

DHS SCIENCE AND TECHNOLOGY

DHS Systems Engineering Acquisition Challenges and Issues



**Homeland
Security**

Science and Technology

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Department Homeland Security

Major DHS Operating Components

- Transportation Security Administration (TSA)
- U.S. Coast Guard (USGC)
- U.S. Secret Service (USSS)
- U.S. Customs and Border Protection (CBP)
- U.S. Citizenship and Immigration Services (CIS)
- U.S. Immigration and Customs Enforcement (ICE)
- Federal Emergency Management Agency (FEMA)
- Domestic Nuclear Detection Office (DNDO)

TSA Programs

Electronic Baggage Screening Program



Passenger Screening Program



USCG Air Programs

C27-J



HC-144



HC-130J



MH-60J



HH-65



USCG Surface Programs

Fast Response Cutter



Motor Lifeboat



National Security Cutter



Offshore Patrol Cutter



Heavy Polar Icebreaker



FEMA Programs

Integrated Public Alert and Warning System



National Flood Insurance Program



Logistics Supply Chain Management System



Grants Management Modernization



USCIS Programs

Transformation Program



DHS USCIS Experience



U.S. Citizenship and Immigration Services



Qlaire Supported the Goals of USCIS Transformation Program

- **Program Performance**
 - Supported the review of QASP standards and Measurement Planning
 - Supported the Program Performance goals by reporting QASP Metrics
- **Quality Assurance**
 - Program Product and Process Quality to meet CMMI Level-3 maturity
 - Led Product and Managed Program Quality and Accessibility testing (Section 508 compliance) throughout all Lifecycle Phases (Iterative and Agile)
 - Managed Process Audits, Facilitated Lessons Learned Sessions, Lead Root Cause Analysis, and Managed Program Risk
- **Water fall to Agile Transition**
 - Tailored Agile Lifecycle, and Quality Review Methods to meet DHS SELC standards
- **Systems Operations and Maintenance**
 - Streamlined Internal User Provisioning Processes
 - Demonstrated improved efficiencies and timely User Provisioning

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Employment Eligibility Verification

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The effective date of the final rule requiring certain Federal Co... read more >

Case Alerts: You Must Take Action!

- Open Cases to be Closed: 5
- Cases with New Updates: 2
- Work Authorization Docs Expiring

U.S. Department of Homeland Security - www.dhs.gov U.S. Citizenship and Immigration Services - www.uscis.gov Accessibility Download Viewers

CBP Programs

Biometric Entry-Exit



Cross-Border Tunnel Detection



Border Wall



Video Surveillance Systems



Cargo Processing and Inspection



SE Challenges in DHS

- Solutions encompass the entire Homeland Security Enterprise (HSE)
 - Diverse customer base, with different rules, restrictions, and users
 - Diverse “mission set” including security, immigration, trade/commerce, disaster planning, and response
- Significant IT and Embedded/Mixed IT Solutions
 - Privacy and security concerns related to sharing data
 - Controlling proprietary, business, or law enforcement-sensitive data
- Flexible and resilient solutions to respond to emergent threats and national disasters
- Procurement vs. acquisition mentality in many parts of the HSE
- Too much focus on compliance/templates vice critical analysis

SE Staffing Challenges

- DHS has a Level I, II, III SE Acquisition Certification program and activity instructing courses
 - Inconsistency/limited participation
- No consistent SE staffing within Acquisition programs and Component Acquisition oversight offices
- Secretary directed all major acquisition programs and Component Acquisition oversight offices to resource SE expertise
 - Initiative established in Secretary's FY19-23 Resource Planning Guidance (for Components developing Resource Allocation Plans)

SE Challenges in DHS Acquisition Programs

Weak Solution Analysis/Analysis of Alternatives prior to approval

AoAs have not been properly scoped and executed

- Frequently focused on all COTS, no COTS, or a mix, vice analyzing the operational and technical solution space
- Poor definition of alternatives and evaluation criteria
- Relative ranking of alternatives among each other vice against actual mission need/requirements
- AoAs often not informed by data from pilots/prototypes/testing
- AoAs as a process to document the acquisition, vice analyze, learn, and modify to enable better decisions

SE Challenges in DHS Acquisition Programs

Poorly developed Operational Requirements and CONOPS

- Limited CONOPS scope
 - Scenarios do not describe the complete operation or even all the tasks the proposed solution must perform (only small mission tasks that need improvement)
 - Boundaries, interfaces, key external stakeholders/systems of the proposed solution not clearly defined/understood
- Limited analysis leading to the actual Operational Requirement
 - Often not operationally focused
 - Often focused on “user needs” that reflect specific problems
 - Limited analysis to support Threshold and Objective performance values

SE Oversight Challenges

- HQ oversight has heavily focused on programmatic oversight
 - Focused on checklists and artifact existence
 - Limited evaluation of the quality/substance of artifacts
- In 2015, Secretary directed S&T to conduct Technical Assessments on major acquisition programs
 - SE-based Technical Assessments of major acquisition programs
 - Focused on quality, not quantity
 - Not *if* a program has operational requirements; are requirements
 - Feasible Testable
 - Clear Backed by objective analysis
 - Complements existing acquisition programmatic oversight processes
 - Conducted prior to commencement of design/development/integration

Technical Assessment Impacts

- Greater up-front analysis = technically stronger programs
 - Threshold and objective parameters of operational requirements, backed by objective analysis
 - CONOPS that better describe end-to-end system operation, not only parts of the system
 - Trade-off analysis during the Analysis of Alternatives that informs/refines operational requirements and CONOPS
- Holistic (programmatic and technical) perspective for Acquisition executives before design/development/integration activities
- More informed decision-making by Acquisition executives

Conclusion

- DHS enterprise has a wide range of mission areas and a civilian/law enforcement culture
- Acquisition still somewhat synonymous with procurement
- DHS realizes SE needs to be institutionalized across the Department and is making headway
- Developed rigorous SELC Guidance
- Implemented Technical Assessments for Major Acquisition Programs
- AoA, ORDs, CONOPS, etc. improving as SEs engage
- Looking to continue collaboration across government and industry



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