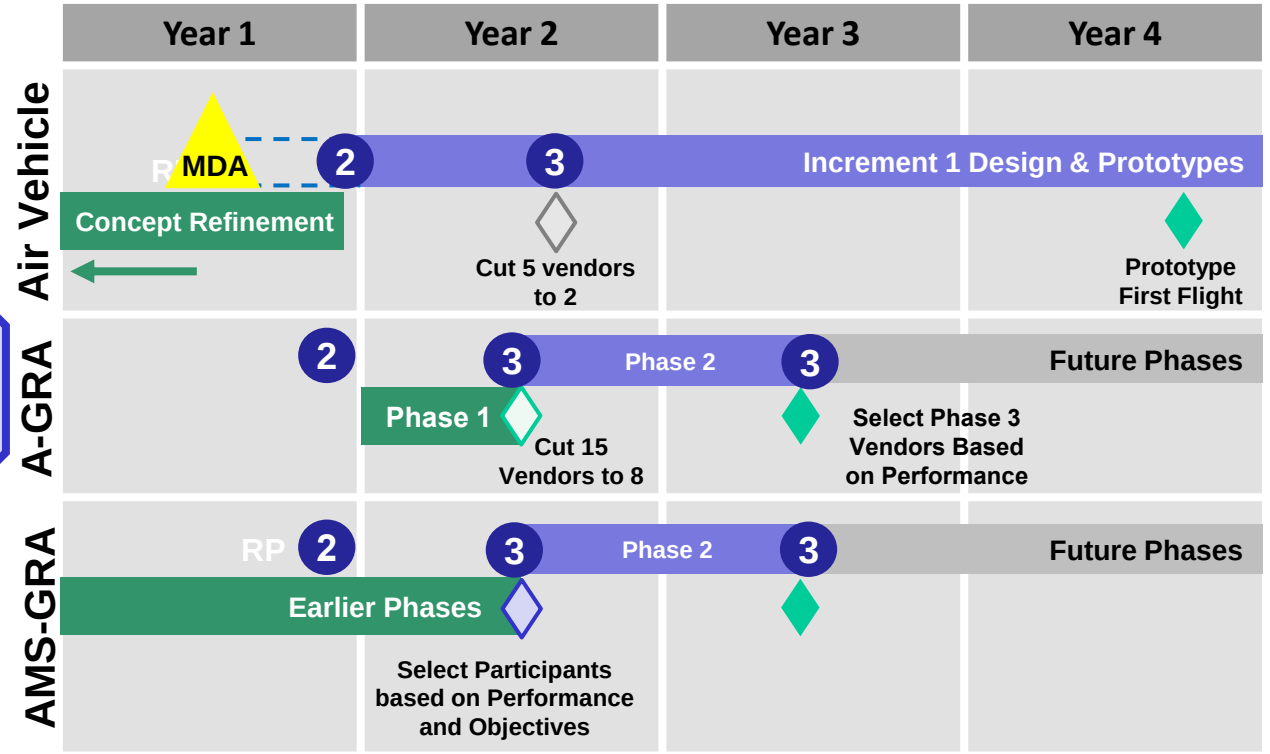
Applied to Development Program

Key Principles

Vendor Pools



Program Execution



Process

1. Multiple Award IDIQ with separate vendor pools (architecture, mission systems, weapon systems)
2. Orders awarded to multiple vendors
3. Program phases tied to option awards
4. Options exercised based on demonstrated <u>performance,</u> not proposals

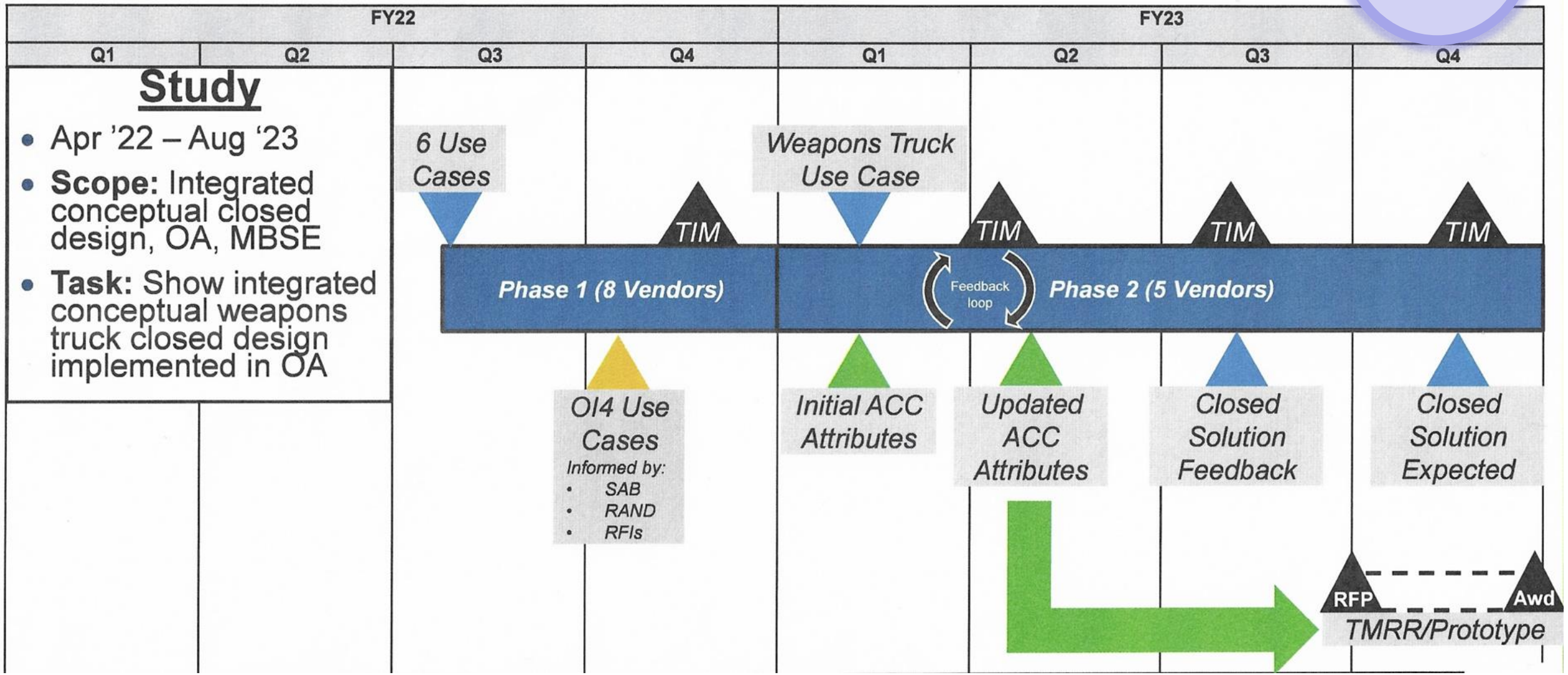
MAJOR DECISIONS BASED ON DEMONSTRATED PERFORMANCE (NOT PROPOSALS)!

FIGHTERS & ADVANCED AIRCRAFT DIRECTORATE

Attribute-based Requirements

Refined Over Time w/ Data and Analysis (CCA Example)

Key Principles



Next Gen Acquisition Model: Summary Thoughts

- **Enabling infrastructure:** Digital networks and engineering tools accessible across industry performers and government stakeholder sites
- **Attribute-based Requirements:** Allows you to initiate based on prioritized operational attributes refined over time based on data and analysis…instead of a delayed start after locking in fixed "waterfall" requirements…while the threat is dynamically changing
- **Stakeholder Teaming:** Tight collaboration with users, intelligence, testers, and industry experts
  - User collaboration refines product from top-level attributes
  - Stakeholder collaboration across contracts and gov't partners to achieve outcomes, with iterative feedback along way
- **Acquisition strategy:** Continuous competition for hardware and software features built on open architecture framework and marketplace opportunities
- **Agile contracting:** Apply best contracting approach for the situation (e.g., FAR 16 Multiple-Award IDIQ with performance-based option awards, OTA, CSO, etc)
- **Knowledge parity [difficult to scale]:** Must scale current ADO-like model into a distributed iPEO architecture and systems engineering function while maintaining proximity to mission—leverage central expertise to build on agile business practice and intentionally shape open architecture adoption across programs

Next-Gen Acquisition Model offers faster business processes with more competition and government leverage…built on open architecture framework


THE IMPOSSIBLE ON-DEMAND
MIRACLES BY APPOINTMENT
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FIGHTERS & ADVANCED AIRCRAFT