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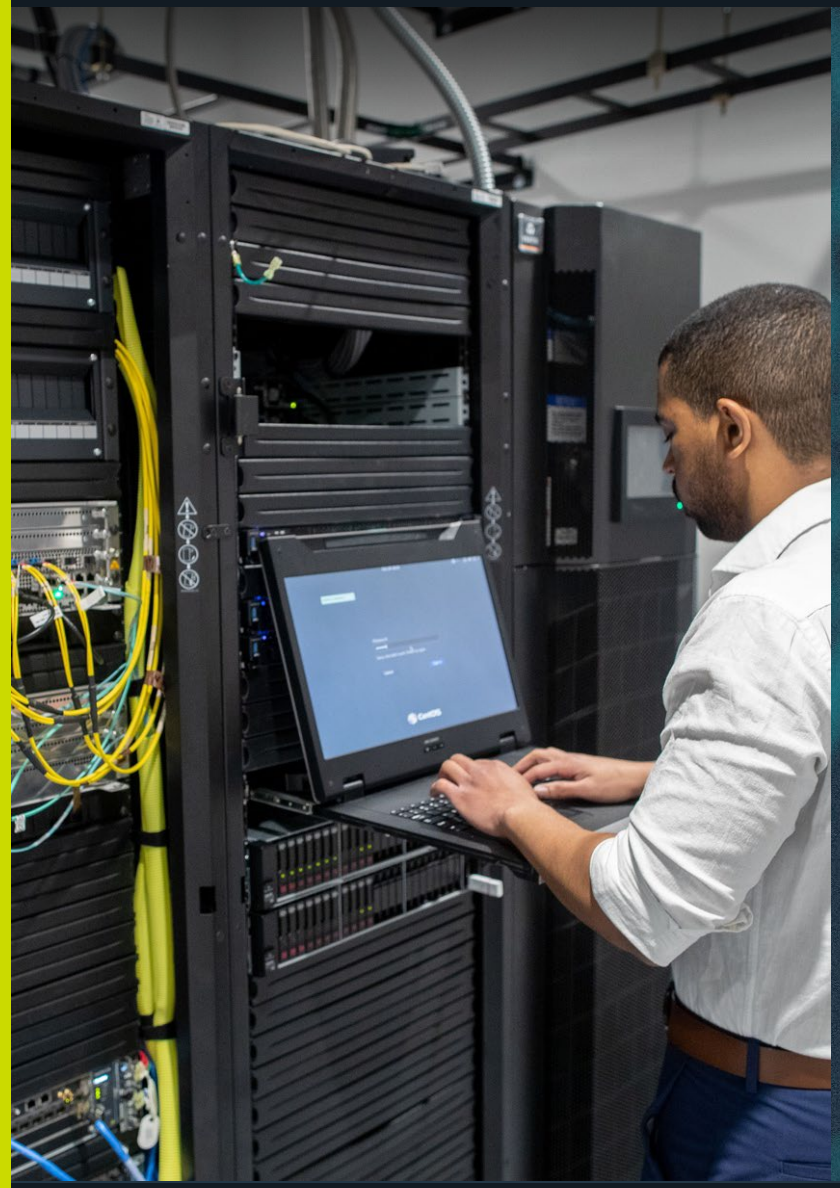

DESIGN AGENT GROUND SYSTEMS ARCHITECTURE WORKSHOP (GSAW) PRESENTATION

Bill Nichols: Nichols_William@bah.com
Matt Dodge: Dodge_Matthew@bah.com

GSAW

GSAW.ORG

February 2022

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GSAW

AGENDA

SYSTEM ACQUISITION EVOLUTION

MOTIVATION FOR CHANGE

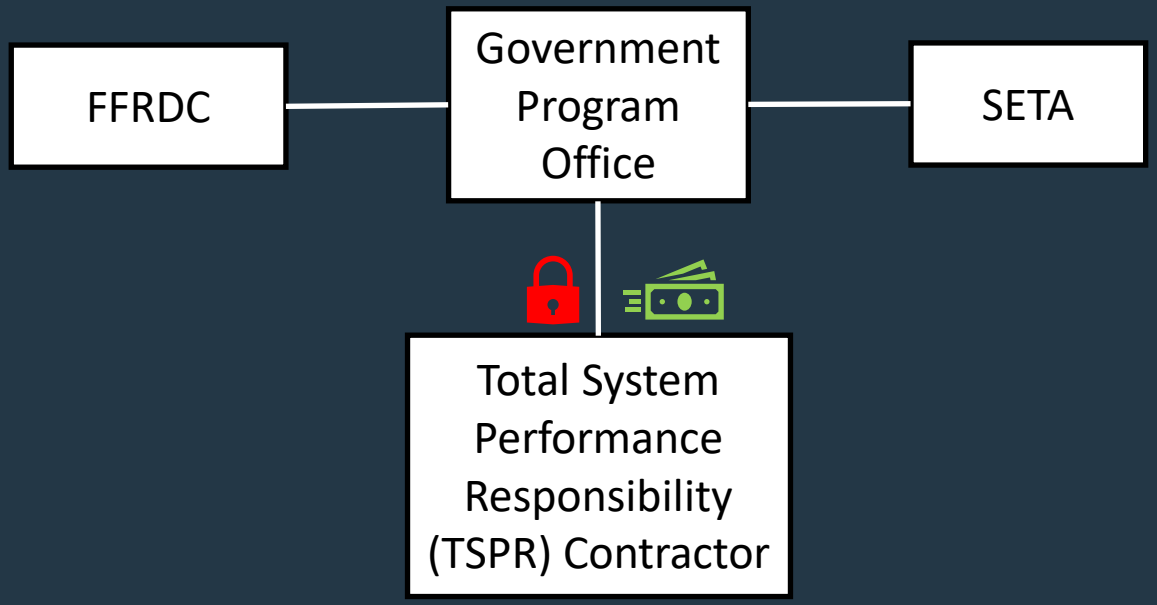
DESIGN AGENT ACQUISITION APPROACH OVERVIEW

DESIGN AGENT IMPLEMENTATION IN EXAMPLE GROUND SYSTEM

BEST PRACTICES

SYSTEM ACQUISITION BACKGROUND (1990+)

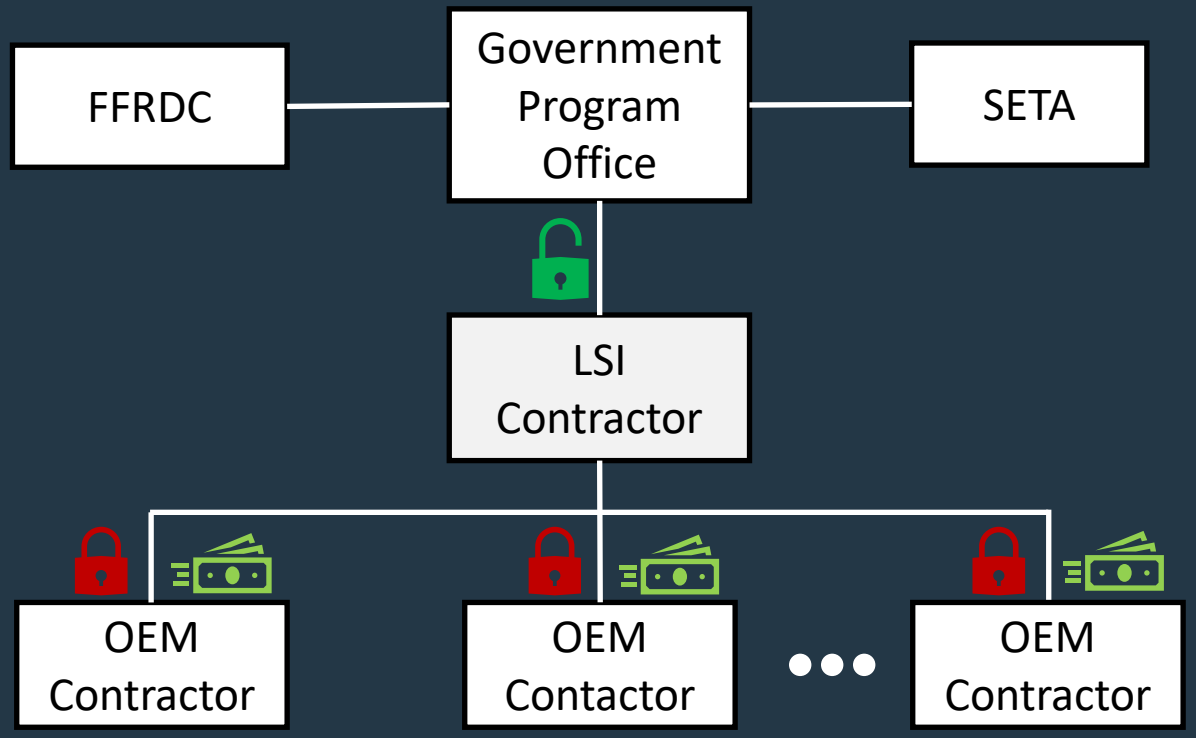
Acquisition reform of the 1990s had the government program office contracting to a single vendor to deliver the entire system.



SIMPLE ACQUISITION MODEL, BUT IT INSTITUTIONALIZED VENDOR LOCK

SYSTEM ACQUISITION BACKGROUND (2000'S)

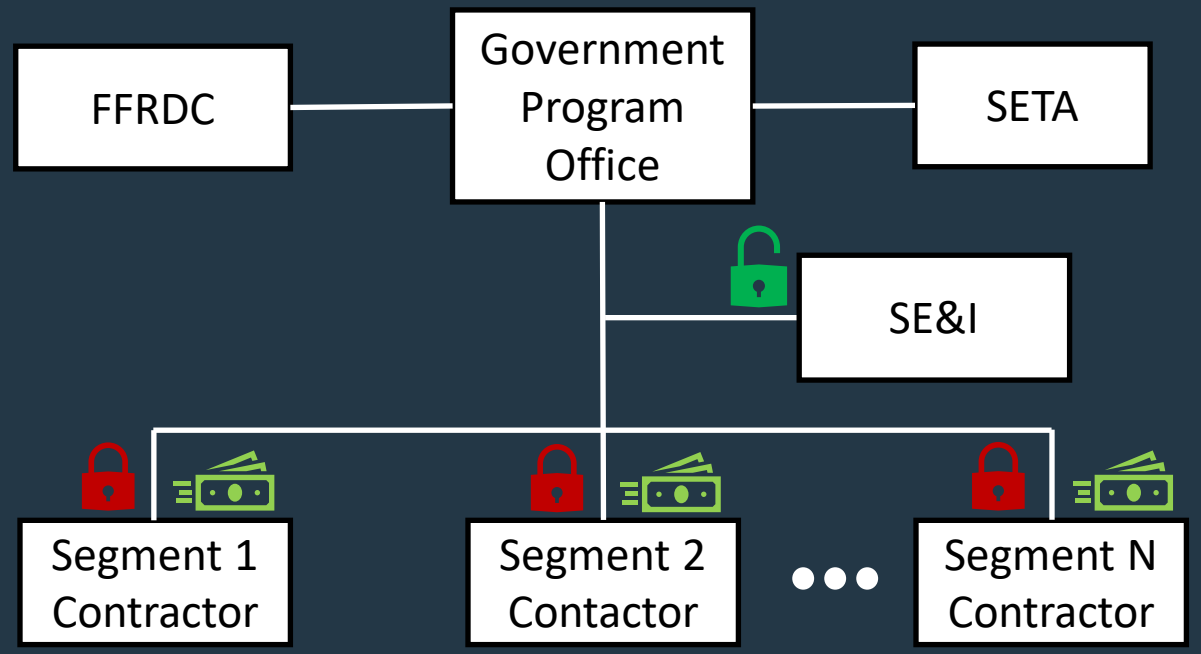
Starting around 2000, government program offices awarded Large Scale Integrator (LSI) contracts to help the government integrate very large systems.



GOVERNMENT SYSTEM OF SYSTEM ARCHITECTURES, BUT VENDOR-LOCKED SYSTEMS

SYSTEM ACQUISITION BACKGROUND (2000 – PRESENT)

Over the last 20 years, government program offices broke up the system into segments and added an SE&I contractor to help the government Integrate the Segments.



GOVT CONTROLS OEM CONTRACTS, BUT VENDOR-LOCKED SEGMENTS

MOTIVATION FOR CHANGE: GOVERNMENT CONTROL AT A MODULAR LEVEL

CHALLENGE: Sole-source Constructs and Proprietary Closed Interfaces

Traditional acquisition approaches led to vendor-locked and closed systems

- **Vendor Lock:** Past winner-take-all constructs led to stove-piped, vendor-locked, vertically integrated, closed proprietary systems that are difficult and costly to develop, modernize, and sustain

GOVERNMENT ACTION: Legal Drivers for Interoperability

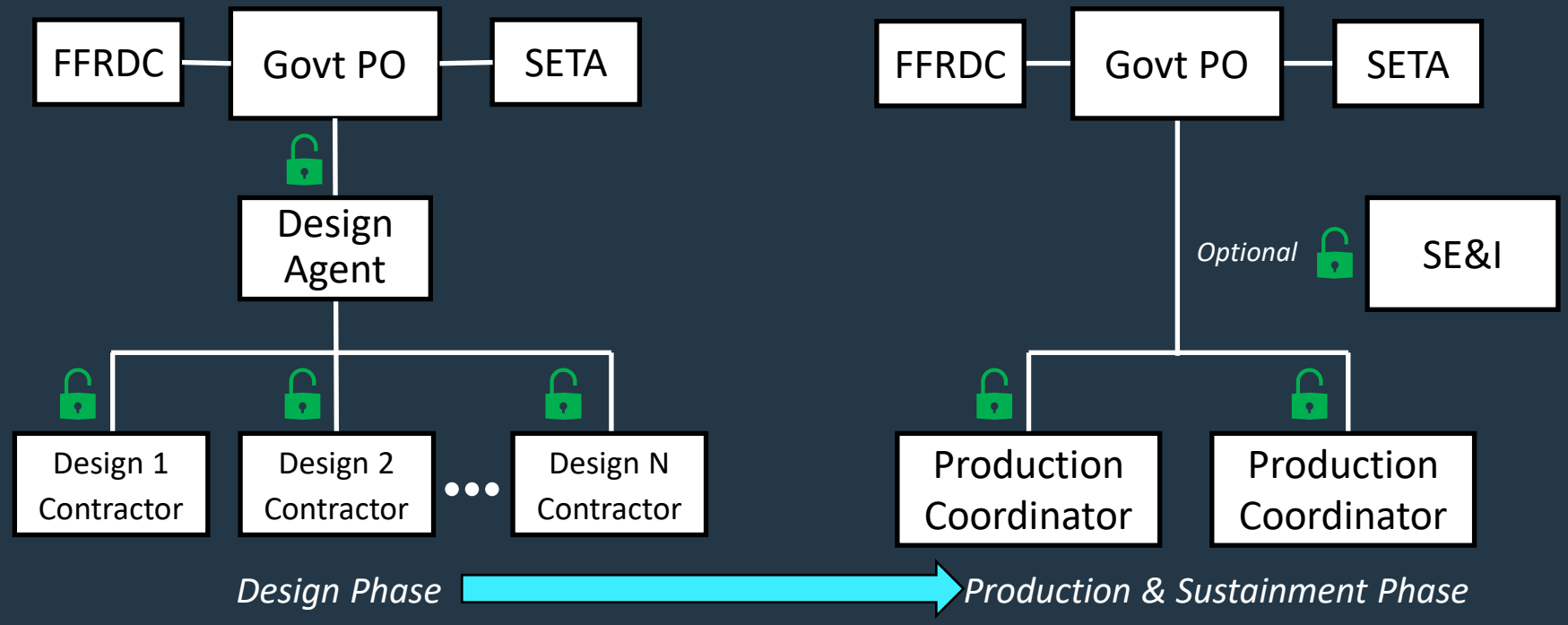
Tactical Guidance for delivering necessary information to ensure compliance is found in the Joint Interoperability and Test Command's (JTIC) Interoperability Process Guide (IPG)

- **Modular Open Systems Architecture (MOSA):** Mandated by NDAA 2017 (P.L.114-328) that programs are to design and develop with MOSA to enable incremental development and enhance competition, innovation, and interoperability.
- **Interoperability:** To operationalize the DoD Information Enterprise (IE), DoD will (to the maximum extent practical) architect its systems for interoperability and openness, and deliver secure, device-agnostic, digital services for the best value in accordance with Office of Management and Budget Memorandum M-13-13 (DODD 8000.01)

ACHIEVE INTEROPERABLE SYSTEMS FOR ALL MAJOR DEFENSE PROGRAMS

DESIGN AGENT ACQUISITION APPROACH

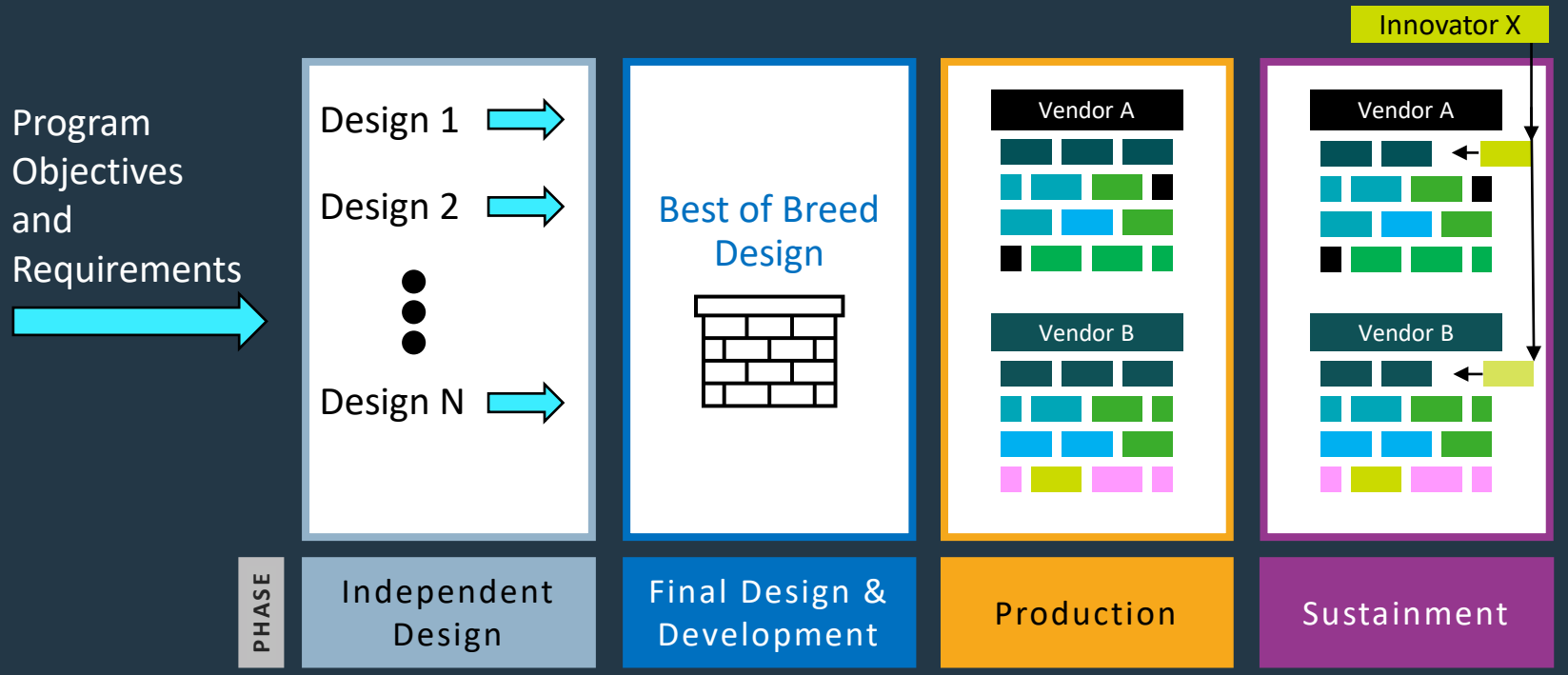
Over the past few years, Government program offices contracted a Design Agent to develop a government-owned open architecture system designs at the component level to alleviate vendor lock. This created cost and schedule certainty in the program's production phase.



GOVERNMENT OWNS A BEST OF BREED MOSA TECHNICAL BASELINE DESIGN

DESIGN AGENT EXECUTION EXAMPLE

The Design Agent approach develops a best of breed design by selecting best ideas from the design teams, then delivers a govt-owned Production Representative Prototype and associated Technical Data Package. Government has greater control of production and sustainment actions.



BEST OF BREED MOSA DESIGN ENABLES RAPID SUSTAINMENT UPGRADES

DAF DESIGN AGENT EXPERIENCE

ACAT III WEAPONS DESIGN AGENT (WPA)

AFLCMC/EBD successfully deployed a WDA strategy on 2 ACAT III programs between CY17-19

- Next Generation Area Attack Weapon (NGAAW) OTA (saved months in design time)
- 500-pound weapon OTA (concept to full scale testing in 4 months)

RESILIENT EMBEDDED GPS/INS (R-EGI)

AFLCMC currently implementing DA for EGI upgrade

- DA to reduce the number of avionics LRU configurations from 261 to an open & modular, government-owned Technical Systems Baseline to enable rapid upgrades and modifications through MOSA and breaking vendor lock.

SKYBORG VANGUARD PROGRAM

AFRL/RQ currently implementing DA for Autonomous UAVs

- Autonomous aircraft teaming architecture designed to produce and sustain combat operations in contested environments

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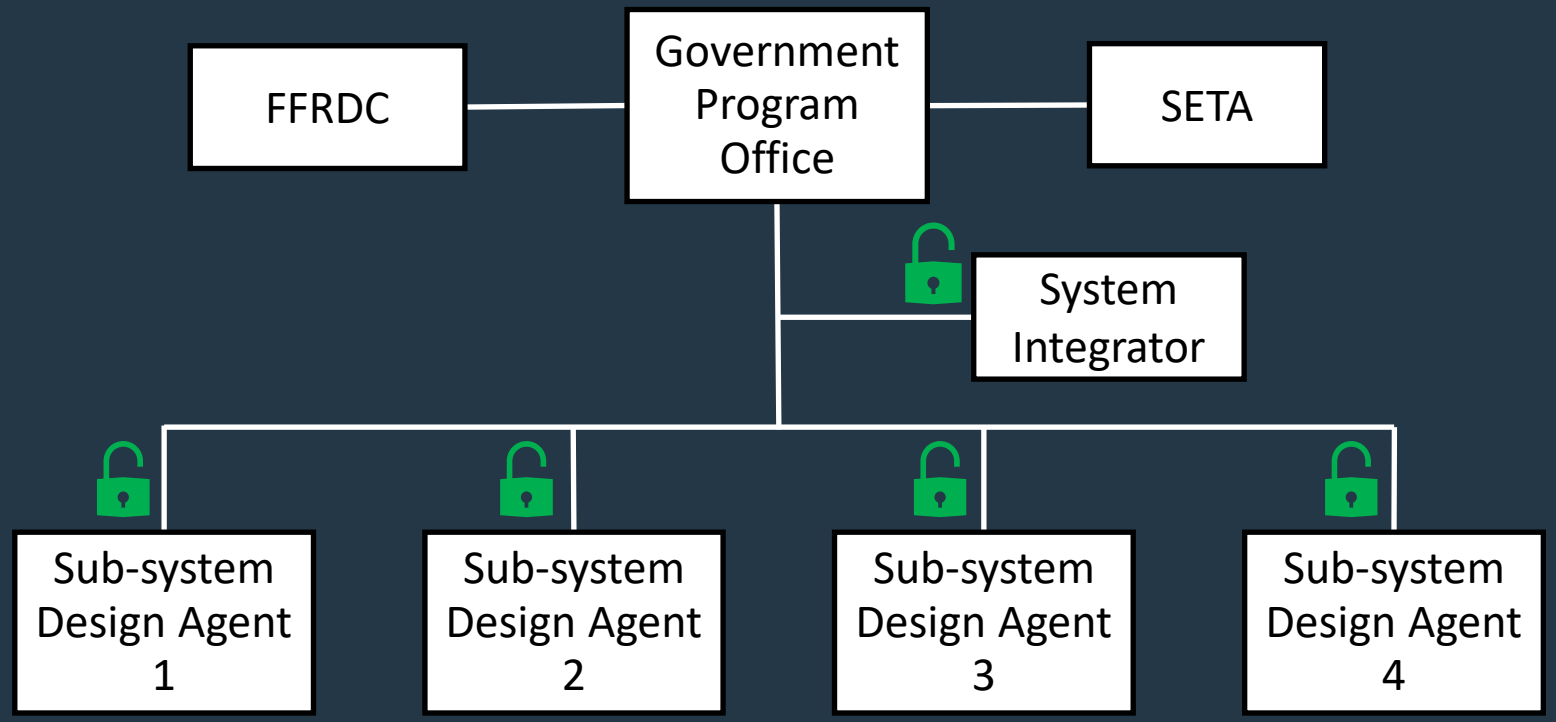
CURRENT DESIGN AGENT IMPLEMENTATION IN GROUND SYSTEM ACQUISITION

GROUND SYSTEM ARCHITECTURE AND DESCRIPTION

VARIATION OF DESIGN AGENT MODEL IMPLEMENTED IN GROUND SYSTEM ACQUISITION

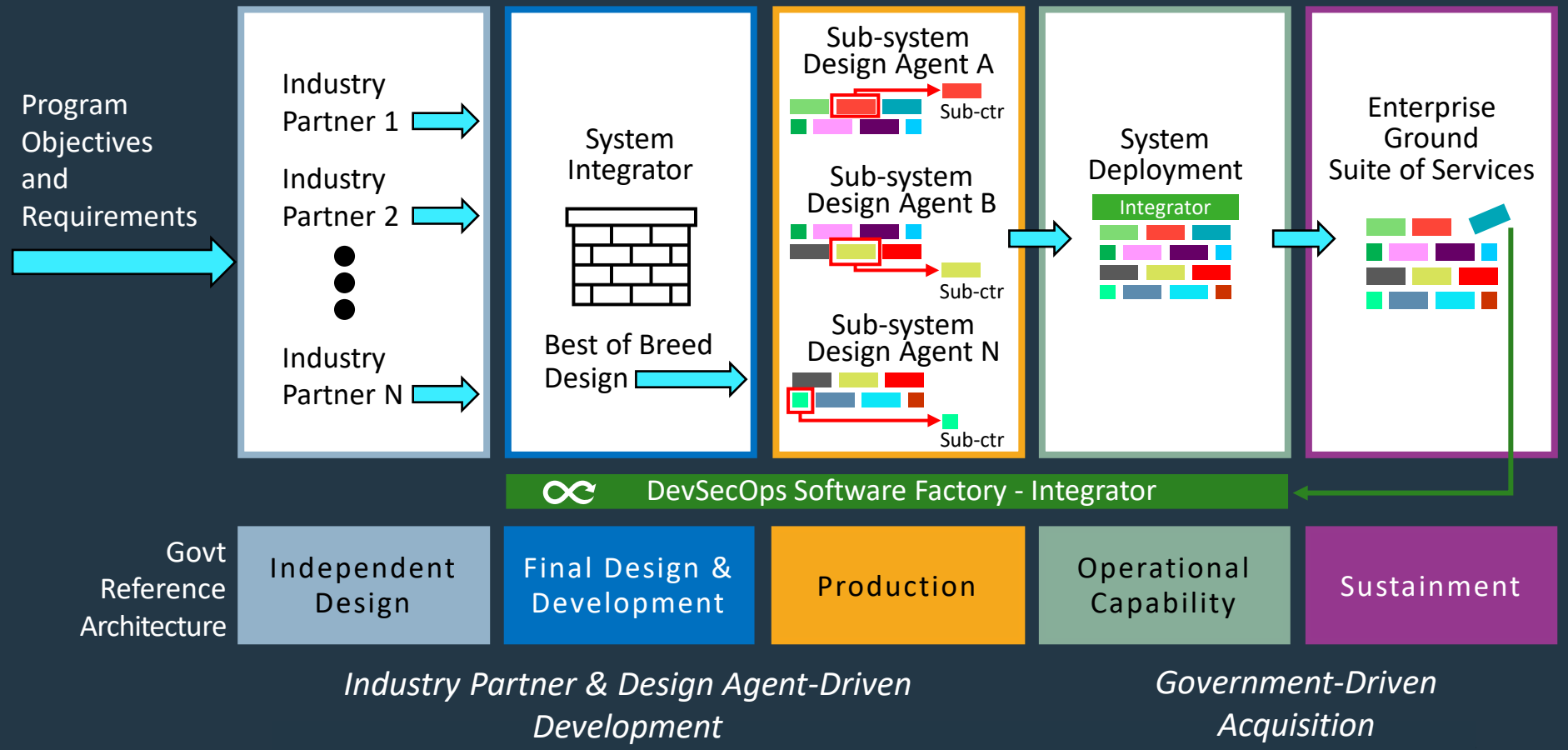
This organization chose to merge acquisition concepts from both the SE&I and Design Agent models to maintain control of the design contracts but gain the benefits of the Design Agent Approach.



GOVERNMENT OWNS BEST-OF-BREED AND USES DESIGN AGENTS AT THE SUB-SYSTEM LEVEL

DESIGN AGENT VARIATION EXAMPLE IN THE SYSTEM DEVELOPMENT LIFECYCLE

This variation of the Design Agent approach uses a best of breed design by selecting best ideas from industry partners and using sub-system Design Agents to deliver government-owned production capabilities capable of independent operations and integrating into the Enterprise Ground Services catalog.



SUCCEEDING WITH A DA APPROACH

BUSINESS CASE

- OEMs gain design insight ahead of production – chance to impact best of breed
- Protect IP: Black box design partitioning and use of reciprocity from certified proprietary components

AGILE CONTRACTING STRATEGY

- OTs: Powerful vehicle for agile decision making
- Single DA with multiple agile dev teams offloads overhead; while multiple design teams encourages competition
- Business Intelligence Task Orders: Evaluate existing capabilities to meet interface & requirements

FUTURE VISION

- Define interfaces with standard language and toolset to streamline design decisions and future adaption of new technology/microservice
- Add attributes to integrate cyber and logistics planning early in design

THANK YOU

BILL NICHOLS

nichols_william@bah.com

MATT DODGE

dodge_matthew@bah.com