



State of Lean and Agile at DHS Today

September 17, 2020

Presented to:

FY20 Joint Information Technology and Software Cost Forum

Presented by:

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Survey Question

How much experience do you have with Agile Software Development?

- A) I've heard of it.**
- B) I'm learning as I go.**
- C) I know enough to be dangerous.**
- D) I don't want to brag, but...**



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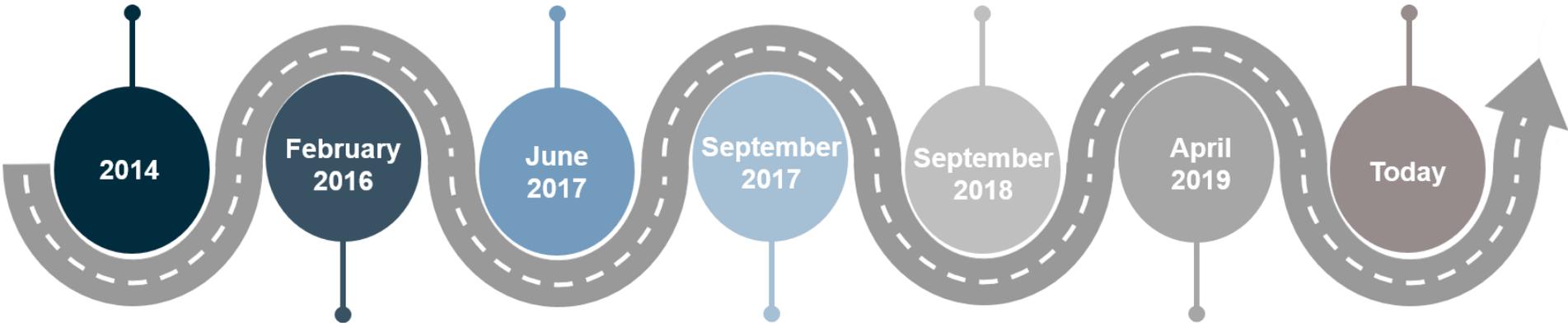
Our Agile Journey

Drafted initial Agile Policy (Agile Instruction Manual MD-102-01-004-01)

Created 18 specific Action Plans that were endorsed by the AUSM and CXOs

Declared 10 of the 18 Action Plans closed based on near term definition of done

Continuing to implement FY20 improvements and complete longer term items



Conducted AAWG Pilots; collected lessons learned and best practices

Began driving implementation of the 18 Action Plans

All original 18 Action Plans met their near term definition of done and are considered closed



Initial & Anticipated Results Summary



Reduced Risk

The **Streamlined Software Acquisition Process** established Solution Architecture earlier to inform KPPs and more clearly defined requirements

Revised **TEMP** Guidance requires incremental testing vs. after development is complete

Revised **JRIMS MD-107-01** Instruction includes Cybersecurity and Privacy

Lean AoA template and guidance created which incorporated the 22 GAO #17-799 Best Practices



Reduced Cycle Time

Prior to Pilot implementation programs required **24 months**, on average, to reach ADE2A/2B

FEMA GMM

Reached ADE2A/2B in **16 months**

FEMA Pivot

Reached ADE2A/2B in **15 months**

TSA TIM

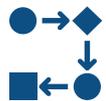
Rightsized to ADE2A/2B rebaseline in **16 months**

ICE SEVIS

Reached ADE2A/2B in **7 months**

USCIS VER MOD

Achieved ADE-2B **prior to pilot**



Improved Business & Mission Value

Cross walked the Acquisition Lifecycle Framework Templates and identified **66 repetitive requests for information**.

Enterprise Architecture touchpoints incorporated in **MD-102-01-001**



Improved Cost Estimation

Established function point analysis methodology

Cost estimate BPA now in place



Increased Transparency

Introduced the **Digital Review & Adjudication Workflow (DRAW) tool** to increase accountability of HQ reviewers and provide transparent status of artifacts to Programs. Programs submit the following artifacts via DRAW:

CDP, APB, ILSP, LCCE, SELC-TP, AoA/AA Study Plan



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Survey Question

How many policies do you think needed to be updated to support the change to Agile?

A) 0-4

B) 5-9

C) 10-19

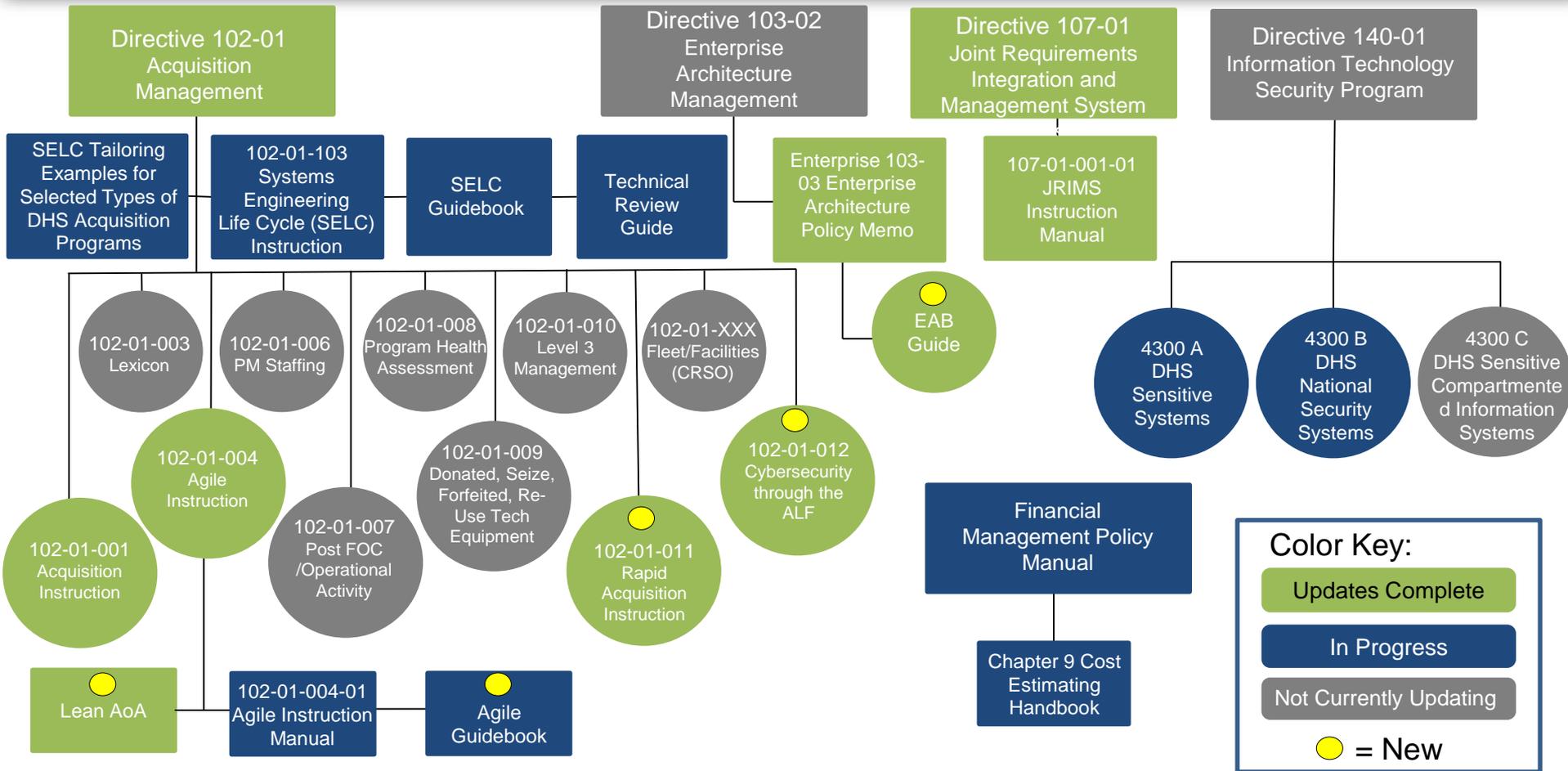
D) 20+



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Policy and Guidance



Streamlined Software Acquisition Process

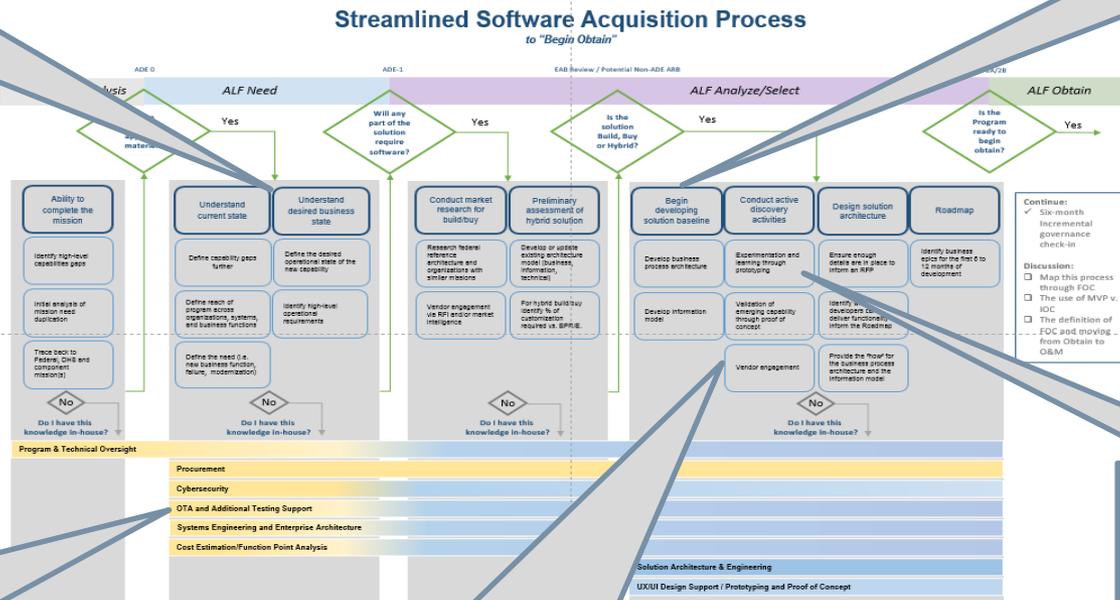
Requires that programs have a **stronger understanding of the current state** as well as a notional idea of their ideal operating concept.

Allows programs to **begin building immediately** after Obtain by requiring that the necessary details be in place much earlier in the process.

Ensures programs have the technical support to make **informed decisions**.

Encourages engagement with the small business market and exploration of new and emerging tech companies not traditionally doing business with the federal government.

Reduces risk by encouraging programs to begin prototyping much earlier in the process.



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Tools to Leverage



maestro

A DHS-approved platform that provides a centralized suite of productive tools (JIRA, Confluence, Bamboo, etc.) that allow IT and business teams to seamlessly collect, track, and measure work within and across projects

A DHS web application that offers visualization capability and enhanced data quality for business and technology information from across the DHS Enterprise



Mobius

The Digital Review and Adjudication Workflow (DRAW) system is an electronic, organizational document management processing tool through which acquisition documents may be submitted, tracked, and processed for formal comment reviews, approvals, and sign-offs

DRAW

The intranet for DHS divisions and components, with employee resources, recent news, links to policies and guidance, templates and much more



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Measuring Progress

- **OMB requires all Agency IT projects** to provide information on planned incremental delivery of functionality and include the dates of their last three releases
- DHS uses Investment, Evaluation, Submission, and Tracking System (INVEST) to track
- DHS CTO requires all Software Development programs to report their **Agile Core Metrics** every month via INVEST

FITARA Score Card

This biannual assessment is used to compare all federal agencies across a matrix of criteria, to include “Agency CIO Authority Enhancements (Incremental Development)”

DHS CIO Agile Certification

This monthly assessment is used to track agile adoption and implementation within DHS Software Development projects



Communication & Collaboration

Information Technology Program Management Center of Excellence (ITPM COE) – Email: DHSOCTO@hq.dhs.gov

Consisting of DHS Headquarters (HQ) Directorate and Management representatives, the ITPM COE acts as a cross-functional team to identify and promote best practices, provide tools and information, and coordinate assistance to programs and projects to maximize the successful management of DHS IT investments.

Office of Program
Accountability and
Risk Management
(PARM)

Office of the Chief
Procurement Officer
(OCPO)

Joint Requirements
Council (JRC)

Office of the Chief
Information Officer
(OCIO)

Office of the Chief
Financial Officer
(OCFO)

Science &
Technology
Directorate

Privacy Office

Agile Center of Excellence

(Agile COE) – Email: AgileCOE@hq.dhs.gov

The Agile COE provides guidance, governance, and resources to DHS IT development programs and projects, as well as IT professionals in efforts to increase their understanding and successful execution of Agile IT software development.



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Communications

This **day-long expo** features speakers, workshops, information tables and more; with representatives from across DHS.

Program Accountability & Risk Management (PARM) conducts periodic presentations to Components, explaining policy changes.

The **S&T Directorate, Office of Systems Engineering** briefs Components on updates to the Systems Engineering Lifecycle (SELC).



The **Agile Acquisition Working Group** will conduct roadshows to all Components throughout 2020 and 2021.

The **Acquisition Review Board** decks were revised and then instituted via USM memo – these decks provide consistent communication for all IT acquisition programs.

Strategic Technology Management within the DHS Chief Technology Officer Directorate are available upon request to give individual briefings on the state of Agile at DHS.



What's Next in Agile?



Make available as many of these Agile techniques as practicable to non-major IT Programs



Offer new funding alternatives empowering Components to flexibly spend based on mission needs



Create a master dashboard of Agile adoption across the enterprise



Make **SecDevOps** the standard way of developing software at DHS



Survey Question

So, we know about Agile, but how much do you know about SecDevOps?

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- B) I'm learning as I go.**
- C) I know enough to be dangerous.**
- D) I don't want to brag, but...**

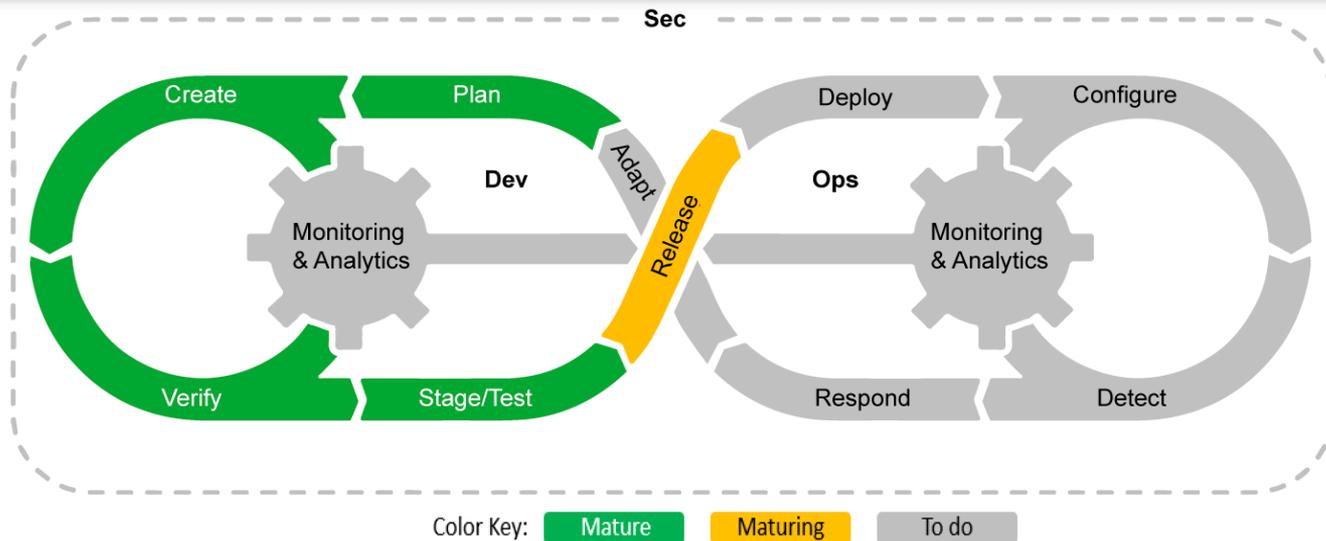


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SecDevOps Campaign

Purpose: To further transform Agile software development by making SecDevOps a standard practice to reduce cost and timelines for increased security and stability across DHS.



For the purpose of this presentation we have tailored Gartner's "Infinity Loop" DevOps model to illustrate our overall IT Maturity at DHS.

Definition: An IT delivery methodology that aims to alter culture and practice to create a delivery workflow that meets the needs of security, development, and operations stakeholders with minimal overhead. SecDevOps includes security-focused automation, a reliable release pipeline, automation of common tasks, and solutions to enable stronger collaboration across all stakeholders (security, development, and operations) with the goal of deploying working functionality to the end-user faster.



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Benefits of SecDevOps



Reduced mean-time to production: the average time it takes from when new software features are required until they are running in production



Increased deployment frequency: how often a new release can be deployed into the production environment



Fully automated risk characterization, monitoring, and mitigation across the application lifecycle



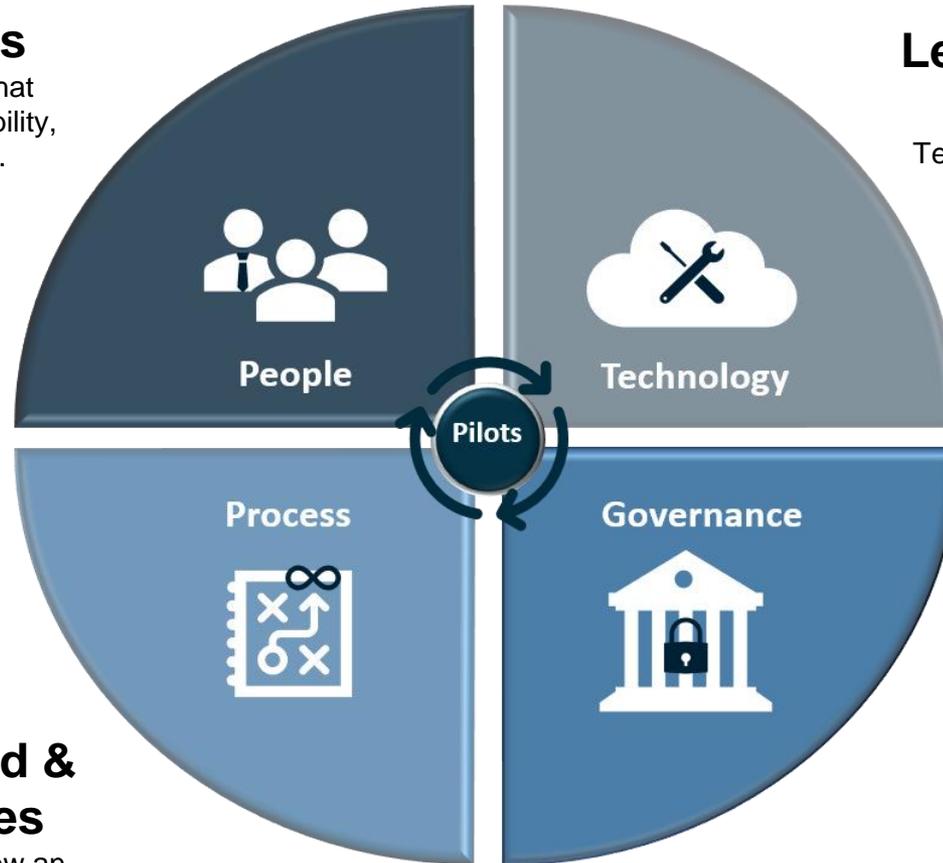
Software updates and patching at “the speed of operations”



SecDevOps Approach

Break Down Silos

Drive a culture of innovation that values transparency, accountability, and increases collaboration.



Leverage Technology to Automate

Testing, security, infrastructure, and compliance as code.

Develop Simplified & Secure Processes

Normalize processes and follow an approved path for development.

Create a Scalable Framework

Establish policies that support automation and compliance.



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What's Next in SecDevOps?



Meet with Partners on a regular basis to share ideas, discuss challenges, address roadblocks, and celebrate successes



Collaborate with stakeholders to finalize Action Plans and begin decomposing them into manageable tasks



Complete necessary revisions to the SecDevOps Guidebook, Pilot Maturity Identification Questionnaire, and SecDevOps Core Metrics



Identify and partner with Pilot Programs to further support SecDevOps implementation



Questions?

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Back-up Materials

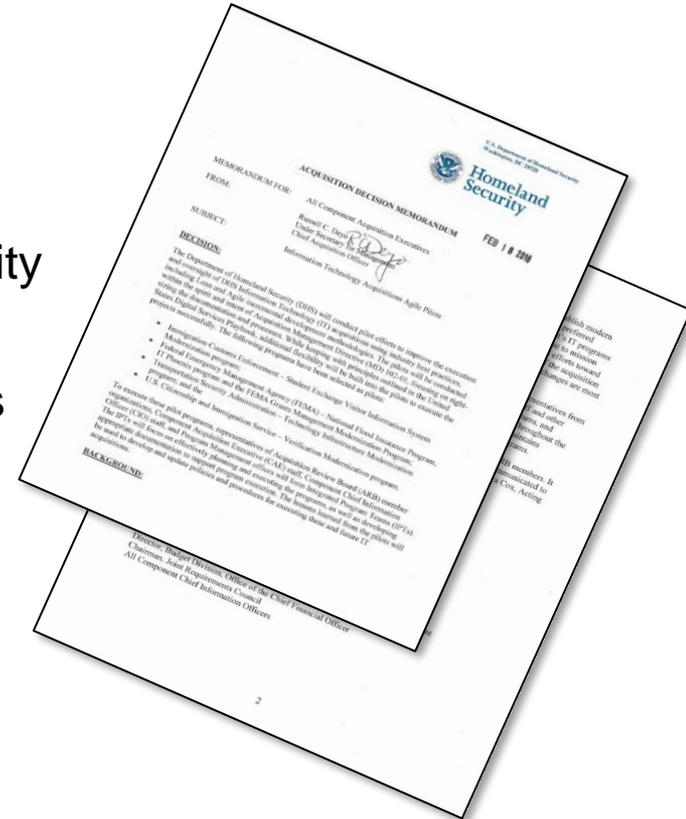


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Agile in Action: The Agile Pilot Program

- In February 2016 USM Deyo initiated the Acquisition Agile Pilot Program to address:
 - Programs delivering late or over budget
 - Low levels of transparency
 - Poor requirements development and traceability
 - Long timeframes to deliver
- The Agile Acquisition Working Group (AAWG) was stood up to collaborate on the improvements to policy, governance, and acquisition guidance to facilitate agility, flexibility, and innovation
- DHS chose five software programs at various stages of the acquisition life cycle for their high visibility and mission impact



The Five Agile Pilots

TSA TIM

TSA Technology
Infrastructure
Modernization

ICE SEVIS

ICE Student &
Exchange Visitor
Information System
Modernization

FEMA NFIP Pivot

FEMA National Flood
Insurance Program -
Pivot

USCIS VER MOD

USCIS Verification
Modernization

FEMA GMM

FEMA Grants
Management
Modernization



AAWG Action Plans

✓ = Complete

1 ✓	Automated Workflow Tool for Artifact Review Improve the process for acquisition document review, adjudication, and approval, enabled by workflow management and process automation technology solutions	7 ✓	Requirements Identification Review DHS acquisition guidance, policy, and practices for the identification and management of requirements through the JRC
2 ✓	Unified Authority for Action Plan Implementation Establish a Unified Authority to govern, institutionalize, and manage the implementation of AAWG Action Plans and enable continuous improvement of IT acquisitions and delivery	8 ✓	Testing & Integration Guidance Update DHS acquisition guidance, policy, and practices for testing and evaluation to enable modern best practices in automated testing and continuous integration
3 ✓	Embedded Support for Agile Acquisition (NextGen AAWG) Establish a scalable future operating model for support of Level 1 and 2 acquisition and IT programs	9 ✓	Tech Solutions & AoA Update the DHS acquisition guidance, policy and practices for evaluation of technical solutions and vendors, including a lean AoA
4 ✓	Defined Roles & Responsibilities Define roles and responsibilities for each step or phase of the ALF and SELC	10 ✓	Agile Cost Estimation Update the DHS acquisition guidance, policy, and practices for initial cost estimation and LCCE reviews for multiyear IT programs
5 ✓	Agile Governance through Obtain Incorporate Agile governance and review models to increase transparency and feedback throughout the Obtain Phase and Operations and Maintenance (O&M)	11 ✓	Cyber Guidance Update the DHS acquisition guidance, policy and practices for cybersecurity considerations for IT acquisitions
6 ✓	Realigned 2A/2B Decision Points Modify principle acquisition decision points and production reviews, including ADE-2A and ADE-2B, Initial Operating Capability (IOC), Full Operating Capability (FOC), and Production Readiness Reviews (PRR) Closing Mar 2019	12 ✓	Value Stream Mapping Map current, future, and ideal state process relationships across the entire ALF/SELC to identify continuous improvement opportunities

AAWG Action Plans

✓ = Complete

 1	Automated Workflow Tool for Artifact Review Improve the process for acquisition document review, adjudication, and approval, enabled by workflow management and process automation technology solutions	 7	Requirements Identification Review DHS acquisition guidance, policy, and practices for the identification and management of requirements through the JRC
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AAWG Action Plans

13

Agile ALF Templates

Remove redundant requirements for program documentation and provide clarifying expectations for Agile tailored ALF artifacts



14

Agile Core Metrics

Establish performance-based delivery metrics and measures to monitor program delivery health



15

Enterprise Architecture Touchpoints

Enforce IT EA touchpoints within MD-103-02, ALF and SELC ensuring EA practices are embedded
Closing March



16

Operational Testing Authority Vendors

Develop strategic sourcing strategy for Operational Test Authority vendors



17

Assessment Using Maturity Models

Codify, implement, and apply the Software Delivery Maturity Model and Agile Maturity Model in Program Health Assessments for DHS Component organizations and programs
Closing April



18

Data Analytics

Pursue text and business analytics tools leveraging automation capabilities to increase effectiveness of program analysis
Closing April



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Agile Core Metrics 2.0

Trend: Positive Change  Marginal Change  Negative Change 

Metric	Category	Metric Description	Value Description	Results / Outcomes		
				FY 20 Q1	FY 20 Q2	Trend
Availability	Performance / Quality	% of downtime for the month	Indicates stability of the application / platform and highlights disruptions (if any) in service to users.	60	70	
Change Failure Rate	Performance / Quality Security / Risk	% of deployments that needed to be rolled back for the month (# rolled back releases / total # releases)	Change failure percentage is important because organizations with a low change failure percentage introduce less risk and spend less time repeating work that has already been completed.	15	0	
Deployment Rate	Performance / Quality / Schedule	Number of Deployments to Production for the month	Programs deliver more valuable work when responding to user feedback. Smaller, more frequent deployments speed the delivery of usable functionality to the user and the rate of user feedback to the product development team.	58	64	
Cycle Time	Schedule / Performance	Avg # of business days between start of work and deployment to production for each story deployed in the reporting period	Indicates how quickly users see value from their desired features. As teams norm and improve, they become more efficient and productive. The amount of time between when they start work and when that work is completed typically shortens.	71	71	
Unit Test Coverage	Performance / Quality / Security	% of code covered by unit testing	High unit test coverage mitigates risk of deploying defects. In order to be rolled up effectively, report both the coverable lines of code in the current codebase and the lines of code covered by automated tests.	87	89	
Cost Per Story	Cost / Schedule	Cost per sprint / number of story points or stories or function points	Average cost per unit of delivered value should decrease over time. Costs per sprint are determined by [(rate per person*team size)*8 hours*days] for a blended rate team. If known, actual rates and hours can be used. Calculate story points, function points, or stories (completed stories) after each sprint, but measure the same thing each sprint.	38 K	23 K	



Training

This is a snap-shot list of trainings available via FAITAS that have been updated, are currently being updated, or will be updated to reflect Agile implementation.

Introduction to Agile Software Acquisition
(CLE 076)

Agile Acquisitions 101: Means behind magic
(FCL-A-0024)

Intermediate Agile Techniques for Contracting
(FCN 605)

Agile Acquisition – 2 Day
(FPM 423)

Acquisitions of Agile Services
(FQN 471)

DHS Program Management Fundamentals
(APM 102)

DHS Introduction to Acquisition
(AQN 101)

DHS Fundamentals of Cost Analysis
(BCE 106)

DHS JRIMS Overview
(FAC 061)

DHS Cybersecurity Test and Evaluation Course
(FAC 062)

Introduction to EAGLE Next Generation
(FCL-DHS-0110)

Core Concepts of DHS JRIMS
(FQN 644)

DHS Test and Evaluation for Information Technology
(FTE 201)

DHS Systems Engineering Lifecycle
(SE 100)

DHS Fundamentals of System Engineering
(SE 101)

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SecDevOps Action Plan Recommendations



People

People Rec #1 Change the Culture

Establish strong people, culture, and principles that embody SecDevOps practices.

People Rec #2 Strengthen Cyber & Technical Workforce

Enhance and maintain the existing cybersecurity and technical workforce talent across the Department.

People Rec #3 Dedicate Technical Support to Programs

Dedicate Component OCIO staff to be embedded in SecDevOps program teams.

People Rec #4 Roadshow Improvements

Showcase and communicate the SecDevOps Campaign results through a post implementation roadshow with programs.



Process

Process Rec #1 Streamlined Continuous ATO

Streamline and implement a continuous ATO process Department-wide.

Process Rec #2 Supportive Contracting

Implement contracting practices supportive to SecDevOps that all Components can leverage.

Process Rec #3 SecDevOps Playbook

Create an online SecDevOps Playbook that guides programs on how to implement SecDevOps regardless of maturity.

Process Rec #4 Technology Reference Model

Optimization

Support the acquisition and use of SecDevOps tools by providing up-to-date information on pre-approved tool stacks.



Technology

Tech Rec #1 Determine Preferred Tools

Analyze existing tools and recommend future tools with preferred capabilities for SecDevOps.

Tech Rec #2 Automation

Automation at all levels of the pipeline removes manual intervention and error-prone tasks, allowing the team to focus on delivering a continuous quality product into production.

Tech Rec #3 SecDevOps as a Service

Ensure SecDevOps Tool Suite is available to all programs.



Governance

Gov Rec #1 Policy Instruction and Guidance

Update Policy Instruction and Guidebook to enforce and instruct how to implement SecDevOps.

Gov Rec #2 Oversight and Measurement

Establish SecDevOps program oversight to monitor maturity and collect metrics.

Gov Rec #3 SecDevOps Pilots

Identify SecDevOps pilot programs and implement Action Plan recommendations. Validate best practices and finalize Action Plan recommendations to apply Department-wide.

Gov Rec #4 Real-time Program Review

Agile governance to support real-time program updates during Under Secretary of Management (USM) Acquisition Review Boards (ARB).

