

# Test and Evaluation in the Department of Homeland Security

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**Homeland  
Security**

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Science and Technology

## *Vision*

*A homeland that is safe,  
secure, and resilient  
against terrorism and other  
hazards, where American  
interests, aspirations, and  
way of life can thrive.*



Jeh Charles Johnson

Fourth Secretary of Homeland Security

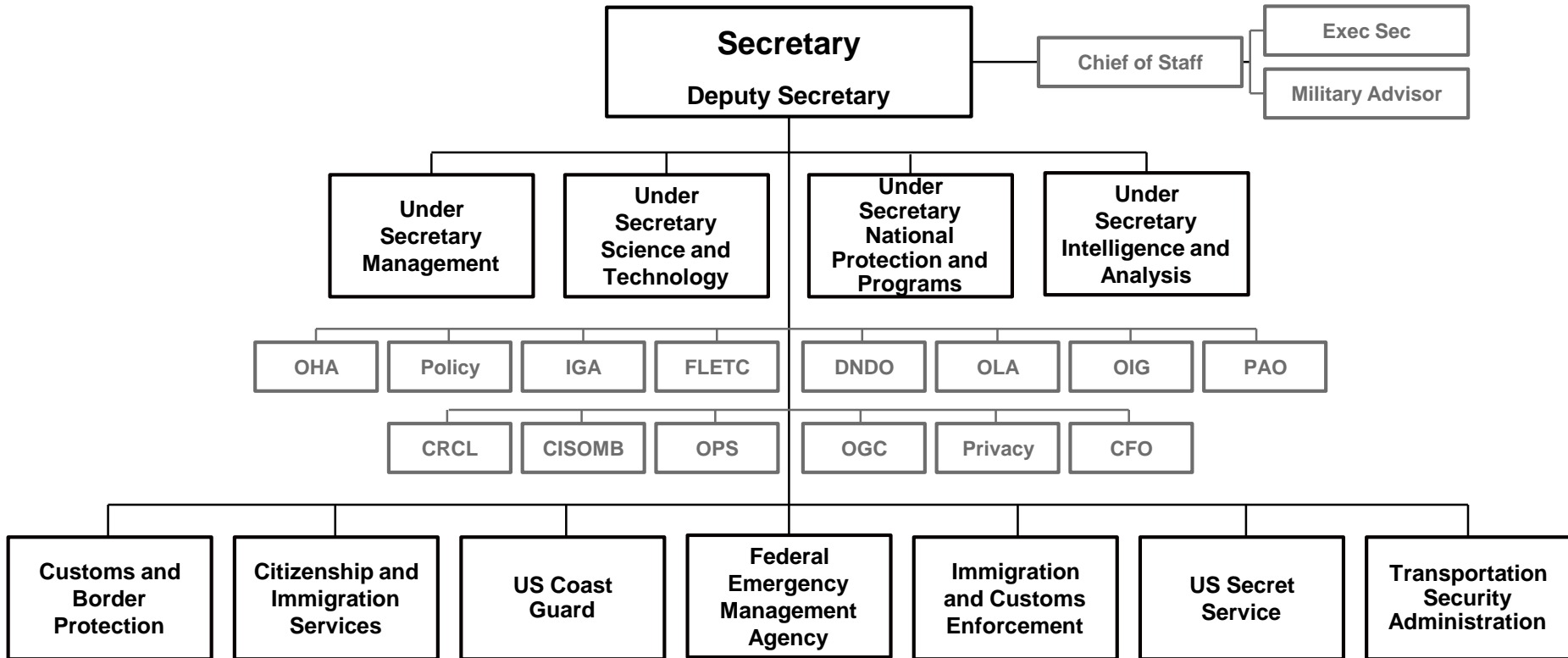
## *Mission*

The 2014 Quadrennial  
Homeland Security Review



- Prevent Terrorism and Enhance Security
- Secure and Manage Our Borders
- Enforce and Administer Our Immigration Laws
- Safeguard and Secure Cyberspace
- Strengthen National Preparedness and Resilience

# Organization





Homeland  
Security

Science and Technology

# The Operating Components



**United States Coast Guard**  
U.S. Department of Homeland Security



**U.S. Customs and  
Border Protection**

# The Operating Components

Federal Emergency Management Agency



Immigration and Customs Enforcement

Transportation Security Administration



# The Operating Components

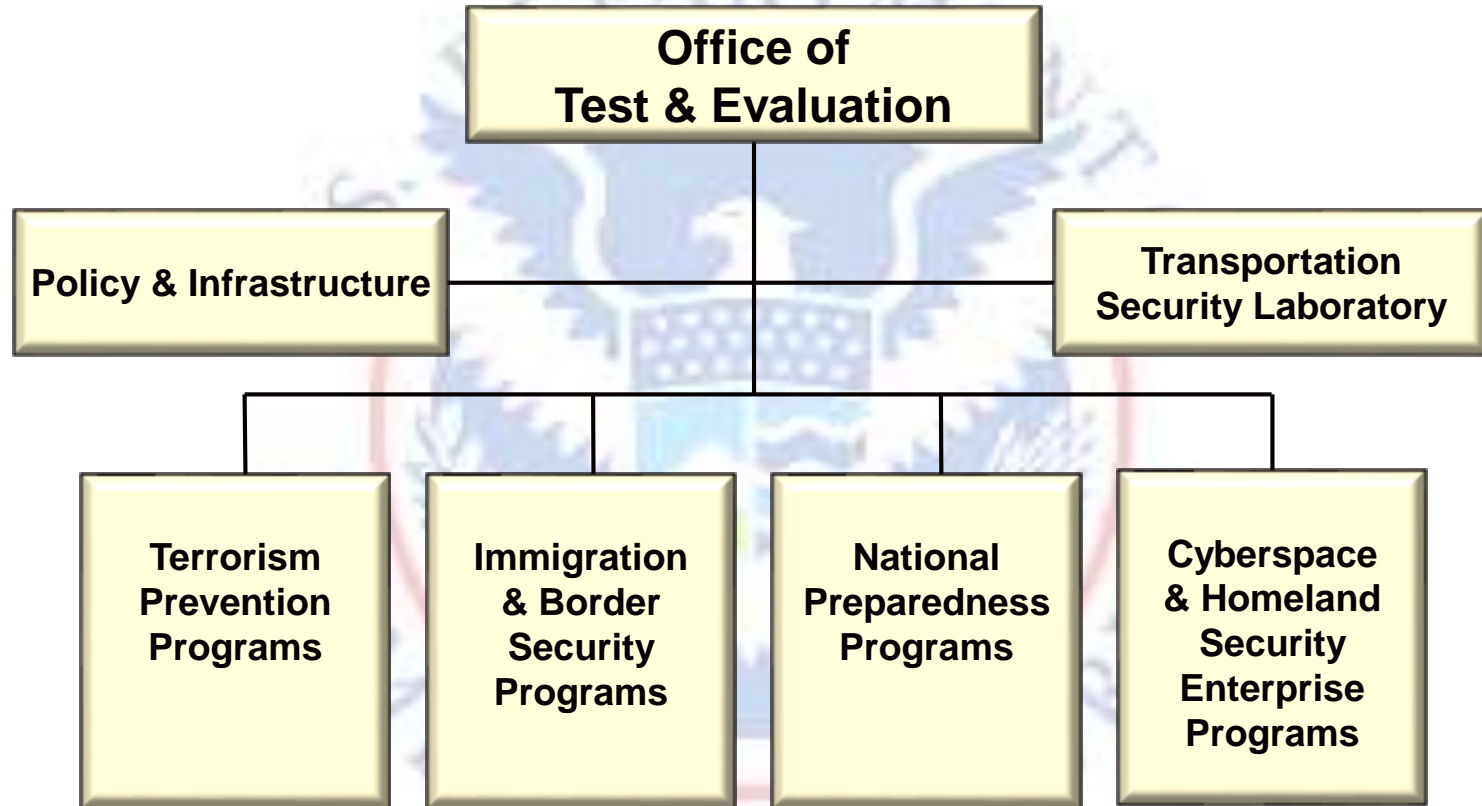


US Secret Service



Citizenship and  
Immigration Services

# DHS Office of Test & Evaluation





# Terrorism Prevention Programs



Advanced Imaging



Radiation Detection



Explosives Detection



Biodetection

# Immigration and Border Security Programs

## Electronic Immigration System (ELIS)



## Tactical Communications Modernization (TACCOM)

## Integrated Fixed Tower (IFT)



## Automated Commercial Environment (ACE)

# National Preparedness Programs

## National Security Cutter



## HC-144A

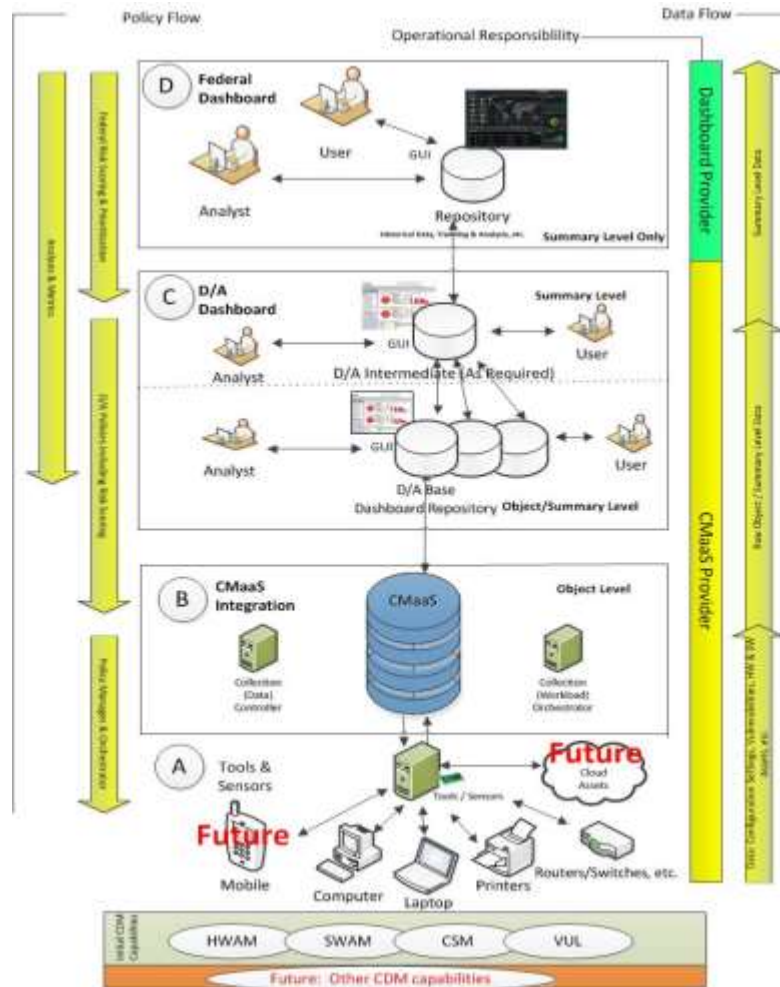
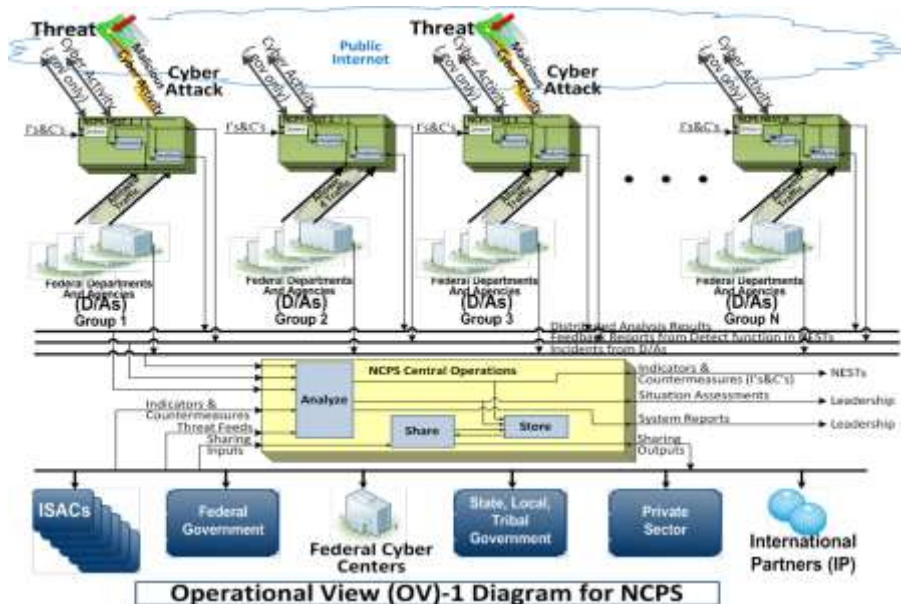


## Fast Response Cutter



# Cyberspace and Homeland Security Enterprise Programs

## National Cybersecurity Protection System (NCPS)



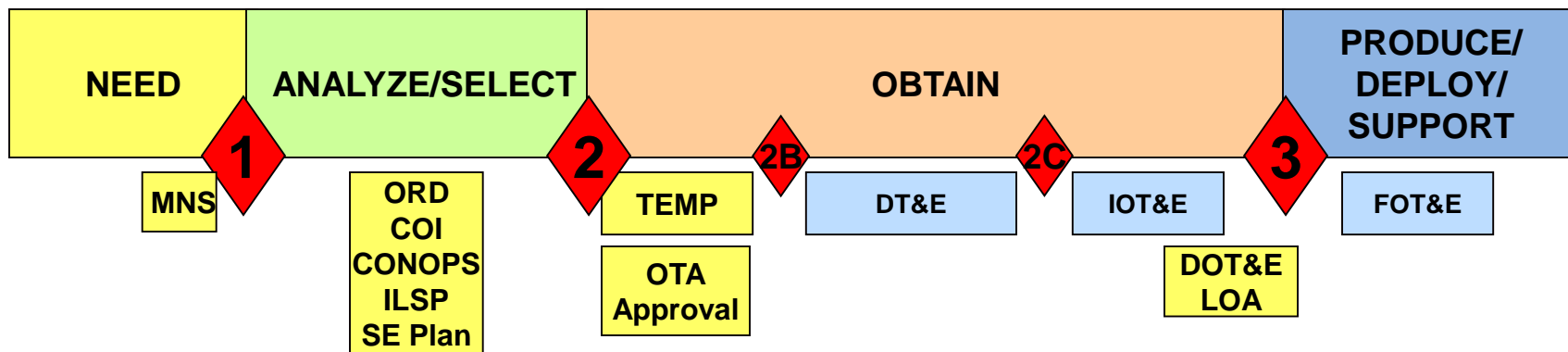
## Continuous Diagnostics Monitoring (CDM)

# Transportation Security Laboratory

- Independent Test & Evaluation provides Certification/Qualification services in support of TSA.
- Developmental Test, Evaluation and Assistance
- Expertise in testing, explosives handling, physics and chemistry of detection, and blast mitigation
- Rapid response team capabilities
- Extensive explosive inventory and specialized facilities

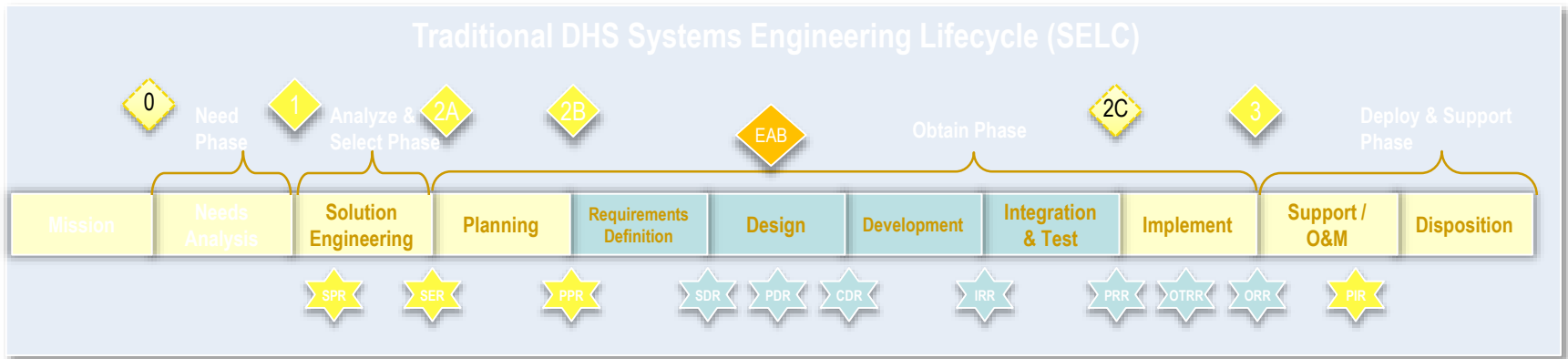


# DHS Acquisition Lifecycle Framework



- **3 Program Levels**
  - Level 1: > \$1B
  - Level 2: \$300M - \$1B
  - Level 3: <\$300M
- **Master Acquisition Oversight List**
  - 112 programs
    - › 72 Major (Level 1 or 2)
    - › 40 Component (Level 3)
  - 2/3 Information Technology

# Agile Adoption in DHS

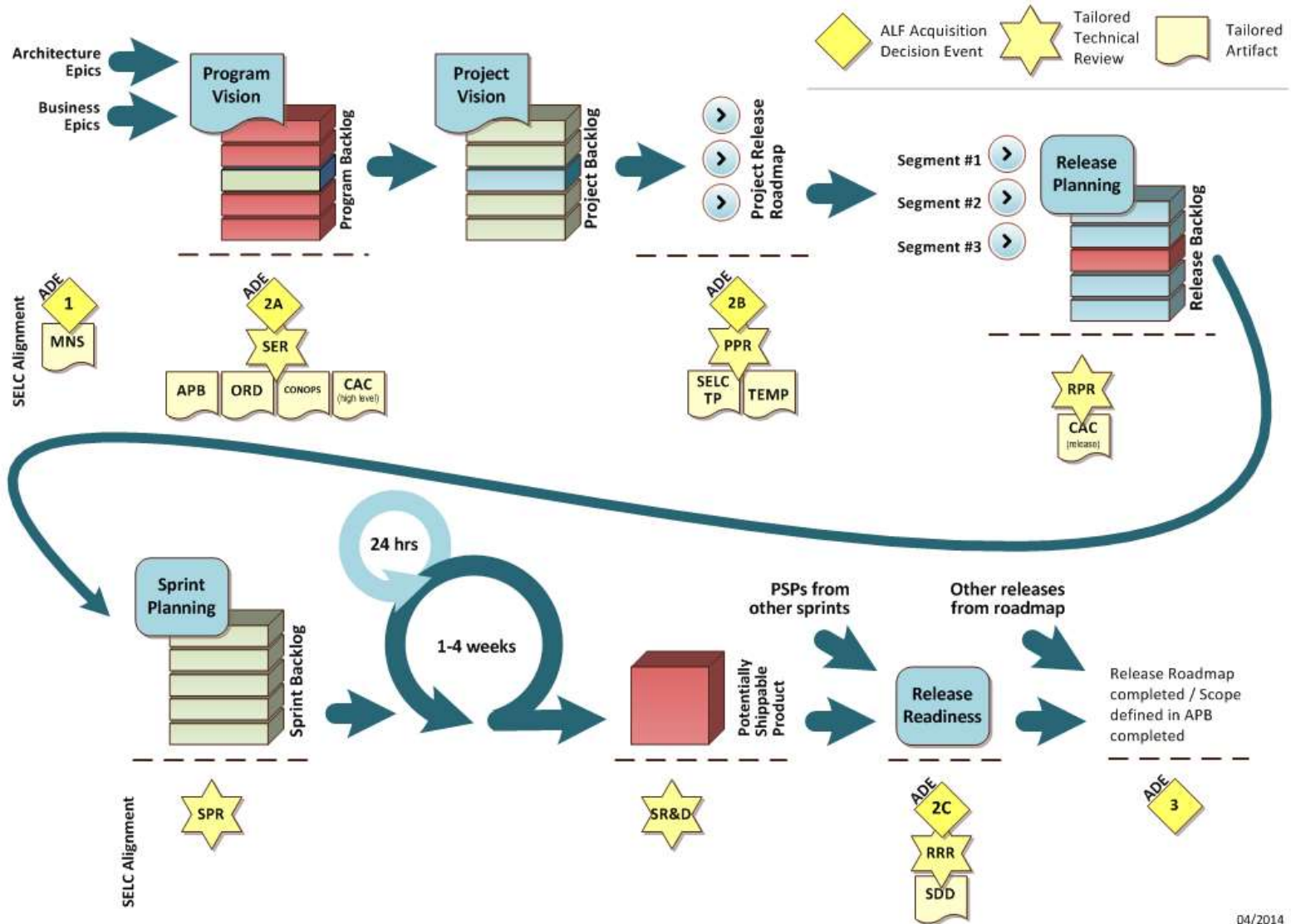


“Agile” is one of several development methods that IT programs may select

- Intended to develop and deliver IT capability to users in an iterative and incremental manner
- Detailed requirements and solutions evolve in time-boxed development iterations/sprints
- The DHS SELCL encourages programs to use best practices such as Agile to streamline processes, reduce costs, and provide the best fit to mission needs
- DHS is developing Agile policy/guidance to supplement the SELCL
  - Identifies Agile as the preferred methodology for IT Systems in DHS



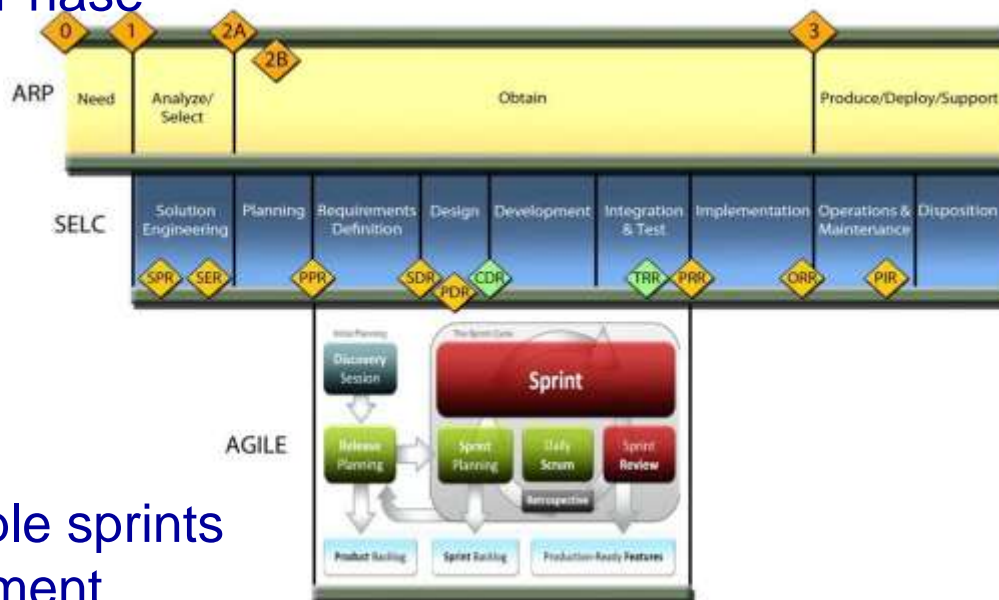
# DHS SELC Tailoring for Agile





# Example #1: Homeland Security Information Network

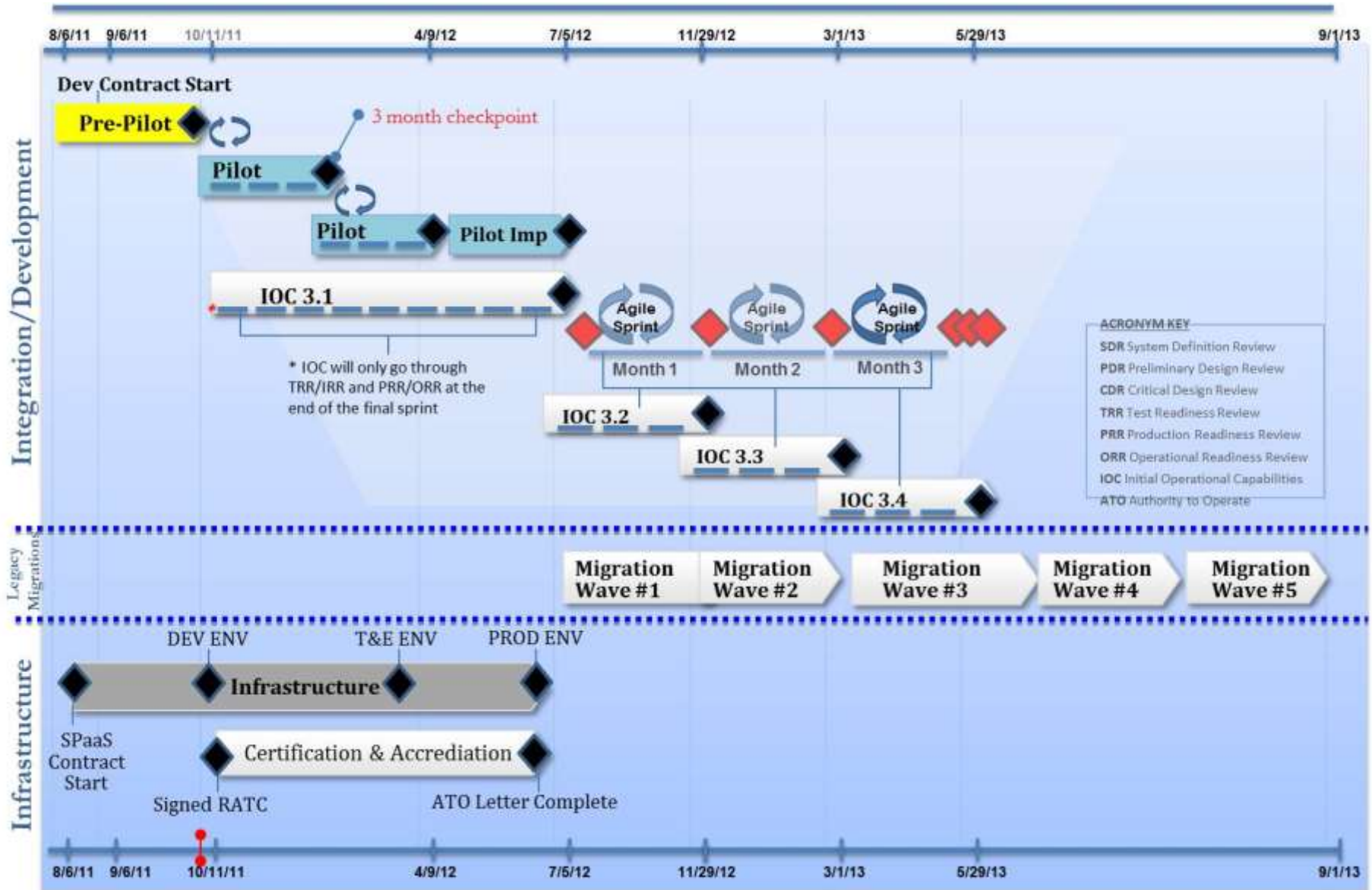
- Collaboration platform based on a suite of COTS products including Microsoft Sharepoint and Adobe Connect to support persistent and ad hoc communities of interest
- Program is following a blended approach to documentation based on Agile best practices and DHS SELC guidance
- SELC stages during the Obtain Phase combined into each Sprint
  - Requirements Definition
  - Design
  - Development
  - Part of Integration and Test



- One release composed of multiple sprints
- Acceptance test driven development
- Operational Test Agent provides Letter of Observation for each Sprint and responsible for final release verification and validation



# Example #1: Homeland Security Information Network

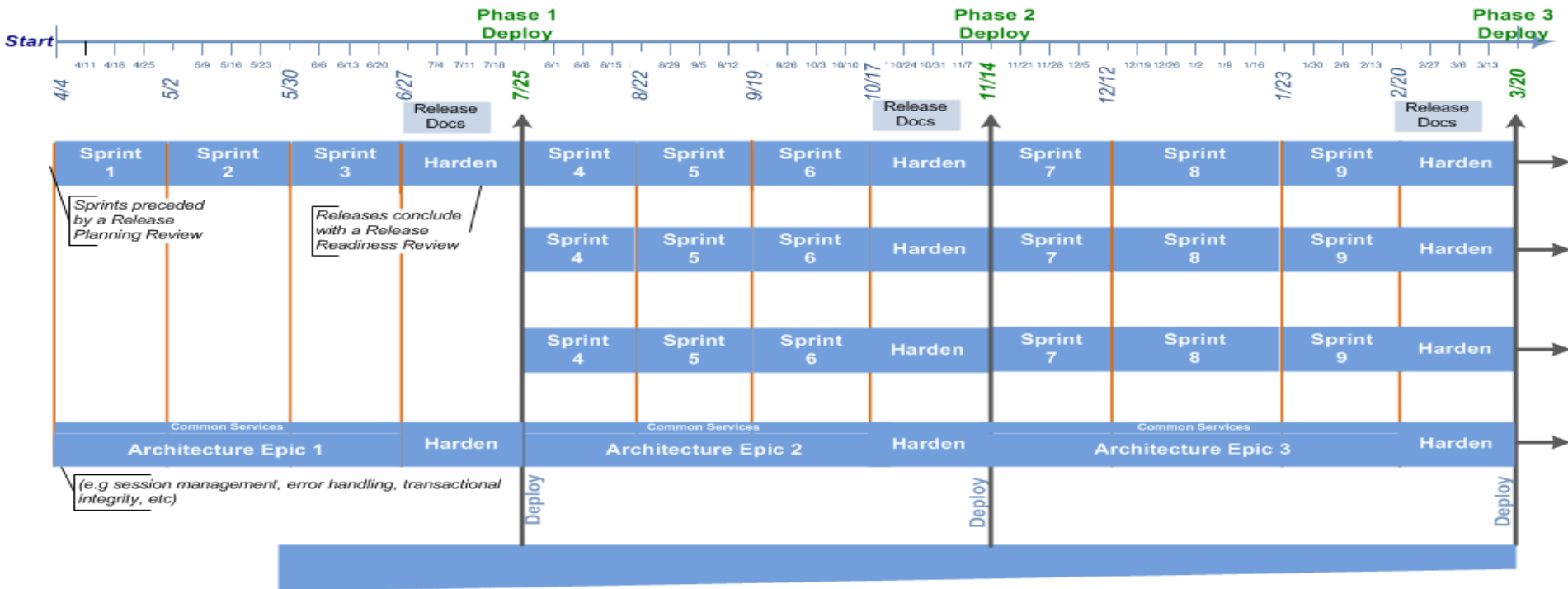


## Example #2: USCIS Electronic Immigration System (ELIS)

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- New web-based portal for filing immigration benefit applications and petitions that supports transition from cased-based processing to account-based processing
- Program leverages scalable agile practices and principles with appropriate level of DHS oversight given program size
- Development uses a Scrum-based approach tailored for testing oversight
- Delivers a working system with additional functionality at the end of every release
- Tailored SELC gate reviews focused on a Release Planning and Readiness Reviews
- Test approach:
  - Early customer perspective
  - Prioritize; unstable module testing later
  - Test new functions manually
  - Plan time for test script automation
  - Test early and often as code becomes available
  - Keep test items set during an iteration
  - Automate testing for existing, stable functions
  - Tester/Developer “pair testing” for complicated scenarios and early defect understanding

# Example #2: USCIS Electronic Immigration System (ELIS)



## Testing in Sprints 1 - 3

In Sprints 1, 2, and 3, the following testing types will be conducted:

- Unit, Story Tests, Acceptance Testing, Interoperability, Regression, Performance, ST&E, and Section 508

## Testing in Hardening Sprint

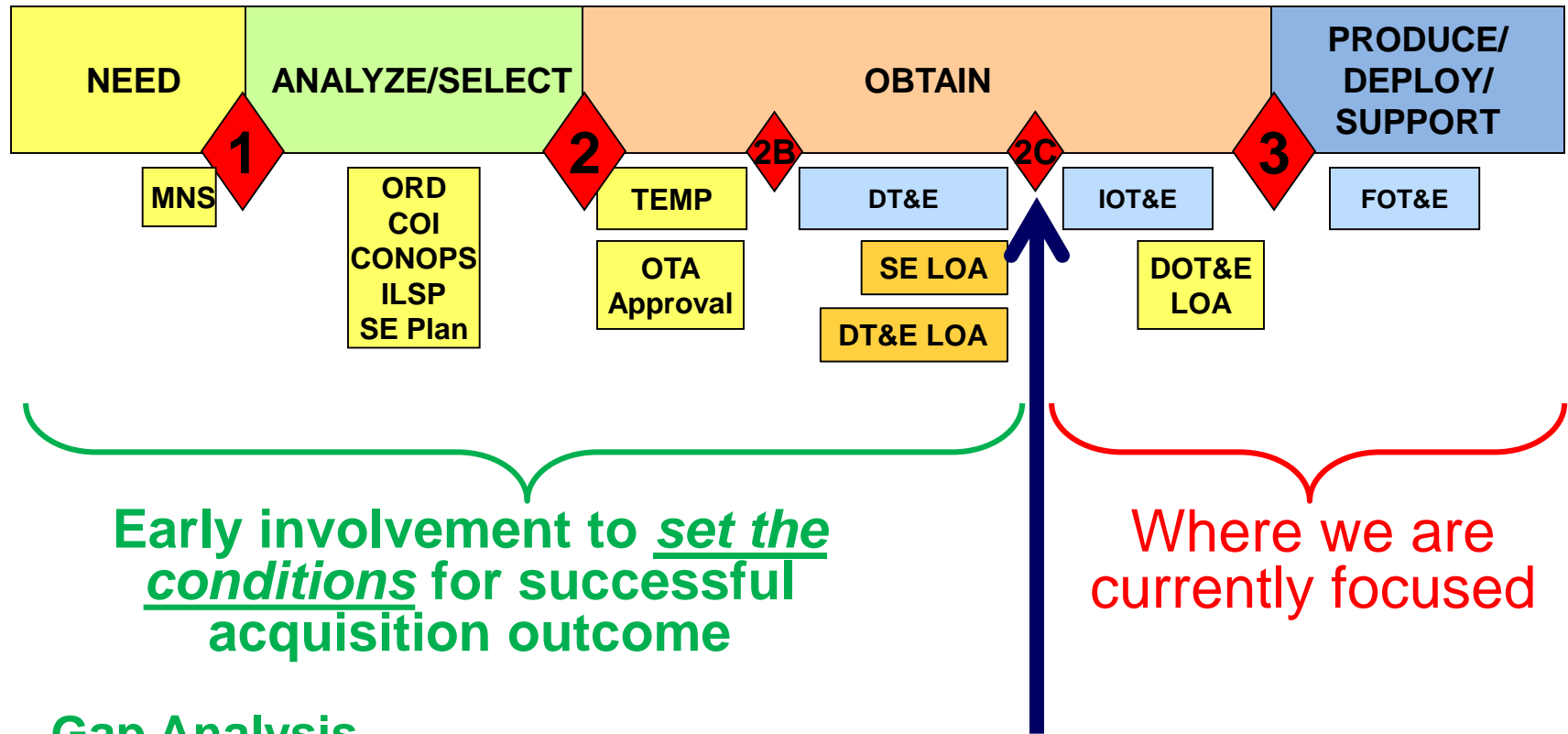
At the end of each Phase, there will be a hardening sprint. The following testing types will be conducted:

- Regression, Performance, ST&E, Final Acceptance, and Interoperability Testing.

## Testing After Deployment of Release

After deployment of each release, the OTA will conduct the Operation Test & Evaluation (OT&E)

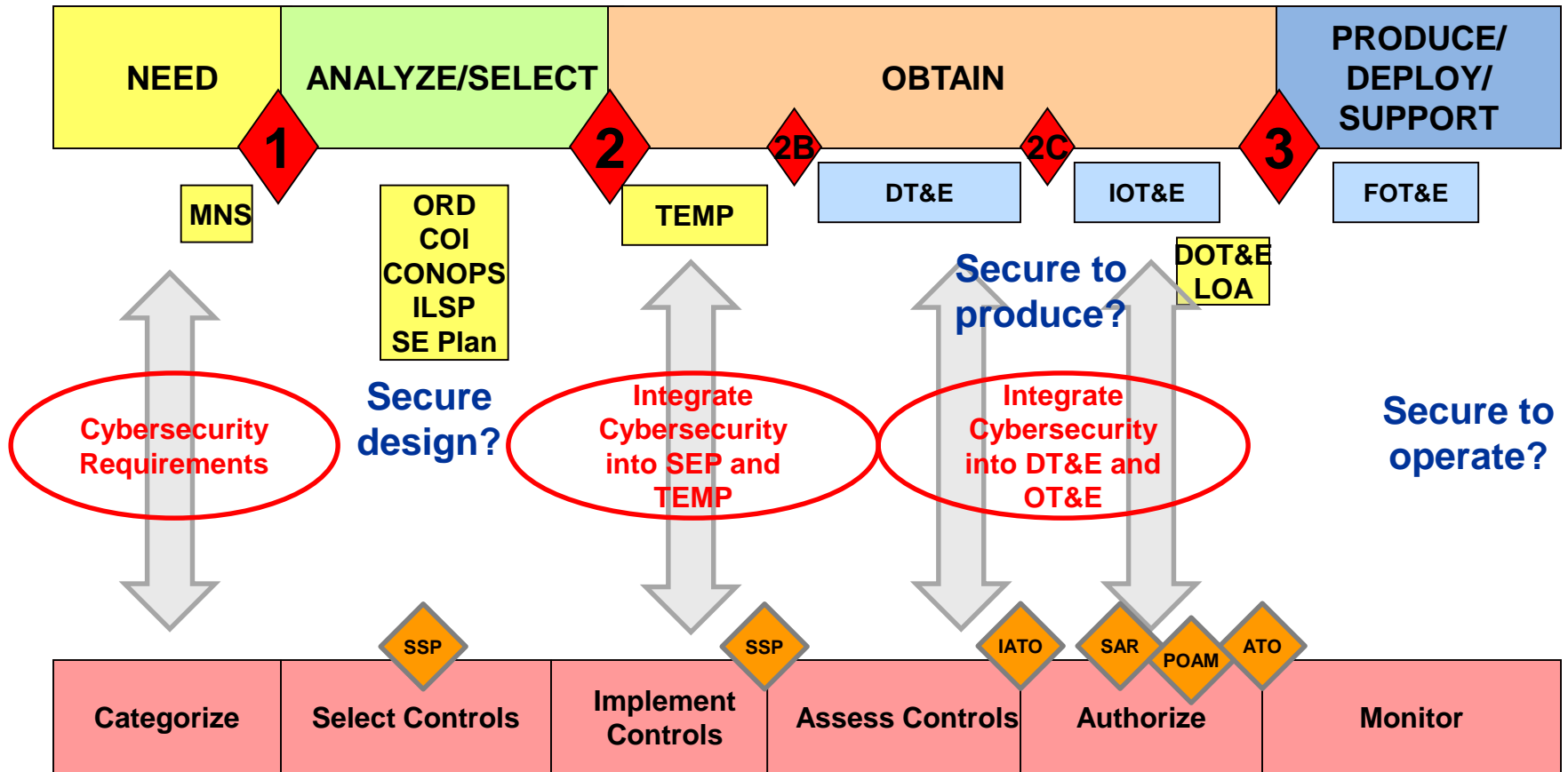
# Shift Left!



- Gap Analysis
- Requirements engineering
- Standards compliance
- Systems engineering
- Developmental T&E
- Transition Planning

Most Important  
Decision in  
Acquisition Lifecycle

# Cybersecurity-Informed Acquisition Decisions



## Risk Management Framework

- *Shift Left!*
- Cybersecurity T&E
- Smart TEMP
- Support and strengthen DHS Component T&E efforts
- Improve support to Acquisition Programs and R&D efforts
- Enhance training and infrastructure



# Homeland Security

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Science and Technology