



Walk-Through Screening for Mass Casualty Threats

Focus Group Report

October 2023



Science and
Technology



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FOREWORD

The National Urban Security Technology Laboratory (NUSTL) is a federal laboratory within the U.S. Department of Homeland Security (DHS) Science and Technology Directorate. Located in New York City, NUSTL is the only national laboratory focused exclusively on supporting the capabilities of federal, state, local, tribal, and territorial responders to address the homeland security mission. The laboratory assists responders with the use of technology to prevent, protect against, mitigate, respond to, and recover from homeland security threats and incidents. NUSTL provides expertise on a wide range of subject areas, including chemical, biological, radiological, nuclear, and explosive detection, personal protective equipment, and tools for emergency response and recovery.

NUSTL manages the System Assessment and Validation for Emergency Responders (SAVER) program, which provides information on commercially available equipment to assist response organizations in equipment selection and procurement. SAVER knowledge products provide information on equipment that falls under the categories listed in the DHS Authorized Equipment List (AEL), focusing primarily on two main questions for the responder community: “What equipment is available?” and “How does it perform?” The SAVER program works with responders to conduct objective, practitioner-relevant, operationally oriented assessments and validations of commercially available emergency response equipment. Having the right tools provides a safer work environment for responders and a safer community for those they serve.

NUSTL is responsible for all SAVER activities, including selecting and prioritizing program topics, developing SAVER knowledge products, and coordinating with other organizations to leverage appropriate subject matter expertise. In conjunction with the DHS Transportation Security Laboratory, NUSTL conducted a focus group on walk-through screening systems for mass casualty threats (or weapons screening systems). Weapons screening systems fall under AEL reference number 15SC-00-PPSS titled “[Systems, Personnel/Package Screening.](#)”

SAVER reports are available at www.dhs.gov/science-and-technology/saver.

Visit the NUSTL website at www.dhs.gov/science-and-technology/national-urban-security-technology-laboratory or contact the lab at NUSTL@hq.dhs.gov.



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EXECUTIVE SUMMARY

Emergency responders and security personnel use walk-through screening systems for mass casualty threats (or weapons screening systems) to enhance safety and security at soft target locations. Walk-through screening systems for mass casualty threats fall under the Department of Homeland Security (DHS) Authorized Equipment List reference number 15SC-00-PPSS, titled [“Systems, Personnel/Package Screening.”](#)

In June 2023, the DHS Science and Technology Directorate (S&T) National Urban Security Technology Laboratory’s (NUSTL) System Assessment and Validation for Emergency Responders (SAVER) program, with support from the DHS S&T Transportation Security Laboratory (TSL), convened a focus group on commercially available weapons screening systems at NUSTL. The meeting’s primary objective gathering evaluation criteria, product selection specifications, product suggestions, and possible evaluation scenarios for a future SAVER assessment. Nine emergency responders who have experience using weapons screening systems and who represented jurisdictions in the District of Columbia, Nevada, New Jersey, and New York took part in the focus group.

The focus group identified 32 evaluation criteria by which weapons screening systems should be assessed. Capability and Deployability ranked as the most important SAVER categories. The 13 criteria identified as being of utmost importance (listed alphabetically) are:

- Alert Latency Period
- Ease of Training
- Hardware Durability
- Initial Price
- Innocuous Item Discrimination
- Interference Resistance
- Maintenance Requirements
- Power Source
- Setup and Breakdown
- Staffing Requirements
- Threat Item Detection
- User Friendliness
- Warranty

The participants recommended several possible scenarios for NUSTL to consider for inclusion in the assessment, including setup, non-divesting screening, and breakdown. NUSTL will use these recommendations to plan the weapons screening systems assessment and will also take the group’s suggested products to include under advisement.

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1.0 INTRODUCTION

Emergency responders and security personnel use walk-through screening systems for mass casualty threats to enhance safety and security at soft target locations. Soft target locations are areas that are easily accessible to large numbers of people and have limited security or protective measures in place, making them vulnerable to violent attacks with the potential for mass casualties. Soft target locations, such as transportation hubs and entertainment venues, present unique security challenges due to their inherent accessibility and high foot traffic.

Walk-through weapons screening systems that can detect concealed mass-casualty threats without impeding pedestrian traffic flow could deter would-be attackers and enhance public safety in crowded areas. Such high throughput systems may enable non-divesting screening in which passengers do not have to remove their bags, clothing, or personal items; this differs from those installed for routine screening at entrances to areas with limited access such as airline passenger terminals or secure government buildings where entrants have their bags and metal objects screened separately using an x-ray scanner. Walk-through screening systems for mass casualty threats fall under the Department of Homeland Security (DHS) Authorized Equipment List reference number 15SC-00-PPSS, titled "[Systems, Personnel/Package Screening](#)."

In June 2023, the DHS Science and Technology Directorate (S&T) National Urban Security Technology Laboratory's (NUSTL) System Assessment and Validation for Emergency Responders (SAVER) program, with support from the DHS S&T Transportation Security Laboratory (TSL), conducted a focus group with experienced users of walk-through screening for mass casualty threats (or weapons screening) at NUSTL in New York, NY. NUSTL's primary objective for the focus group was to gather information on the participants' practical experiences relevant to operational and procurement decisions. This included focus group members working with NUSTL and TSL members to determine evaluation criteria and product selection specifications as well as possible products and scenarios for a SAVER assessment of weapons screening systems.

1.1 PARTICIPANT INFORMATION

Nine emergency responders with at least seven years of experience using weapons screening systems came together from various federal, state and local jurisdictions to participate in the focus group. Their professional information is listed in Table 1-1.

Table 1-1 Focus Group Participant Demographics

Discipline	Years of Experience	Jurisdiction
Public Transit Security	26-30	New York
Homeland Security/Public Transit Security	21-25	New York/New Jersey
Law Enforcement	21-25	Nevada
Homeland Security/Emergency Management	16-20	New York
Public Transit Security	16-20	New York/New Jersey
Law Enforcement/Public Transit Security	11-15	New York
Law Enforcement	11-15	District of Columbia
Law Enforcement	11-15	District of Columbia
Homeland Security/Emergency Management	6-10	New York

2.0 FOCUS GROUP METHODOLOGY

The focus group's day at NUSTL opened with overviews of NUSTL, TSL, the SAVER program, walk-through screening systems for mass casualty threats, and the goals and objectives of the focus group. Once that background material had been covered, members of the project team interviewed focus group participants individually to gather information about their experiences using weapons screening technology. After the individual interviews, a final session gathered all participants and a NUSTL facilitator led group discussions of five sets of recommendations:

- 1) Evaluation criteria: product features that are important to consider when making operational or procurement decisions
- 2) Assessment scenarios: operational settings and activities that reflect the responders' experiences and would provide evaluators with appropriate conditions to assess the products
- 3) Product selection criteria: features, attributes or characteristics a product should possess to be considered for assessment
- 4) Products: specific brands or models that should be candidates for inclusion in the comparative assessment
- 5) Laboratory characterization tests: testing conducted by TSL that would incorporate challenges identified by first responders to assist the project team in planning the operational assessment

Figure 2-1 illustrates the process followed to gather these recommendations.

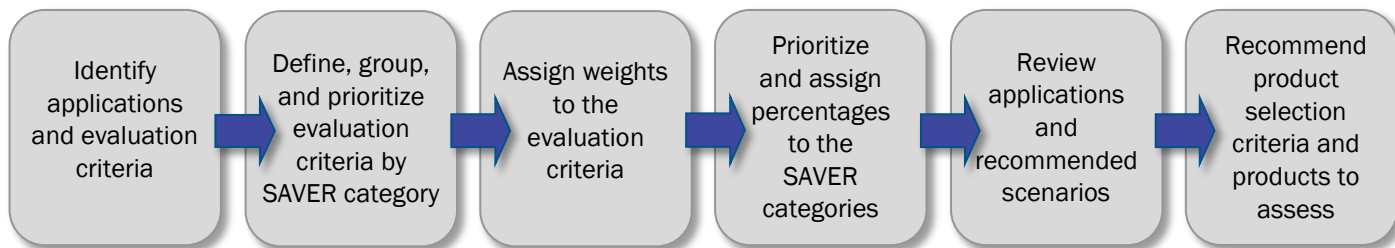


Figure 2-1 Focus Group Process

Focus group participants first identified applications in which weapon screening systems are commonly used. Next, the focus group participants identified and defined evaluation criteria, which were then grouped within the SAVER categories: affordability, capability, deployability, maintainability and usability. The SAVER categories organize criteria in the following manner:

- **Affordability** groups criteria related to the total cost of ownership over the life of the product, including purchase price, training costs, warranty costs, recurring costs and maintenance costs
- **Capability** groups criteria related to product features or functions needed to perform responder-relevant tasks
- **Deployability** groups criteria related to preparing to use the product, including transport, setup, training, and operational or deployment restrictions

- **Maintainability** groups criteria related to the routine maintenance, storage, calibration, and minor repairs to be performed by responders, as well as any included warranty’s terms, duration and coverage
- **Usability** groups criteria related to ergonomics and the relative ease of use when performing responder-relevant tasks

Once the evaluation criteria were sorted into the SAVER categories, focus group participants deliberated and assigned a weight for each criterion’s level of importance on a 1 to 5 scale, where 5 signifies “utmost importance” and 1, “minor importance.” (See Table 2-1 for additional explanation.) The group of responders then reviewed and refined the criteria, categories, and respective weights. Evaluators could also deem some criteria “for information only” and not assign those a weight. The criteria are still evaluated, usually by specification (see below), but are not counted in product scoring during an assessment.

Table 2-1 Evaluation Criteria Weighting Scale

Weight	Definition
5	This evaluation criterion is of utmost importance : “I would never consider purchasing a product that does not meet my expectations of this criterion or does not have this feature.”
4	This evaluation criterion is very important : “I would be hesitant to purchase a product that does not meet my expectations of this criterion or does not have this feature.”
3	This evaluation criterion is important : “Meeting my expectations of this criterion or having this feature would strongly influence my decision to purchase this product.”
2	This evaluation criterion is somewhat important : “Meeting my expectations of this criterion or having this feature would influence my decision to purchase this product.”
1	This evaluation criterion is of minor importance : “Other things being equal, meeting my expectations of this criterion or having this feature may influence my decision to purchase this product.”
N/A	This specification should be disclosed during assessment but is “for information only.” Specification will not be evaluated or scored during assessment.

After they had assigned weights to the evaluation criteria, the focus group participants recommended whether each of the criteria should be assessed operationally or evaluated according to vendor-provided specifications.

The focus group participants then identified product selection criteria for inclusion in SAVER’s assessment of weapons screening systems. The group also recommended particular products that should be considered for the assessment. Lastly, the focus group participants reviewed the applications identified at the beginning of the focus group session and recommended operational scenarios for the assessment.

3.0 EVALUATION CRITERIA RECOMMENDATIONS

The focus group identified 32 evaluation criteria and concluded that capability was the most important SAVER category, followed by the Deployability, Usability, Maintainability, and Affordability categories, respectively. Table 3-1 presents the evaluation criteria and their corresponding weights. The table also includes category weights, which reflect the cumulative weight of all criteria within that category relative to the cumulative weight of all 32 criteria. After an assessment, overall product scores will be calculated using a weighted average of all criteria.

Table 3-1 Evaluation Criteria

SAVER CATEGORIES				
Capability	Deployability	Usability	Maintainability	Affordability
Overall Weight 31%	Overall Weight 27%	Overall Weight 24%	Overall Weight 11%	Overall Weight 7%
Evaluation Criteria				
Threat Item Detection Weight: 5	Hardware Durability Weight: 5	Alert Latency Period Weight: 5	Maintenance Requirements Weight: 5	Initial Price Weight: 5
Innocuous Item Discrimination Weight: 5	Interference Resistance Weight: 5	Ease of Training Weight: 5	Warranty Weight: 5	Recurring Costs Weight: 4
Throughput Weight: 4	Power Source Weight: 5	Staffing Requirements Weight: 5	Self-Diagnostics Weight: 4	
Variable Sensitivity Settings Weight: 4	Setup/Breakdown Weight: 5	User Friendliness Weight: 5		
Admin Levels Weight: 3	Portability Weight: 4	Calibration Requirements Weight: 4		
Cybersecurity Measures Weight: 3	Standalone Operability Weight: 4	Monitoring and Alerting Interface Weight: 4		
Detection Zone Dimensions Weight: 3	Transport Case Options Weight: 4	Data Analysis and Storage Weight: 3		
Low Ferrous Metal Content Detection Weight: 3	Passage Width Weight: 3			
Object Localization Weight: 3				
Simultaneous Entry Weight: 3				

SAVER CATEGORIES				
Capability	Deployability	Usability	Maintainability	Affordability
Evaluation Criteria				
Technology Integration Weight: 2				
Video and Imaging Capabilities Weight: 2				

3.1 CAPABILITY

Twelve capability criteria were identified and defined by the focus group. Listed from highest to lowest weight within the category, the criteria are:

Threat Item Detection refers to the ability of the product to detect and trigger an alarm when screening/in the presence of large threat objects, including assault rifles, knives with blades over 4 inches in length, and improvised explosive device (IED) components. This criterion also includes the capability of the product to identify the individual who triggered an alarm and to sound alarms in the event of simultaneous detections.

Innocuous Item Discrimination refers to the ability to discriminate innocuous (non-threat) items and smaller threats from large threat items (i.e., the system will not trigger an alarm for smaller items that are present and/or detected).

Throughput refers to the rate in people per hour at which the device can accurately screen the individuals who pass through.

Variable Sensitivity Settings refers to the user's ability to adjust the detection and alarm sensitivity of the product. Sensitivity may be fine-tunable or have discrete pre-programmed sensitivity settings. Products with discrete sensitivity settings are expected to have at least eight or more settings available.

Admin Levels refers to the user's ability to create administrative-level user accounts with permissions to reconfigure and/or lock product settings (including sensitivity settings). Thus, operator-level user accounts would not have these same permissions.

Cybersecurity Measures refers to system capabilities for preventing or mitigating cyberattacks including high-level network security protocols.

Detection Zone Dimensions refers to the size of the zone within which and range from how far away the device can detect weapons. This includes the maximum and minimum height range of portal style systems or the field of view (FOV) and detection distance of standoff style systems.

Low Ferrous Metal Content Detection¹ refers to a system's capability to detect threat items in which most components are made primarily of non-ferrous metals or non-metallic materials with very few or no components made of ferrous metals, for example, 3D printed weapons and IEDs.

¹ Non-ferrous metals may include aluminum, zinc, and copper. This criterion may be omitted if the assessment includes metal detectors or other products that claim to be unable to detect such items.

Object Localization refers to a product's capability to identify whereon an individual the system has detected an item triggering its alarms. This criterion includes the capacity to localize object detections of multiple separate items on one person.

Simultaneous Entry refers to the capability to screen more than one person walking through the detection zone at the same time.

Technology Integration refers to the ability of the system to integrate or be interoperable with external security operations centers and video management systems. Products with wireless data transmission capabilities should be able to transmit over mesh networks. Systems using cloud-based services should provide an open application programming interface for technology integration.

Video and Imaging Capabilities refers to on-board camera and/or video systems included in the product that can work off-network, can be deactivated, and can be used without saving or recording facial video or images

3.2 DEPLOYABILITY

Eight deployability criteria were identified and defined by the focus group. Listed from highest to lowest weight within the category, the criteria are:

Hardware Durability refers to the ability of the product to withstand a variety of environmental conditions (e.g., indoor and outdoor use, hot and cold temperatures, humidity, precipitation and wind) as well as direct impacts, frequent use and potential vandalism. Products should be dustproof and waterproof (i.e., have an ingress protection rating of IP65 equivalent or higher). Dustproofing should protect against steel dust.

Interference Resistance refers to the product's ability to resist effects of electromagnetic (EM) and/or radio frequency (RF) interference on detection performance, including interference from both the operating environment as well as other deployed units. Products may have shielding that mitigates interference. Further, directional orientation of the product's transmitter and receiver should allow bi-directional flow without causing interference to additional units deployed.

Power Source refers to the method of powering the product (e.g., internal battery, external generator, or other portable power source). Commercial off-the-shelf batteries are preferred over proprietary batteries. External power sources should be compatible with 115–240V and with international power sources, either directly or through an easily obtainable adapter.

Setup and Breakdown refers to the ease and repeatability of, as well as time required to deploy the product and remove it from the field. Directional orientation of the product's transmitter and receiver should allow for bi-directional flow. Additionally, this criterion includes the ability for configuration settings to be retained after unexpected power outages.

Portability refers to the ability for one or two people to easily hand carry the product. This criterion also addresses the size, weight, and transportability (e.g., wheeled) of transport cases.

Stand Alone Operability refers to the ability of the product to function without network connection or cloud connection.

Transport Case Options refers to the durability and ease of use (i.e., packing) of cases available for the product. Transport cases may be different from storage cases.

Passage Width refers to the distance between two sides of a walk-through portal. Products may have a fixed or adjustable passage width. Products with adjustable passage widths should not experience detection performance degradation at wider widths. Products should be compliant with the Americans with Disabilities Act (i.e., providing at least 32 inches of clearance).

3.3 USABILITY

Seven usability criteria were identified and defined by the focus group. Listed from highest to lowest weight within the category, the criteria are:

Alert Latency Period refers to the delay between when the object or person passes through the device before the operator is alerted.

Ease of Training refers to the ready availability training resources (e.g., electronic user manuals, on-demand videos) and intuitiveness of on-the-job training. This criterion also addresses the amount of time needed to train operators, where less training time is preferable.

Staffing Requirements refers to the minimum number of operators required to conduct screening. This criterion does not include the number of personnel required to deploy the product.

User Friendliness refers to the overall ease of use in conducting screening, such as having binary alerts for alarms and requiring a minimal amount of user interpretation. Further, products that allow for bi-directional flow should not impact screening operations.

Calibration Requirements refers to automatic and manual calibration, the time needed to conduct calibration, the calibration schedule, and the ease or complexity of conducting manual calibration. Test articles and user guides (e.g., electronic manuals, on-demand videos) should be readily available. This criterion addresses both pre-deployment full calibration and field calibration with a test article.

Monitoring and Alerting Interface refers to the method of notifying operators of alarms including displays integrated into the screening device and displays that may be hosted on a separate device such as a tablet, smartphone, or laptop. If displayed on a separate device, alerts should be visible on the screening device as well. Visible and/or audible alerts on the interface should specify the alerting unit if multiple units are deployed. Products should allow operators to deactivate visible or audible alerts from the monitoring and alerting interface.

Data Analysis and Storage refers to the ability to review or process usage data such as the number of occupancies, number of alarms, and date and time of alarms. The data should be easily accessible and downloadable. Additionally, the system should have the ability to retain data in the event of an unexpected power outage.

3.4 MAINTAINABILITY

Three maintainability criteria were identified and defined by the focus group. Listed from highest to lowest weight within the category, the criteria are:

Maintenance Requirements refers to maintenance activities, schedule, and resources (e.g., maintenance related user guides and training for performing in-house maintenance) needed for the system to function properly.

Warranty refers to the level and duration of coverage (e.g., inspections, replacement products and/or components).

Self-Diagnostics refers to overall system health diagnostics. This criterion addresses the operating system of the product (i.e., Windows, iOS, Android) and regular software patching and updates.

3.5 AFFORDABILITY

Two affordability criteria were identified and defined by the focus group. Listed from highest to lowest weight within the category, the criteria are:

Initial Price refers to the manufacturer's suggested retail price to purchase the product.

Recurring Costs refers to other costs of operating the system such as leasing fees, subscription fees, consumables (e.g., batteries), maintenance contracts, and extended warranties.

4.0 EVALUATION CRITERIA ASSESSMENT RECOMMENDATIONS

The focus group made recommendations on whether the evaluation criteria should be assessed operationally or according to manufacturer-provided specifications. At the assessment, evaluators will assess operationally focused criteria through hands-on experiences using the product (and/or by inspecting its features). They will evaluate other specifications, based on product information provided by the vendor, including technical specifications and, when available, reports from third-party testing labs. Some criteria may be assessed by both methods.

During the weighting process, the focus group categorized some evaluation criteria as “specification” criteria. These will be evaluated but not be scored during the assessment, however, relevant information (e.g., price, warranty information) will be gathered and included in the assessment report. Criteria that were not given a weight during that part of the focus group process are designated “information” only: while information on that specification will be provided, the criterion will not be evaluated nor scored.

Table 4-1 presents the focus group’s assessment recommendations for the evaluation criteria.

Table 4-1 Evaluation Criteria Assessment Recommendations

Category	Criteria	Operational	Specification	Information Only
Capability	Threat Item Detection	✓		
	Innocuous Item Discrimination	✓		
	Throughput	✓	✓	
	Variable Sensitivity Settings	✓	✓	
	Admin Levels	✓	✓	
	Cybersecurity Measures		✓	
	Detection Zone Dimensions	✓	✓	
	Low Ferrous Metal Content Detection	✓		
	Object Localization	✓		
	Simultaneous Entry	✓	✓	
	Technology Integration		✓	
	Video and Imaging Capability			✓
Deployability	Hardware Durability	✓	✓	
	Interference Resistance	✓	✓	
	Power Source	✓	✓	
	Setup and Breakdown	✓		
	Portability	✓		
	Stand Alone Operability	✓	✓	
	Transport Case Options	✓	✓	
	Passage Width	✓		

Category	Criteria	Operational	Specification	Information Only
Usability	Alert Latency Period	✓		
	Ease of Training	✓		
	Staffing Requirements	✓		
	User Friendliness	✓		
	Calibration Requirements	✓	✓	
	Monitoring and Alerting Interface	✓		
	Data Analysis and Storage	✓		
Maintainability	Maintenance Requirements*		✓	
	Warranty*		✓	
	Self-Diagnostics	✓	✓	
Affordability	Initial Price*		✓	
	Recurring Costs*		✓	
* Denotes evaluation criteria the focus group weighted relatively heavily and, as such, may be scored during an assessment despite being characterized as specifications.				

5.0 ASSESSMENT SCENARIO RECOMMENDATIONS

The focus group identified screening in transit hubs and at special events (such as concerts, sporting events, and political events) as the main applications for weapons screening systems. Based on these applications, the focus group recommended four scenarios, as described in sections 5.1 through 5.4, in which products could be assessed using the evaluation criteria and recommended methods of an operational assessment per Table 4-1.

The SAVER assessment incorporating these scenarios will take place at a venue that has a conference room as well as the ability to accommodate multiple screening lanes, uneven surfaces, and readily available power sources in line with those that the focus group identified as necessary for operationally assessing weapon screening systems.

5.1 SETUP AND DEPLOYMENT

Evaluators will receive a brief training on the weapons screening system delivered by a vendor's or original equipment manufacturer's representative. Evaluators will then pre-configure the product, pack it into the transport case, and carry the disassembled product down a flight of stairs to a suitable screening location where multiple screening lanes can be set up. Evaluators will setup the system for screening, install power sources and field calibrate the device. Time to deploy will include only setup time and not the transport time. Evaluators will also swap power sources as part of the assessment scenario.

Evaluation criteria to be assessed during this scenario include Admin Levels, Setup and Breakdown, Portability, Standalone Operation, Transport Case Options, Passage Width, Ease of Training, and Calibration Requirements.

5.2 NON-DIVESTING SCREENING

After setting up the product, evaluators will simulate a screening operation at a large, ticketed event such as a concert or sporting event. The event scenario will be dependent on the test venue. The Non-Divesting Screening will test system capabilities when the scanned subjects do not divest their bags or clothing for search, as befits a walk-through weapons screening system for mass-casualty threats.

Mock spectators or passengers carrying various concealed threat items and non-threat items placed in various positions both on their persons and in a variety of bags they are carrying will proceed through a designated screening area. Evaluators will guide the mock spectators or passengers through the screening device, interpret screening results, and conduct additional screening if necessary. Evaluators will also conduct simultaneous entry screening and variable-passage-width screening.

Evaluation criteria to be assessed during this scenario include Threat Item Detection, Innocuous Item Discrimination, Throughput, Detection Zone Dimensions, Low Ferrous Metal Content Detection, Object Localization, Simultaneous Entry, Alert Latency Period, Staffing Requirements, User Friendliness, Monitoring and Alerting Interface, Simultaneous Entry, and Passage Width.

5.3 ALTERNATE SCREENING SITES

This scenario will simulate screening in a mass transit environment during a rush hour commute or commuting after a large, ticketed event. The Alternate Screening Sites scenario will be used to simulate screening operations in non-ideal locations.

Evaluators will transport and deploy the systems to various locations during the assessment including those that may adversely impact the screening system's performance, including areas with uneven surfaces such as grass, gravel, sand, and ramps; areas proximate to sources of EM and RF interference such as subway platforms, elevators, escalators, steel doors or beams; windy environments; and environments with strong vibrations from loud noise or other sources. Environmental challenges may be simulated (e.g., using a box fan to simulate wind, space heaters to simulate heat). Once moved to the new location, evaluators will adjust the sensitivity settings on the screening devices, re-calibrate if necessary, and conduct an abbreviated version of the Non-Divesting Screening scenario.

Evaluation criteria to be assessed during this scenario include Variable Sensitivity Settings, Hardware Durability, Interference Resistance, Power Source, Setup and Breakdown, Portability, Standalone Operation, Passage Width, and Calibration Requirements.

5.4 POST-OPERATION ACTIVITIES

Evaluators will download data logs from the screening systems, breakdown the systems and transport them back to the classroom. Once back in the classroom, evaluators will review the information from the data logs, such as recorded detections, time stamps. Evaluators will also conduct any necessary post-operation servicing, such as recharging batteries or running a self-diagnostic check.

Evaluation criteria to be assessed during this scenario include Setup and Breakdown, Portability, Transport Case, Power Source, Self-Diagnostics, Maintenance Requirements, and Data Analysis and Storage.

6.0 LABORATORY CHARACTERIZATION TEST RECOMMENDATIONS

Prior to the operational assessment TSL will conduct laboratory testing to characterize the consistency of the detection and discrimination parameters of the systems with the manufacturers' specifications of the products capabilities. TSL's results will inform the operational assessment's planning regarding the types of threat items and screening activities to include in the operational assessment. That is, products should not be tested against threat items that the product claims to be unable to detect.

The focus group recommended characterizing detection capabilities for the following items:

- Various sizes, classes and types of threat items including large firearms and knives with blades longer than 4 inches, components of disassembled firearms, firearms with and without ammunition, ammunition alone, and IED components
- A variety of non-threat items including cellphones, keys, laptops, tablets, metallic water bottles, umbrellas, large back-up battery power packs, and wireless over-the-ear headphones
- Various bags including backpacks, purses, rolling suitcases, rugged cases (such as Pelican cases), clear plastic bags, and bags with telescoping handles

The focus group also recommended testing detection with the following variables:

- Horizontal or vertical orientation of threat items
- Placement of threat items on various parts of the carrier's body including left side, right side, and near the feet
- Placement of threat items in bags
- Walk-through speed and gait of the person being screened
- Passage width and distance between transmitter and receiver
- Simultaneous passage of multiple threat items

7.0 PRODUCT SELECTION RECOMMENDATIONS

The focus group identified four product selection criteria that may be used to select products for the weapon screening assessment. Table 7-1 presents and explains those criteria in order of priority.

Table 7-1 Product Selection Criteria

Product Selection Criteria	Description
Technology Type	Evaluators are interested in assessing active metal detectors, passive metal detectors, and passive imaging systems (also referred to as passive millimeter -wave/mm-wave or “standoff” systems). NUSTL and TSL have determined, however, that active mm-wave scanners will not be included in the assessment.
Portability	Evaluators are interested in assessing portable screening systems.
Non-Divested Screening	Assessment products should allow people to be screened without divesting bags, clothing, or personal items.
Compliant with major electromagnetic (EM) and radiofrequency (RF) standards	<p>Products should be compliant with various standards addressing the shielding and reduction of EM and RF interference caused by the screening system including:</p> <ul style="list-style-type: none"> • IEC TR 61000-1-1 Electromagnetic Compatibility (EMC) • ANSI/AAMI 2700-1 (2019) Medical devices and Medical Systems – Essential Safety Requirements for Equipment Comprising the Patient Centric Integrated Clinical Environment (formerly ASTM F2751-09 (2013)) • IEEE C95.6-2002 Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0 to 3 kHz (while this standard was mentioned by the focus group, it has been superseded by IEEE C95.7-2022 Standard for Electromagnetic Energy Safety)

In addition to portable products, the focus group participants also recommended assessing fixed solutions if possible. Some participants stated that they would eventually like to install fixed screening systems at specific locations. Fixed systems are seen as a long-term solution would be a larger investment of agencies’ funds. As such, it is more likely that portable systems would be adopted as a short-term solution while agencies conduct research on fixed systems.

The focus group participants recommended selecting the following products for inclusion in the assessment:

- CEIA OpenGate
- Evolv Express
- Liberty Defense Hex Wave³
- SafePointe Targeted Magnetic Moment (TM2)²
- Thruvision TAC 8 or TAC 16

² The SafePointe TM2 is a fixed system.

³ Only if commercially available; at the time of this report, the Liberty Defense Hex Wave is still in development and is not commercially available.

8.0 SUMMARY

The SAVER focus group on walk-through screening for mass casualty threats, consisting of nine emergency responders with at least seven years' experience using weapons screening systems, identified 32 evaluation criteria for use in a future technology assessment. Given the weights they assigned to individual criteria, the participants rated Capability and Deployability the most important SAVER categories.

The focus group identified 13 evaluation criteria as being of "utmost importance," system characteristics that if absent would keep them from even considering purchasing that product. They are listed alphabetically below:

- Alert Latency Period
- Ease of Training
- Hardware Durability
- Initial Price
- Innocuous Item Discrimination
- Interference Resistance
- Maintenance Requirements
- Power Source
- Setup and Breakdown
- Staffing Requirements
- Threat Item Detection
- User Friendliness
- Warranty

The focus group participants recommended scenarios — including setup, non-divesting screening, and breakdown — and several products to consider for inclusion in the upcoming assessment. These recommendations will be used to plan the SAVER weapon screening assessment.

9.0 FUTURE ACTIONS

The focus group's recommendations will be used to guide the development of the "Walk-through Screening Systems for Mass Casualty Threats Assessment Plan" as well as the selection of products to evaluate in the assessment. Once the assessment is complete, the results will be available online in the SAVER Documents Library at <https://www.dhs.gov/science-and-technology/saver>.

10.0 ACKNOWLEDGEMENTS

NUSTL thanks the focus group participants for their valuable time and expertise. Their insights and recommendations will guide the planning and execution of the assessment as well as future SAVER projects. The lab also extends its appreciation to the organizations of the participants for allowing these first responders to participate in the SAVER program.