Innovating the Future of Aviation Security

**Cybersecurity** | Cybersecurity Requirements; Technical Solutions

**Innovation** | Operational Improvements; New Technologies; Innovation Task Force

**System Architecture** | Update on Implementation of OSC System Architecture; Priorities for Fiscal Year 17; Transportation Security Equipment (TSE) Connectivity

**Deployment & Logistics** | Planning Guidelines and Design; Checkpoint Design Guide

**Checked Baggage** | Recap and Acquisition Plans

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The Office of Security Capabilities (OSC) safeguards our Nation’s transportation systems through the qualification and delivery of innovative security capabilities and solutions.

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**Alignment to Strategic Five-Year Technology Investment Plan Themes:**

1. Enhancing Core Mission Delivery by Focusing on System of Systems
2. Integrating Principles of Risk-Based Security in Capabilities, Processes, and Technologies
3. Streamlining Acquisitions, Requirements, and Test and Evaluation Processes
4. Increasing Transparency in Engagement with Stakeholders to Enable Innovation

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**Standards & Security** | Updates to Detection Standards

**Passenger Screening** | Life Cycle Cost Estimates (LCCE) Revision Updates; Passenger Screening Experience

**Test & Evaluation** | New Qualification Process; Third Party Testing Update
Agenda

• OSC System Architecture’s Origin
• OSC System Architecture’s Direction
• The MITRE Corporation (MITRE) and Innovation Symposium Key Takeaways
• Lessons Learned from the Department of Defense (DoD)
• System Architecture Industry Consortium: Purpose & Structure
• Open Discussion
OSC System Architecture’s Origins

OSC System Architecture has relied on Industry engagement to develop and refine the concepts for the future of aviation security screening. This partnership is essential for continued success.

**Discussed Scope and Intent:**
- Scale of Effort
- System Architecture Concepts
- Technical and Business Considerations
- Potential Benefits to the Transportation Security Administration (TSA) and Industry

**Introduced system architecture concepts and initiatives:**
- Alignment with TSA Strategic Vision
- Benefits to TSA and Industry
- Impact to Acquisition
- Segment Security Screening Architecture
- TSE Requirements Assessment Platform (TRAP)
- Open Threat Assessment Platform (OTAP)

**Informed Industry on current progress and solicit recommendations:**
- System Architecture Design and Desired Capabilities
- Common Interfaces and Exchanges
- DICOS Development and Implementation
- NIEM Recommendation
- System Architecture Middleware Development
TSA is continuing to pursue advanced concepts and capabilities to enable TSA's vision of the future of aviation security screening. The OSC System Architecture program will allow for the integration of technology, data, and processes to enable expanded implementation of risk-based security through the development of an integrated and modularized security screening system.

**Benefits of OSC System Architecture**
- Reduction in upgrade and technical refresh costs
- Increased competition and innovation among vendors
- The ability for components to be added, modified, replaced, removed or supported by different vendors throughout the lifecycle

**Key**
- Requirements and Standards
- Program Initiatives
- Architecture Development
- Cybersecurity Milestone

**System of Systems**
Current capabilities integrated into initial baseline
New capabilities procured through a system of systems approach with updates to the hardware and software baseline
Cybersecurity is a requirement for full System of Systems capability

**System Architecture Program Initiation**
Socialize principles and vision with programs, partners, and industry

**Implementation and Migration Planning**
Conduct detailed implementation analysis, migration planning, and project prioritization

**Architecture Definition**
Define the current and future state of business, data, application, and technology architecture

**Interface and Standards Analysis**
Identify and assess key interfaces and evaluate standards such as DICOS

**Common GUI Displays**
Develop EDS and AT common display standards

**Common Data and Interface Standards**
Document standard post-processed image data format

**Common Algorithms**
Develop 3rd party dynamic risk-based algorithms

**Common Data and Interface Standards for Non-Imaging Modalities**
Document standard post-processed data format

**Program Alignment and Business Reengineering**
Assess and reengineer relevant organizational and compliance processes

**Architecture Testbed**
Implement physical system architecture testbed

**Implementation Governance**
Govern the overall implementation and deployment process

**Cybersecurity Solution Proof of Concepts**

**Initial TSE Connectivity**
Continuous TSE Connectivity

**Deployment**
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**Testing**
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**Solution Engineering**

**Inform APSS Solicitation Requirements**

**APSS**

**Cybersecurity Solution Proof of Concepts**

**Implementation and Migration Planning**

**System Architecture Program Initiation**

**TSA OSC System Architecture Roadmap**

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**TSA OSC System Architecture Roadmap**
OSC System Architecture has identified the following key takeaways from MITRE and the Innovation Symposium:

<table>
<thead>
<tr>
<th>Identify Stakeholders and their Roles within the System Architecture</th>
<th>Define and Communicate Changes in Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Identify stakeholders that will be impacted by the development of a system architecture</td>
<td>✓ Define the mechanisms for passing data and the systems that would be used to analyze data</td>
</tr>
<tr>
<td>✓ Address the type and extent of roles that the various stakeholders will have within the system architecture</td>
<td>✓ Decide the physical infrastructure to accommodate system architecture required to transfer the quantity and type of information</td>
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<th>Publish Technical Data to Industry</th>
<th>Create Standards Development and Implementation Process</th>
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<td>✓ Define data types that will traverse the system to enable engineers to recommend standards</td>
<td>✓ Work with industry to identify business and technical considerations during the development of standards</td>
</tr>
<tr>
<td>✓ Address the modularization of the boxes within the system to allow for plug and play</td>
<td>✓ Collaborate with industry to design an implementation approach that incorporates the standards into TSA requirements once the standard meets both TSA and Industry’s needs</td>
</tr>
<tr>
<td>✓ Describe the operational data that is necessary to improve TSE performance</td>
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</table>

One of the most critical takeaways was the need to focus on Industry engagement and incorporate others’ best practices into the process.
Lessons Learned from DoD

By incorporating others’ lessons learned, we can promote industry engagement in order to assess feasibility, measure progress, and leverage best practices.

Be able to share with Industry:
- Design documentation, specifications, interfaces, tools, etc.
- Architecture definition
- Established sub-systems boundaries that are defined, coherent, and loosely coupled

Focus on what is needed to encourage Industry competition:
- Scaled sufficiently to attract competitors
- Scoped to accept innovative offerings
- Support for innovation through appropriate licensing of intellectual property

Be a smart buyer:
- Plan for the significant new demands on government in-house engineering capabilities and capacity

The Government Must

Make these considerations in development:
- Establish an environment for change
- Focus system engineering for openness
- Explore business architecture and sound competition approaches
- Leverage and exercise data rights as appropriate

Address a Unique Set of Challenges:
- Dependent on detailed engineering designs that incorporate and define open systems architectures, standards, and interfaces
- Increased demand on TSA engineering competence, capability, and capacity
- Adoption should only be made where a well-defined business case and acquisition strategy support this approach

One approach to address these themes is the development of an Industry Consortium.
The purpose of the industry consortium is to produce a structured open forum that allows industry and government stakeholders to mutually develop architectural concepts and standards that accommodate their needs.

### Benefits to Industry
- Hold representation in the development of system architecture
- Remain informed on architectural developments
- Have a voice in the development of recommended standards
- Develop an advantage over competitors not participating
- Potentially receive government incentives for actively and consistently contributing

### Outputs
- Recommend interface standards
- Provide technical subject matter expertise to collaborate on developing standards
- Reach consensus on recommended standards
- Present business and technical considerations to assist in the definition of system architecture

### Notional Structure

<table>
<thead>
<tr>
<th>Program Director</th>
<th>OSC System Architecture staff who acts as a neutral, non-voting facilitator of the steering committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steering Committee</td>
<td>Governing board, containing a representative from each member organization, that generates consensus and decides strategic direction</td>
</tr>
<tr>
<td>Sub-Committees</td>
<td>Sub-committees consist of members that specialize in a specific standard type within the system architecture</td>
</tr>
<tr>
<td>Consortium Members</td>
<td>A company or organization that has joined the consortium and agreed to the founding principles</td>
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<tr>
<th>Steering Committee Chair</th>
<th>Elected annually and responsible for the consortium’s operation and achievements</th>
</tr>
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<tr>
<td>Steering Committee Vice Chair</td>
<td>Elected annually and supports the activities of the chair as needed</td>
</tr>
<tr>
<td>Working Groups</td>
<td>Groups chartered for a specific period of operation with the purpose of carrying out tasks and developing work products</td>
</tr>
<tr>
<td>Standing Committees</td>
<td>Groups chartered for an indefinite period of operation and triggered by specific events or conditions to carry-out tasks</td>
</tr>
<tr>
<td>Advisory Boards</td>
<td>Groups established to increase the likelihood that standards under development meet both public and private sector needs</td>
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Questions?