Touchless Screening

July 20, 2021

Fiscal Year 2021 Report to Congress

Homeland Security

Transportation Security Administration

Message from the Administrator

July 20, 2021

I am pleased to present the following report, "Touchless Screening," which was prepared by the Transportation Security Administration (TSA).

This report was compiled in response to direction in the Joint Explanatory Statement accompanying the Fiscal Year (FY) 2021 Department of Homeland Security (DHS) Appropriations Act (P.L. 116-260). It discusses TSA's efforts to ensure sanitary checkpoints, ongoing touchless screening initiatives, and proposals for acquisition of touchless screening technologies.

Pursuant to congressional requirements, this report is being provided to the following Members of Congress:

The Honorable Lucille Roybal-Allard
Chairwoman, House Appropriations Subcommittee on Homeland Security

The Honorable Chuck Fleischmann
Ranking Member, House Appropriations Subcommittee on Homeland Security

The Honorable Chris Murphy
Chair, Senate Appropriations Subcommittee on Homeland Security

The Honorable Shelley Moore Capito
Ranking Member, Senate Appropriations Subcommittee on Homeland Security

Inquiries relating to this report may be directed to me at (571) 227-2801 or to TSA's Legislative Affairs office at (571) 227-2717.

Sincerely,

David P. Pekoske
Administrator

Executive Summary

This report responds to the requirement for an update on touchless screening as outlined in the Joint Explanatory Statement accompanying the FY 2021 DHS Appropriations Act (P.L. 116-260). TSA's activities support DHS's mission and the Secretary's priorities for responding to the Coronavirus Disease 2019 (COVID-19) pandemic and for creating a modernized lower touch security environment while maintaining security effectiveness. TSA has taken the following actions in response to COVID-19:

- Deployed acrylic-shield barriers to high-contact areas in checkpoints to protect both local transportation security officers (TSO) and passengers.
- Developed a comprehensive set of enhanced cleaning guidelines for the entire TSA enterprise and initiated contracts and/or reimbursed airports to ensure that cleaning services were paid for.
- Updated standard operating procedures at security checkpoints and established a new infection-control monitor position to ensure that the new guidelines and processes are followed.
- Worked with industry partners to accept the donation of antimicrobial bins that enhance bin cleanliness and increase the traveling public's confidence in the safety of this high-touch area.
- Launched a "Stay Healthy. Stay Secure." campaign to keep the traveling public informed of TSA protocols and created a public webpage to broadcast important announcements.
- Instituted a variety of communication vehicles for TSOs (playbooks and security notices) to disseminate the latest information and procedural changes rapidly.
- Supported a variety of international and interagency partnership efforts to standardize and document COVID response efforts, such as the publication of the *Runway to Recovery* guidance document.

TSA also has prioritized the deployment of specific technology enhancements and solutions, and has explored other solutions to accelerate progress toward a lower touch screening experience. Solutions either deployed or explored for potential use include:

- The use of ultraviolet light for disinfection of surfaces within the security checkpoint environment;
- The evaluation of stand-off detection technology to minimize the need to be in proximity or to have physical contact between TSOs and passengers;
- The evaluation of explosive vapor detection to provide a touchless alternative to secondary screening solutions; and
- Upgrades to existing credential authentication and advanced imaging technology pilot programs that merge self-service and biometric capabilities to provide a safer checkpoint experience while maintaining the same level of security authentication and respect to individual privacy, civil rights, and civil liberties.

In addition, TSA conducted a touch-rate analysis to assess the impact of these changes on the level of direct and indirect touch between passengers and TSOs. Preliminary findings for the first phase of the touch-rate analysis indicate that direct touch was reduced by 10 percent and that indirect touch was reduced by 51 percent.

As always, TSA engaged with a variety of stakeholders to source best practices and effectively socialized solutions to the traveling public and to the TSA workforce, ensuring that all were aware of the changes to the security environment. TSA will continue to respond to the latest guidance and will innovate to provide a safe, secure, and sanitary security environment for the traveling public and for the workforce.

Touchless Screening

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I. Legislative Language

This document has been compiled in response to direction in the Joint Explanatory Statement accompanying the Fiscal Year (FY) 2021 Department of Homeland Security (DHS) Appropriations Act (P.L. 116-260), which states:

> *Touchless Screening.*—Within 60 days of the date of enactment of this Act, TSA shall provide a report to the Committees detailing current efforts to ensure checkpoints are sanitary; initiatives to limit interactions that are not conducive to a touchless screening environment between passengers and TSOs without adversely impacting the core security mission; and proposals for procurement and acquisition of available technologies to promote a touchless screening environment.

II. Background

When the Coronavirus Disease 2019 (COVID-19) pandemic emerged as a major threat, the Transportation Security Administration (TSA) stood up the Critical Incident Management Group to direct TSA's immediate response. Subsequently, TSA formalized a Pandemic Planning Executive Committee composed of a variety of workgroups dedicated to various aspects of the response. These workgroups collaborated with the TSA enterprise and with the aviation security industry to implement procedural changes and technology solutions to mitigate the spread of COVID-19 at airports, using funding from the Coronavirus Aid, Relief, and Economic Security (CARES) Act.

III. Procedural Efforts and Initiatives to Create a Low-Touch and Sanitary Checkpoint Environment

TSA brought low-cost procedural and technology mitigation solutions to security checkpoints across the Nation; the solutions allowed TSA to address the emerging COVID-19 threat rapidly. These mitigation solutions included:

- Changes in procedures;
- Enhanced cleaning standards for airports;
- Installation of acrylic-shield barriers;
- Adjustment of current technologies to be lower touch; and
- Deployment of personal protective equipment (PPE).

These efforts were coordinated closely with stakeholders and allowed TSA to protect passengers and transportation security officers (TSO) from the virus better and to create a sanitary, touchless travel experience while maintaining security effectiveness.

A. Procedural Changes

TSA conducted an in-depth review of all screening policies and procedures to determine opportunities to increase the health and safety for TSA's workforce and for the traveling public. TSA also conducted risk assessments after identifying proposed modifications to ensure that changes did not affect security effectiveness negatively or did not compromise individual privacy, civil rights, and civil liberties.

Throughout the response, TSA delivered modified policies and procedures to the field through a new security notice format. This format was developed in March 2020 to deliver comprehensive procedural information rapidly to all front-line officers and field leadership. Following the release of several security notices, a variety of stakeholders discussed additional screening policies, procedures, and safety measures, including short- and long-term options, with applicable TSA stakeholders. These discussions led to the development of COVID-19 standard operating procedures (SOP). Since its release in May 2020, additional security notices were released to refine COVID-19 policies and procedures further. An update to the SOP that consolidates security notices and clarifies procedures is in its final stages of development. Some modifications to the screening policies and procedures are listed in **Figure 1**.

Figure 1: Modified Screening Procedures

Modified Screening Procedures	
Mask Requirement	Mandatory for all individuals (complies with executive orders)
Social Distancing	Required between passengers and TSOs in all screening locations
Identification Document (ID) Verification	Passengers scan their own boarding pass, without physical contact between the TSO and passenger
Gloves	Mandatory use by TSOs while performing screening functions
Changing Gloves	Mandatory for TSOs after every on-person and in-property search, and every 30 minutes or sooner for other screening functions
Acrylic Barriers/ Face Shields	Required to the maximum extent possible during screening and when within 6 feet of or closer to others
Hand Sanitizer	Permitted in carry-on bags as medically necessary in quantities of up to 12 ounces; individuals must remove from their bags before X-ray screening
Uniformed and Nonuniformed Flight Crew	Permitted to bring commercial disinfectants of any size, so long as the item is not listed on the prohibited items list and it undergoes appropriate screening
Explosives Trace Detection	Swabs must be discarded after each use on passengers, their accessible property, or checked baggage
Divestiture Requirements	• Increased focus on removing specific items like belts and bulky jewelry on the passenger • Increased focus on removing food items to reduce alarms and the need for additional screening of passengers and accessible property • Increased focus on passengers divesting their own items and/or moving their own belongings through the checkpoint to limit physical/touching assistance provided by TSOs
Reduced Patdowns	• Use of alarm-resolution (AR) procedure, which allows for additional rescans with Advanced Imaging Technology (AIT) • Use of AR procedure, which enables passengers to adjust their clothing in nonsensitive areas for TSO visual inspection • Implement procedure for sensitive-area AR, which includes a patdown of the alarming area only • Increased use of a handheld metal detector to focus walkthrough metal detector alarms and to minimize the need for full-body patdowns • Modified procedure for passengers who appear 75 years of age or older, in a wheelchair or scooter

B. Enhanced Cleaning Guidance

TSA published "Enhanced Cleaning Guidance" in June 2020. This guidance provides a uniform cleaning standard to limit the spread of COVID-19 at checkpoints and other security screening areas. It requires use of a disinfectant approved by the U.S. Environmental Protection Agency upon job rotation every 30 minutes or as directed by the equipment manufacturer's specifications. TSA worked with its chief medical officer as well as with industry partners—including hardware manufacturers, airlines, and airport authorities—to develop these guidelines and will continue to refine them as needed on the basis of evolving guidance from the Centers for Disease Control and Prevention.

TSA received FY 2020 funding from the CARES Act to fund the enhanced cleaning at federalized airports. To encourage execution and uniformity of enhanced cleaning at federalized airports, TSA is reimbursing airport authorities, airlines, and tenant operators for cleaning services performed to TSA standards. The enhanced cleaning effort is voluntary for airport authorities, airlines, and tenant operators; however, 92 airports have opted into the program as of January 2021, and TSA continues to receive applications. As of June 1, 2021, funding for enhanced cleaning reimbursement will end on September 30, 2021.

C. Acrylic Shield Barriers

TSA deployed acrylic-shield barriers to high-contact areas in checkpoints to protect both TSOs and passengers. These areas include the travel document checker podium, the carry-on baggage divestiture area, lobby-installed checked baggage explosive detection systems, and the AR area. The barriers initially were sent to airports with the highest numbers of screeners, as well as to COVID-19 hot spots. TSA received FY 2020 funding from the CARES Act to pay for the acrylic-shield barriers. Airports not included in the first round of delivery had the option to purchase their own acrylic-shield barriers using TSA purchase cards. TSA also was awarded an indefinite delivery/indefinite quantity contract to provide all airports with acrylic-shield barriers through a phased approach between June and September 2020. TSA received orders from more than 350 airports (more than 5,500 barrier kits) and is completing those deliveries. TSA will continue to fulfill orders as they are received.

D. Antimicrobial Bins at the Checkpoint

TSA worked with industry partners to accept the donation of antimicrobial bins for the automated screening lanes. These bins enhance cleanliness and increase the traveling public's confidence in the safety of this high-touch area. The bins have built-in surface protection to prevent the growth of microbes and bacteria, which enhances sanitization, although it is not necessarily effective against COVID-19. TSA published a list of tested and approved bins for purchase or donation and will continue to update that list as tests on other bins are completed.

E. Infection Control Monitor Position

TSA also created a new position at the checkpoint referred to as the "infection control monitor" to ensure TSO and passenger compliance with new COVID-19 response procedures. The infection control monitor performs the following functions:

- Provides guidance on cleaning protocols to TSOs;
- Verifies that social distancing procedures are maintained;
- Ensures that PPE (for example, face shields, surgical masks, and vinyl gloves) is available and is worn correctly; and
- Ensures that enhanced cleaning of high-touch surfaces is occurring.

F. Passenger Communications

TSA worked to ensure that its workforce and the traveling public understood the measures taken to respond to the COVID-19 pandemic and to improve workforce and traveler confidence at security checkpoints. To accomplish this, TSA used signage addressing COVID-19 procedures and social distancing to remind travelers to maintain distances during security screening operations. TSA also explored enhanced digital communications capabilities through hardware, such as digital totems, to provide targeted messaging to passengers for specific COVID-19 procedures.

TSA's "Stay Healthy. Stay Secure." campaign also provided information to the traveling public, building on the checkpoint communications, to provide passengers with information outside the checkpoint space. Travel tips, educational posts, and timely information about TSA's changes to the checkpoint are available in a variety of outlets, such as TSA's public COVID-19 website (www.tsa.gov/coronavirus), press releases, social media accounts, blog, and segments on news channels. TSA also established reporting and tracking mechanisms to inform the public of the number and location of presumed or confirmed positive infections.

As part of TSA's COVID-19 related communications, TSA continued its partnerships with various advocacy and community-based organizations through the TSA Disability and Medical Conditions Coalition. TSA hosts regular and annual teleconferences with the coalition. These teleconferences provide a platform for TSA leadership and program offices to assess and address improvements in screening travelers with disabilities and medical conditions and their assistive and medical devices through feedback and information exchange. For example, from March 2020 to April 2021, TSA hosted seven teleconferences with TSA leadership, federal partners, and coalition members.

In September 2020, TSA held its 18th Annual Coalition Conference. The Annual Coalition conference usually is held in-person but was held by teleconference in FY 2020 because of COVID-19 pandemic requirements. TSA's Administrator was the keynote speaker. Administrator Pekoske and TSA's executive leadership directly engaged with Disability and Multicultural Coalition organizations to provide information on COVID-19 related airport screening updates and other short-term strategies and long-term plans for improving screening for all travelers.

In addition to the Annual Coalition teleconference, TSA also conducted the following teleconferences to address trends and key issues:

- In February 2021, TSA held a teleconference on "Mask Requirements for Travel on Public and Commercial Transportation: A Conversation with Federal Agencies."
- In December 2020, TSA held a teleconference on "Airport Jurisdictions." Travelers often have questions about the different federal jurisdictions and whom to contact in customs, ticketing, security screening, at the gate, or on a flight. TSA, with leadership from U.S. Custom and Border Protection, the Department of Transportation, and the Federal Aviation Administration, presented and engaged in an exchange of information with coalition participants.
- In June 2020, TSA held a teleconference on "Engaging with the Disability and Multicultural Coalition: Continuing Conversations about COVID-19." TSA leadership provided updates on REAL ID and provided an overview of what TSA is doing to ensure that the public can travel in a safe environment.
- In May 2020, TSA held a teleconference on "COVID-19 Screening Procedures Updates and Thermal Imaging."
- In April 2020, TSA held a teleconference on "COVID 19 and TSA Travel."
- In March 2020, TSA held a teleconference on "REAL ID and Travelers with Disabilities and Medical Conditions."

TSA issues a monthly "What to Expect" publication to coalition members, featuring a different disability or medical condition as part of the "Awareness Series," which focuses on different disabilities and medical condition each month. The publication helps to manage traveler expectations and prepares travelers for screening at the checkpoint. Coalition organizations share and distribute the publication throughout their networks.

The "Awareness Series" is a Section 504 of the Rehabilitation Act of 1973 publication issued to the security screening workforce and features promising practices for screening different disabilities and medical conditions in alignment with disability-related awareness months. For example, in February, TSA's Office of Civil Rights & Liberties Ombudsman and Traveler Engagement issued a publication in recognition of Heart and Stroke Awareness month that addressed proper engagement with, and screening of, travelers who have internal medical devices such as pacemakers.

TSA creates material for the National Shift Brief each month that aligns with the current disability complaint trends from the traveling public. This material is distributed to TSOs as a refresher on proper screening procedures as well as on best practices for effective public interactions with the disability and medical condition community and covers topics such as how to engage respectfully and effectively with travelers with low vision, hearing, speech, and intellectual disabilities.

Examples of specific National Shift Brief topics include:

- Paralyzed Veterans of America: Best Practices for Travelers with Spinal Cord Injuries and their Mobility Aids
- Hearing Loss Association of America: Face Masks and People with Hearing Loss

TSA's Passenger Support Specialist (PSS) Program assists travelers with disabilities and medical conditions. PSS training is available in the TSA Online Learning Center and by the TSA News App. The PSS training includes a section provided by a coalition member on etiquette, sensitivity, and effective communication practices when screening travelers with disabilities and medical conditions and their assistive or medical devices:

- Through the PSS Program, specially trained uniformed TSOs serve as the primary points of contact and as subject matter experts (SME) at the checkpoint when screening and interacting with individuals with disabilities and medical conditions.
- Prospective PSS members receive a 2-hour specialized training on effective engagements with and screening of individuals with disabilities and medical conditions that was created in coordination with the coalition.
- The PSS program furthers TSA's goal to make security checkpoints accessible to individuals with disabilities while maintaining a high level of security and threat mitigation.

TSA's disability SMEs conduct live virtual trainings on how to:

- Articulate TSA's obligation to comply with federal civil rights laws in public-facing activities, such as security screening, and
- Accommodate members of the traveling public with a disability or medical condition during screening.

In FY 2020, TSA launched the Public-Facing Interactions Course, a mandatory online learning course for TSA personnel, which further educates about program and physical access, effective communication, reasonable accommodations for TSA security screening law enforcement, and customer service programs and activities.

Lastly, TSA posts required signage notifying travelers of their rights under Section 504 of the Rehabilitation Act of 1973, including how to file a discrimination complaint. The signage also advises travelers how to get assistance during screening.

G. Communicable Disease Response Playbook

In June 2020, TSA introduced the "TSA Communicable Disease Response Playbook," which consolidated all of TSA's best practices and recommendations for security checkpoints to mitigate the spread of COVID-19. This playbook was shared with TSA leaders, federal security directors, industry stakeholders, vendors, and airlines. The playbook contains a series of solutions organized by theme:

- Minimizing touchpoints during the security process;
- Increasing social distancing;
- Enhancing cleanliness of the checkpoint;
- Requiring PPE; and
- Establishing new acquisition pathways.

The playbook includes an appendix with instructions, resources, and links to tactical information to implement these solutions in a variety of checkpoint environments. Everything is integrated and linked into one document for easy access by employees throughout the field. All requirements that have been issued to the field, to date, are included in the playbook's sensitive security information appendix, including the COVID-19 SOP, security notices, and return-to-duty guidance.

To achieve maximum accessibility, the latest version of the playbook is available on the TSA News app as well as on TSA's COVID-19 iShare page, and updates are made regularly to ensure that the latest guidelines are published.

H. Interagency and International Stakeholder Coordination

TSA's response to COVID-19 was coordinated across all levels of the TSA enterprise, as well as with airlines, airports, industry, and interagency stakeholders, to ensure that its mitigation practices were current and consistent with other agencies across the Federal Government. Some examples of these collaborations are listed below:

- TSA leveraged its partnership with DHS's Science and Technology Directorate (S&T) in constructing its COVID-19 response. TSA established biweekly meetings and defined workstreams with S&T's COVID-19 working group to leverage research and development (R&D) solutions to detect, mitigate, and reduce the spread of COVID-19 at checkpoints.

- S&T also worked closely with TSA's Innovation Task Force (ITF) to prepare to deploy elevated body temperature screening across the enterprise. Although TSA ultimately did not deploy elevated body temperature solutions, S&T's relationship with TSA (and ITF specifically) was key to testing different elevated body temperature systems and to establishing a concept of operations if the units needed to be deployed.

- TSA also engaged the Department of Energy laboratories to gather information on planned and ongoing R&D work linked to mitigating the presence of COVID-19. TSA identified several linked projects including environmental sampling, closed-space modeling, antibacterial/antiviral solutions, and portable detectors.

- TSA, along with other DHS agencies, supported the publication of the *Runway to Recovery* guidance document, which provides airports and airlines guidance for implementing measures to mitigate the public health risks associated with COVID-19 and to prepare for an increase in travel volume, while ensuring that aviation safety and security are not compromised.[1] It addresses public health concerns comprehensively and consistently and supports U.S. air carriers and airports as they make decisions and implement changes related to reducing the spread of COVID-19.

[1] *Runway to Recovery, the United States Framework for Airlines and Airports to Mitigate the Public Health Risks of Coronavirus*, guidance jointly issued by the U.S. Departments of Transportation, Homeland Security, and Health and Human Services (July 2020).

International coordination was another essential part of achieving TSA's goal to find, implement, and communicate best practices for COVID-19 mitigation. Some examples of TSA's international collaborations are listed below:

- TSA conducted conference calls with more than 20 international partners such as Canada, Mexico, China, and Germany, to share best practices and lessons learned on detection and mitigation of COVID-19 at airport checkpoints. These calls led to the exchange of test reports, procedures, and guidance material used in the United States and abroad, including TSA's "Communicable Disease Playbook" and enhanced cleaning guidance.

- TSA organized opportunities for S&T to share its latest R&D findings with cleared foreign partners and industry representatives. It also participated in multilateral meetings to help set and influence voluntary international COVID-guidance, such as the International Civil Aviation Organization's Council for Aviation Recovery Taskforce Guidance.

I. Advisory Panels

Another key to TSA's success managing COVID-19 changes at checkpoints was early and consistent engagement with stakeholders through an advisory panel structure.

TSA established an advisory panel of federal security directors from across the country that met weekly to provide feedback and discuss progress. Feedback from the field was particularly valuable as TSA rapidly responded to the evolving threat of COVID-19. Candid questions and feedback on how response solutions would affect field operations allowed TSA to troubleshoot and deploy effective solutions to the field. Consistent communication with the field allowed TSA to pinpoint existing and emerging threats not evident from TSA Headquarters' perspective.

TSA also established a panel of current and former industry executives with expertise in aviation, security, acquisition, and public health. This panel helped TSA leaders to gain feedback on specific solutions and socialization efforts and allowed the panelists to communicate TSA's progress to external stakeholders.

IV. Procurement and Acquisition of Touchless Screening Technologies

TSA identified several needs to enhance its ability to mitigate the spread of COVID-19 through its enhanced touchless screening environment. For all existing and proposed screening technologies, balancing passenger security and privacy will continue to be TSA's priority and will continue to be an underlying principle in assessing promising solutions.

A. Eliminating Touchpoints during Travel Document Checking

Traditionally, identity authentication at the checkpoint required a physical interaction between the TSO and the passenger. As the entry point to the screening process and the initial determination for the passengers' level of screening, TSA must verify a passenger's identity effectively and efficiently, decreasing touchpoints between TSOs and passengers.

At the onset of COVID-19 in March 2020, TSA collaborated with its Credential Authentication Technology (CAT) vendor and other stakeholders to explore if changes to existing CAT systems could provide a safer checkpoint experience while maintaining the same level of security authentication. To increase social distancing, limit cross-contamination, and reduce the interaction between TSOs and passengers, TSA instituted an immediate procedural solution of rotating the CAT to make it more self-service, but required a more sustainable, permanent material solution moving forward. The self-service modifications to the CAT with camera (CAT-C) prototype included a passenger-facing user interface and a physical acrylic barrier between the TSO and passenger. The modifications, along with the identity verification benefits provided by the CAT-C, allow for automation of all identity verification functions that the TSO otherwise would perform manually.

Upgrades to Self-Service CAT-C

TSA continues to test CAT machines upgraded with facial-recognition capabilities. The upgraded CAT-2 systems will use 1:1 facial matching by comparing the live biometric image of a traveler's face captured by cameras attached to CAT machines to the image on a credential presented by the passenger. CAT-2 does not require a database of prestaged passenger biometric images because the passenger's ID contains the reference photo to which the passenger's live face will be matched.

Because of collaborative efforts, TSA was able to plan and initiate a pilot of CAT-2 at Ronald Reagan Washington National Airport (DCA) in August 2020. This pilot focused on assessing the CAT-C modifications to evaluate its effectiveness in reducing touch rate and in automating identity verification in an operational environment. TSA is conducting another phase of testing in three airports. Throughout the demonstration process, TSA will continue to engage with key stakeholders to inform decisions using results from ongoing evaluations. Upon system performance validation and other key requirements, TSA will evaluate the best and quickest

acquisitions option to upgrade the baseline CAT units to the touchless and automated CAT-C units.

Integration of Mobile Driver's License

To support the touchless experience at the checkpoint further, TSA is exploring the integration of a mobile driver's license (mDL) authentication capability with CAT-2 to transmit digital identity information and to verify a person's identity at the airport checkpoint. An mDL is a digital representation of the information contained on a physical ID, stored on or accessed through a mobile device, such as a smartphone. An mDL is considered a complement to, not a replacement for, a physical driver's license or ID.

TSA is coordinating with stakeholders and is aligning to industry standards to develop a digital identity capability that serves as a secure, digital protocol for transacting nonphysical credentials at the checkpoint. Independent of how the mDL information is transmitted to TSA, TSA will verify the authenticity of the identity through digital signature verification against the issuing authority. TSA will establish ownership of the data by performing 1:1 facial matching, biometrically linking the person passing the data to the photo associated with the digital mDL. TSA is working with its CAT vendor to develop and test this capability during the second quarter of FY 2021. Assuming successful testing, TSA plans to upgrade all deployed CATs with the ability to accept mDLs.

B. Improving On-Person Screening

TSA has deployed AIT[2] enhancements to reduce touch, to improve passenger experience, and to provide clarity to TSOs when groin patdowns are required. Combined with procedure updates, these enhancements demonstrated a statistically significant reduction in overall patdowns.

In addition to the enhancements made to AIT systems in response to COVID-19, TSA is proposing a multiyear program to implement quickly solutions that reduce touch rate, increase threat detection, and reduce false alarms. These solutions also promote social distancing, reduce TSO contact with passengers, and reduce contact between passengers.

Software Enhancements and Upgrades to AIT

To reduce the need for patdowns further, TSA will deploy enhancements and upgrades to AITs at passenger security checkpoints to screen passengers on the basis of risk-level. These enhancements will increase detection capability and will lower false-alarm rates.[3]

TSA also will complete initial activities toward an eventual upgrade of the AIT fleet to meet next-generation, on-person screening requirements through use of a wideband kit. This kit will lower false alarms, require fewer patdowns, increase throughput, and thus improve the passenger

[2] AIT relies upon Automated Target Resolution software to reduce the impact to individual privacy by eliminating the image of each individual's body.

[3] This includes deployment of an AIT operating system update (Windows 10) AIT 2 computer replacement (to ASCU 7 computers), and AIT post-implementation review emulator development and test/deployment.

experience. The algorithms will be gender-neutral, which will make it unnecessary to ask passengers for gender. A demonstration of the kit is scheduled for the second quarter of FY 2021. The kit is scheduled to be tested in FY 2022, and potentially is ready for deployment in FY 2023.

Quick Personnel Security 201 Scanner

Another technology that TSA is testing is the Quick Personnel Security (QPS) 201 Scanner. This flat-panel, millimeter wave AIT unit allows for an arms-down passenger stance that may ease the screening process for passengers. It also enables TSOs to review alarm images and to screen passengers simultaneously at alternative locations. In testing, QPS 201 has shown to have a faster processing time and fewer false-alarm rates when compared to the baseline, which, in turn, would reduce the need for patdowns of passengers. Additional Transportation Security Lab testing is required to determine QPS 201 detection capabilities. Procurement and deployment could occur in the near-term if TSA determines that the QPS 201 meets its requirements.

C. Enhancing Detection with Computed Tomography

Computed tomography (CT) for screening carry-on items produces high-quality, three-dimensional images that can be rotated up to 360 degrees on three axes for a more thorough visual analysis of a bag's contents. By rotating images, TSA officers can analyze carry-on bags better for potential threats without having to touch the bag compared to existing two-dimensional screening. CT also can see through clutter in a bag more easily to identify specific items, resulting in fewer manual bag checks compared to the Advanced Technology (AT) X-rays that CT is replacing.

2020-2021 CT Deployment Strategy

TSA is developing a logistically efficient CT deployment strategy that seeks to enhance security effectiveness and to reduce passenger search rates. TSA has deployed more than 90 percent of the 300 Smiths AT/CT units purchased.

D. Reducing False-Alarm Rates with Alarm Resolution

TSA is conducting R&D in support of enhancing contactless AR countermeasures, initially focusing on confirmatory bulk detection capacities such as a chemical analysis device, as well as next-generation bottled liquid scanners. The goal is to require fewer types of containers to be handled or opened by TSOs. The R&D aims to develop material capabilities that identify and resolve a greater number of benign materials and threats with no additional procedures or security equipment required, resulting in fewer cases needing to be escalated to Transportation Security Specialists in Explosives for resolution.

E. Increasing Distance while Conducting Screening

TSA identified several additional technological solutions that will increase social distancing and that will create more sterile environments while maintaining security effectiveness.

Stand-off Detection Technology

TSA employs an integrated approach to ensure the security of the traveling public and the Nation's transportation system. Stand-off detection (SOD) was identified as a potential security technology to protect soft targets and aviation spaces at security checkpoints. SOD would help to minimize the need to be in proximity or to have physical contact between TSOs and passengers.

TSA assessed several emerging passive[4] SOD solutions in the aviation environments. SOD solutions can screen individuals quickly, and without physical contact, for items hidden under layers of clothing, which could indicate the presence of an explosive device. Operators of the SOD will see the same images as viewed by the naked eye. There is no X-ray or other penetration of garments and no collection of identifiable information or display of bodily characteristics.

Remote Screening

TSA is exploring ways to support the development and integration of remote screening at the checkpoint. Remote screening limits exposure of TSOs performing carry-on baggage screening by removing a subset of them from the checkpoint floor and relocating them to a remote viewing room. It also reinforces social distancing practices by reducing the necessary number of TSOs present at the checkpoint because TSOs will be able to screen bags and to review images of carry-on baggage from a remote room. TSA's use of remote screening improves TSOs' capability for image analysis and offers increased staffing flexibility without being limited by the available checkpoint lanes.

Off-Lane X-Ray Resolution

Screening carry-on bags remotely with an off-lane screening technology would separate TSOs from passengers to maintain social distances by establishing remote viewing rooms at 16 airports with requisite technology. To implement this concept, TSA must assess whether this procedure can reduce the number of carry-on bags handled by TSOs, while maintaining security effectiveness. It also would assess if existing remote screening procedures and AR requirements that currently apply to checked baggage also apply to the remote screening of carry-on bags.

[4] Passive imaging detection techniques rely on collecting naturally occurring radiation and on using the contrast between apparently "warmer" and "colder" objects, which usually results from contrasts between the different materials' ability to absorb and radiate energy.

F. Reducing Human Contact with Explosive Vapor Detection

TSA continues to explore lower touch alternatives to secondary screening, such as explosive vapor detection (EVD). EVD-based technology is designed to provide novel AR sampling techniques that allow for trace-level, threat detection capability for on-person, in-baggage, and cargo scenarios. Currently, deployed trace detection techniques require the operator to come into direct contact with passengers or their accessible property; whereas, EVD technology functions by assessing the vapor being emitted from the explosive or chemical threat at a defined standoff distance. The research conducted considers longer range technologies that are 3 to 6 years away from fielding. TSA will assess improvements on current technologies, innovative approaches, and new detectors or components to improve vapor collection efficiency on the basis of dependencies such as explosive substance, physical size, and temperature.

In partnership with S&T, TSA initiated work to support AR through understanding the limits of detection (that is, sensitivity) required for EVD, ultimately resulting in the development of a new EVD standard for on-person, baggage, and break-bulk cargo. This work will assess operational needs to detect explosive vapor signatures; to develop EVD requirements and concepts of operation, mature EVD technologies, and test and evaluation tools; and to integrate EVD technologies into the current and future aviation screening architecture.

G. Utilizing Ultraviolet Light for Disinfection

TSA is exploring two types of systems that use ultraviolet (UV-C) light for disinfection of surfaces within the security checkpoint environment.

UV-C Light Standalone Systems

TSA has accelerated the demonstration process for two standalone disinfection systems for bins using ultraviolet light. Both solutions are at TSA's testing facility undergoing safety evaluations and operational efficiency tests. Testing will include the system's ability to reach the required dosage to inactivate COVID-19, as determined by S&T and TSA. Once testing ends, the systems will move to an airport to undergo a live operational demonstration in the checkpoint environment. After the demonstration, next steps are determined on the basis of operational need and system efficiencies.

UV-C Light Integrated Systems

TSA also is exploring in-line bin systems that could integrate with existing automated screening lanes (ASL). This solution is added to the ASL tray return system, under the recomposure area, where the trays travel back to the next passenger after security screening is completed. TSA is evaluating the efficacy of these integrated solutions between three separate UV-C light providers and four ASL vendors across checkpoint AT and CT scanners in the field. To expedite the end-to-end acquisition and deployment process, TSA aims to use these demonstrations to inform subsequent risk assessment and system evaluation activities. Additional considerations include retrofitting the current AT-ASL fleet and upgrading the checkpoint CT-ASL fleet (approximately 18 lanes).

H. Streamlining Acquisition and Procurement Processes

To enable its ability to combat COVID-19 and other future threats rapidly, TSA implemented new methods and streamlined current methods to identify, evaluate, acquire, and deploy these new solutions to the field efficiently.

The **TSA Urgent Solution Intake Process** defined a standardized evaluation process to vet technology solution proposals rapidly that address urgent mission needs, as determined by TSA leadership. The process integrates existing solution intake channels[5] into a uniform evaluation process to reach an outcome decision within 4 weeks.

TSA Acquisition and Procurement Pathways provided users with baseline criteria to identify the procurement and acquisition processes and outcomes that are most appropriate for efficient implementation of a given solution. Solution owners and relevant stakeholders can reference these pathways to direct the transition from a TSA solution intake channel (for example, Broad Agency Announcement (BAA), DHS Commercial Solutions Opening Pilot, S&T Tech Scouting) to an acquisition program or direct procurement. The criteria for each pathway provide users with a starting point to initiate outreach with appropriate stakeholders to launch a formal acquisition or procurement.

The **TSA 90-Day Procurement Process** defines the steps required to award a contract rapidly to meet mission-critical requirements under emergency conditions and to address health and safety concerns. This process is intended only for critical circumstances as determined by TSA leadership. It requires the prioritization of the procurement and concentration of contracting resources to achieve a 90-day award.

TSA's Capability Acceptance Process is a framework to partner with stakeholders, such as airlines or airport authorities, to donate checkpoint capabilities and screening equipment to TSA. This process is an option for stakeholders who benefit from accelerating capability deployment timelines, recapitalizing screening equipment, or enhancing security and the passenger experience. Typical checkpoint technology solutions that may minimize touch or otherwise limit the spread of COVID-19, such as CAT, already are approved for donation.

TSA's ITF has an established BAA process for the aviation security industry to submit proposals on potential security capabilities that support TSA in these efforts. ITF received technology proposals relating to touchless screening; some example proposals include crowd movement analytics that ensure social distancing, automated methods to disinfect bins associated with property screening, and remote screening via X-ray technology.

[5] Currently, intake channels include a BAA, the DHS commercial solutions opening pilot program, and S&T reports.

V. Touch-Rate Analysis

TSA conducted a touch-rate analysis to assess the impacts of these changes to the procedural and operational environment for direct and indirect touch between passengers and TSOs.

- **Direct touch** is the average time that a passenger is touched by a TSO performing a patdown to resolve a primary screening alarm.
- **Indirect touch** is the average time that a passenger's belongings are touched by a TSO and includes the time that a TSO touches the passenger's items such as an ID, boarding pass, or carry-on baggage.

A. Preliminary Findings

Preliminary findings for Phase I of the touch-rate analysis focused on impacts to passengers processed through the standard screening process using AT equipment. **Figure 2** shows a comparison of touch with and without COVID-19 mitigations implemented in the screening environment.

Figure 2: Direct vs. Indirect Touch
(seconds per passenger)

Touch Category	No Mitigations (sec/passenger)	COVID-19 Mitigations (sec/pax)	Change
Direct Touch	6.96	6.26	-10%
Indirect Touch	75.0	36.7	-51%

B. Analysis Methodology

TSA applied field data and inputs from SMEs to construct a detailed screening-data model in accordance with TSA SOPs. The model computed the seconds per passenger of direct (TSO and passenger) and indirect (TSO and property) touch in a two-lane passenger screening checkpoint. To quantify the impact, TSA calculated the total touch time per passenger with and without COVID-19 mitigations (with consideration of the operational environment) to quantify the impacts.

C. Timeline

TSA is conducting the touch-rate analysis in a phased approach and is updating the model projections as additional data is collected, validated, and analyzed. **Figure 3** outlines the timeframe for each activity.

Figure 3: Touch-Rate Analysis Timeframes

Timeframe	Activity
May – June 2020	TSA developed a touch-rate analysis data model and applied discrete event simulation modeling (NetSCO) to estimate the impact of COVID-19 social distancing on screening performance.
Phase I July – September 2020 **Phase II** October – November 2020	TSA conducted two phases of field data collection activities to observe screening under the COVID-19 environment and to gather field data to validate touch rates. • **Phase I:** TSA collected operational data at four locations.[6] The sample size was limited because of passenger volumes and travel limitations. • **Phase II:** TSA collected operational data at seven locations,[7] targeting airports with higher passenger volume.
November – December 2020	TSA incorporated Phase I data results into the COVID-19 touch-rate analysis and assessed the impact of COVID-19 procedure changes at the checkpoints.

D. Next Steps

TSA will continue to analyze and update the COVID-19 touch-rate analysis as additional operational data become available. **Figure 4** outlines future timelines.

Figure 4: Touch-Rate Analysis Projected Timeframes

Timeframe	Activity
January – February 2021	TSA is updating the COVID-19 touch rate analysis with Phase II data results and is planning Phase III data collection activities for the peak summer months.
Summer 2021	Phase III data collection activities will occur during the peak operational summer months, and the touch-rate analysis will be updated with Phase III results.

[6] DCA, Dulles International Airport, Boston Logan International Airport, and Detroit Metropolitan Airport
[7] John F. Kennedy International Airport, LaGuardia Airport, Portland International Airport, Los Angeles International Airport, Hartsfield-Jackson Atlanta International Airport, Tampa International Airport, and Miami International Airport.

VI. Conclusion

TSA made significant procedural and technological changes at airport checkpoints, including touchless screening procedures, sanitization measures, enhancements to technologies, and initiatives that limit interactions between passengers and TSOs. TSA collaborated with stakeholders to implement procedural best practices and to deploy new technology in ways that are efficient and responsive to the current environment while also respectful of travelers' privacy, civil rights, and civil liberties.

TSA will continue to identify and deploy long-term technology and process solutions to enable a more touchless security environment in the future.

Appendix: Abbreviations

Abbreviation	Definition
AIT	Advanced Imaging Technology
AR	Alarm Resolution
ASL	Automated Screening Lane
AT	Advanced Technology
BAA	Broad Agency Announcement
CARES	Coronavirus Aid, Relief, and Economic Security (Act)
CAT	Credential Authentication Technology
CAT-C	Credential Authentication Technology with Camera
COVID-19	Coronavirus Disease 2019
CT	Computed tomography
DCA	Ronald Reagan Washington National Airport
DHS	Department of Homeland Security
EVD	Explosive Vapor Detection
FY	Fiscal Year
ID	Identification Document
ITF	Innovation Task Force
mDL	Mobile Driver's License
PPE	Personal Protective Equipment
PSS	Passenger Support Specialist
QPS	Quick Personnel Security
R&D	Research and Development
S&T	DHS Science and Technology Directorate
SME	Subject Matter Expert
SOD	Stand-Off Detection
SOP	Standard Operating Procedure
TSA	Transportation Security Administration
TSO	Transportation Security Officer
UV-C	Ultraviolet