

The explosive pace of technological change means we all need to be empowered to embrace new approaches



Acquisition Has Been Isolated from Technology Rates of Change by Bureaucracy



"The United States must bolster its competitive military advantage—which the NDS sees as having eroded in recent decades—relative to the threats posed by China and Russia." Summary of the National Defense Strategy

"The traditional requirements-driven process that the DoD has to deal with for acquisition has become more than inefficient ... it's become dangerous."

> Milo Medin, Alphabet Inc. Defense Innovation Board At AFA National 2017

Digital Directorate Scope and Mission Areas



Mission Expedite delivery, and effectively support, warfighting battle management systems in partnership with users and industry

Vision: Our people make the Digital Directorate the most proactive and effective DoD life cycle management organization

Goal 1: Plan and execute extremely well achieve 85% on-time or early for planned critical events in FY19 to build the trust and confidence of our stakeholders

Goal 2: Speed and innovation, a majority of our programs in FY19 include innovative approaches to speed capability to the warfighter



Aerospace Mont Systems



Air Force Software Factory

Strategic Warn &

Surv Systems



Ops Command

& Control

International Airborne BMC2

AWACS



E-4B SAOC Recapitalization

Force

Protection

COCOM Comm

& Control



Mission Plan Svs

Airspace

Qatar

IAMD



C2ISR

Foreign Military

Sales



Aerospace Dominance Enabler



Factors Enabling Innovation

- Outside influencers—DIB, DDS, DIU, AFWERX, AFSBs, and others
- Unprecedented delegation of authority
- Changing strategies—agile devops, rapid prototyping, and MVP
- Working with accelerators and start-ups
- Technology—commercial tools, ML/AI
- New partnerships
- AF leadership—SECAF, CSAF, USECAF, and VCSAF

VCSAF: "Status quo is not acceptable"

Dr. Roper: "Be radical! Make me nervous!"

Kessel Run







KESSEL RUN BOSTON HIRING EVENT January 23-24

Registration required. Register at afciviliancareers.com/kesselrun

HEAD WHERE

Personnel Recovery C2 ISPAN Msn Planning and Analysis System ISPAN Nuclear Planning and Execution System ISPAN GAP CIE NCR-IADS **Mission Planning CSAR Pedro King** C-sUAS Medusa C2 C2AOS/C2IS **Targeting and GEOINT** UC2 **AF-DCGS** Phoenix **OA-DCGS DMO DIB** Weather Data Analysis **Cheyenne Mountain CIC2S** Legacy SPADOC SPEARR **Cobra Dane ADPE Re-host Integrated Broadcast Service** F-35 ALIS

Growing revolution

- Bespin, PEO/BES, Montgomery
- Level Up, PEO/C3I&N, San Antonio
- Kobyashi Maru, SMC West Coast
- Rogue Blue, PEO/Digital, Offutt
- RPF Proposal, PEO/Digital & SMC/SY, Colorado Springs
- Software Engrg Groups, Hill, Robins, and Tinker

We have successfully implemented agile devops with:

- Organically-led PMO coding teams
- Government as integrator—industry coding teams
- Traditional contract relationships with industry
- Organic SEGs at Robins, Hill, & Tinker

Not every program can migrate to the cloud and create a continuous delivery pipeline

But every software program can:

- achieve a release cadence of weeks
- use automated testing for quality and cyber-security
- and work directly with end-users

NDAA Section 804—Enabling Agile DevOps

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Program	Benefit	Current Schedule Savings Estimate	Initiation Plan
Air Operations Center Pathfinder (AOC)	Integrated product teams, software developers, platform teams, and platform operators together in the entire development process, creating a true user-centered design that supports continuous delivery	16 months (to IOC)	YES (30 Jul18)
Command and Control Air Operations Suite Command and control Information Services (C2AOS-C2IS)	Utilizing Rapid Prototyping authority to develop Minimally Viable Products (MVPs) in support of deprecating TBMCS FL and other mission critical fielded applications to meet current warfighter needs	-3.0 Years (TBMCS deprecation)	YES (6 Oct 18)
Integrated Strategic Planning and Analysis Network Increment 5	Frequent software deliveries that are more responsive and aligned with customer needs	-2.5Years (to IOC)	YES (8 Aug18)
Nuclear Planning and Execution System Recapitalization (NPES Recap)	Delivers initial Minimum Viable Product (MVP) approximately 2 years prior and Minimum Operational Product (MOP) approximately 9-12 months prior to warfighter's original requested IOC	9 mon (to IOC)	YES (14 Sep 18)
AWACS Communications Network Upgrade (CNU)	Enables CNU to modify multiple aircraft before the crypto mandate. A traditional acquisition approach would yield zero aircraft by the mandated date. The prototype will be based on the earliest available AWACS software baseline and integrated at the first opportunity. This prototype will then be incorporated within the next AWACS baseline software.	-1 Year (to IOC)	YES (10 Oct 18)
AWACS Mode 5 Acceleration	Mode 5 804 enables Mode 5 capability to be delivered separate from ADS-B out. Purchasing and quickly installing this GOTS solution enables AWACS to utilize a more resilient IFF capability in contested air space multiple years prior to the DRAGON update. Reduces the gap of not meeting the JROC Mode 5 mandate by five years (from DRAGON's planned FY27 FOC date to FY22)	-5 Years (to FOC)	YES (18 Nov 18)
AWACS Electronic Protection	AWACS EP 804 enables the program to compete the AWACS EP system and to recover from the schedule delays from the previous sole-source effort. This competition will save cost and provide a better solution to the warfighter	6 months (to IOC)	
MAF Modernization AGM	MAF Modernization 804 will enable the program to get on contract 1 year earlier than previously planned under 5000.2. In addition with by moving to Agile DevOps releases will be delivered to the field in a 3-month cadence enabling rapid user feedback	1 Year (to IOC)	YES (8 Nov 18)

15 years of potential savings already identified

AF Pitch Day NYC, 6-7 March





PEO Digital as a Venture Capitalist

MD5 Starts	Showcase Event, 22 May 19, Los Angeles MDO/MDC2 Data Virtualization / Human Machine Learning
MassChallenge	Safety & Security Accelerator, Jun-Oct 19 MD5 Sponsored Problems: Secure ops in Cloud / AI/ML techniques Accelerating high-potential start-ups with high success rate
AF Pitch Day Kessel Run	July 2019 at Kessel Run Identify product teams/tools/processes for Kessel Run Focus on security and low-bandwidth networks
AF Pitch Day UAS Event	Northeastern Kostas Research Institute, 17 July 19 UAS payloads, signature identification, software trust/verification Set the stage for a CSAF Challenge Event at USAFA in Jan 2020
AF Pitch Day Space/SW	SMC Pitch Day, Sep 19 in San Francisco PEO Digital topics on software

Data Analytics



• Attacking underutilized data and lack of simple analytics



Advanced Battle Management System (ABMS) and Multi-Domain C2 (MDC2) are the Air Force's IoT challenges

Machine Learning / Artificial Intelligence



Machine Learning and Al

Infrared Persistent Surveillance



Machine Learning Cloud Detection



Global Synthetic Weather Radar

Storm Top Height and Precipitation Intensity





RTES



Implications for the Institution

Right skills versus traditional functions

- Kessel Run leader is a 17D Cyber Officer running a platform in operations and leading a team updating applications daily
- SrA are leading product teams

Hiring new skill sets for which there is no AFSC/job-series

- Coders, designers, platform operations, and data scientists
- Creating software SML/MLs

Demand for training programs

- Individual programs are self-funding
- Need for familiarization to reach other PEOs/teams

Traditional APDP certifications viewed as suspect—and traditional acquisition courses viewed as negative training

Agile is a Team Sport

We will not be agile by capturing hundreds of requirements up front and then not fielding unless all requirements are satisfied—this is basically how we've traditionally operated

Beginning to change the tide working with AF MAJCOMs

- Rapid prototyping to discover high level requirements?
- Is it better than what we are currently operating?
- Is it more secure than what we are currently operating?
- How much faster can we iterate and improve it in a production environment working with operators?
- Can we address minor issues in parallel instead of stopping?

"It's not that acquisition has decided to go fast ... the Air Force has decided to go fast!" Dr. Will Roper

