Privacy Impact Assessment Update
for the

Future Attribute Screening Technology (FAST)/Passive Methods for Precision Behavioral Screening

DHS/S&T/PIA-012(a)

December 21, 2011

Contact Point
Robert D. Middleton, Jr.
Homeland Security Advanced Research Project Agency
Human Factors/Behavioral Sciences Division
Science and Technology Directorate
202-254-2204

Reviewing Official
Mary Ellen Callahan
Chief Privacy Officer
Department of Homeland Security
(703) 235-0780

Abstract

The Future Attribute Screening Technology (FAST) project, managed by the Human Factors/Behavioral Sciences Division (HFD), Homeland Security Advanced Research Projects Agency (HSARPA), Science and Technology Directorate (S&T) seeks to develop physiological and behavioral screening technologies that will enable security officials to test the effectiveness of current screening methods at evaluating suspicious behaviors and judging the implications of those behaviors. The FAST research is adding a new type of research, the Passive Methods for Precision Behavioral Screening (hereinafter FAST/Passive). The purpose of the FAST/Passive study is to build upon existing FAST research using volunteers and increase the performance of FAST primary screening procedures and to increase the ability to differentiate malintent through the inclusion of passive stimuli. The aim of the FAST/Passive study is to devise passive stimuli that will evoke malintent cues and incorporate these stimuli into the FAST screening project. The ultimate goal of the FAST screening project after the testing has been completed is to equip security officials with quantitative tools to rapidly assess potential and unknown threats.

Introduction

The DHS Science and Technology Directorate (S&T) conducts homeland security research and leverages the scientific, engineering, and technological resources of the United States to develop technological tools to help protect the homeland. FAST is one such technology. FAST seeks to improve the screening process at transportation and other critical checkpoints by developing physiological and behavior-based screening techniques that will provide additional indicators to screeners to enable them to make more informed decisions. FAST is not intended to provide "probable cause" for law enforcement processes, nor would the technology replace or pre-empt the decisions of human screeners.

The overall goal of FAST project is to determine whether technology can enable the identification and interpretation of a screened subject's physiological and behavioral cues or signatures without the need for operator-induced stimuli which, in turn, will allow for security personnel to remotely (and therefore, more safely) identify cues diagnostic of malintent (defined as the intent to cause harm). This will potentially lead to elimination of the need for face-to-face interaction (a key driver of time and resources). As well as earlier notice of cues and indicators diagnostic of malintent–at greater stand-off distances–allowing for earlier interaction or intervention if necessary; increased screening throughput due to the expanded security perimeter resulting in a "longer look" at screened personnel; and decreased attempts by screened persons to alter their behavior as a countermeasure to the screening process given the passive, unobtrusive, and non-invasive nature of the project.

The overall FAST project, including the FAST/Passive research seeks to: (1) identify and validate indicators of malintent; (2) develop a prototype incorporating sensors that measure these

indicators; (3) identify and test appropriate stimuli; and (4) test the performance of the prototype using fully-informed and consenting volunteers. During the experimental research, the volunteer participant (as notified during the informed consent process) may be explicitly instructed to carry out a disruptive act, so that the researchers and the participant (but not the experimental screeners) already know that the participant has malintent.

Reason for the PIA Update

The current FAST project is designed to analyze specific psychophysiological signals and behavioral attributes, e.g., respiration, cardiovascular response, eye movement, thermal measures, and gross body movement of a screened individual – the project does not use personally identifiable information (PII). The stimuli thus far has been verbal interactions with security personnel. The goal of the FAST/Passive study is to increase the performance of FAST primary screening procedures and to increase the ability to differentiate malintent through the inclusion of passive stimuli. The working definition of passive stimulation is *the activation by the environment of an individual's mental representations of malintent and associated behavioral and physiological responses, without the need for an active conversant response by the individual*.

The one change in this study is the type of stimuli being used to induce a response from research subjects. In addition to verbal stimuli, research may explore the identification and effectiveness of additional passive stimuli, which include audio, visual, or tactile stimuli.

Once FAST/Passive is validated in a laboratory setting, researchers may conduct tests of FAST/Passive in limited operational settings. The operational tests enable researchers to evaluate project functions under operational conditions, and determine potential concepts for operational needs. The operational test settings will be in public places like special events, mass transit portals and border crossings but will be closed to the public and only involve volunteer participants. The volunteer participants for FAST testing are approached through the operational settings, like employees at an arena, and offered the option to volunteer with full-informed consent.

During FAST/Passive study, volunteer participants will be randomly assigned to complete one of three screening styles: questions alone, images alone, or questions and images combined. Once a volunteer executes a completed informed consent form and enters the screening area, the security officer will instruct the volunteer to stand still while the screening takes place. The volunteer will be asked to answer a few questions and to observe various stimuli as they are presented on an LCD monitor. During the screening, the contact and non-contact sensors identified in the original PIA will collect behavioral and physiological data from the volunteer participants. These stimuli are designed to be evocative to the volunteers with

malintent, but to be nonthreatening and non-challenging to those without malintent. Stimuli images used have been designed to be benign and non-offensive, such as images of security signs, guard posts, floor layouts, and interview rooms; they are not intended to provoke or otherwise elicit any violent reaction from individuals who are being screened. The inclusion of passive stimuli will strengthen the study by amplifying malintent cues, thus increasing the likelihood of detecting malintent and decreasing inconveniences to the public. The initial evaluations will include visual stimuli—predominantly non-word images as they allow for the most control. These stimuli are designed to be provocative the volunteers with malintent, but to be non-threatening and non-challenging to those without malintent. Of note, the goal of the Passive Methods for Precision Behavioral Screening is to activate malintent representations selectively from individuals who already have malintent via passive, environmental stimuli; e.g., pictures, sounds, etc. The goal is not to create a new idea or mindset within an individual, but to activate preexisting motivational states.

Three stimulus areas of investigation have been identified for FAST/Passive study: passive stimuli that augment direct questioning; passive stimuli that replace direct questioning; and passive stimuli that precede initial screening. Augmenting stimuli will enhance standard direct questioning, with an anticipated effect that malintent cues will be amplified. In addition, in an effort to increase throughput and minimize the inconvenience to the public associated with the study, researchers will investigate the possibility of passive stimuli replacing the direct questioning method. The passive stimuli would activate malintent associations and permit identification without the need for a formal questioning phase. Investigations might also include presentation of passive stimuli preceding the traditional screening methods; the purpose of this area of research is to determine if it is possible to detect malintent cues farther away from a venue's entrance.

Initial evaluations will include visual stimuli—predominantly non-word images—since there is ample research to guide presentation parameters, and they appear to allow for the most control. Additionally, a FAST/Passive study aim is that screening scenarios remain impartial to an individual's demographic characteristics such as race, age, gender, ethnicity, and cultural affiliation or education level; use of images without text will provide the greatest likelihood that people being screened comprehend the stimuli regardless of literacy or dominant language.

Furthermore, as part of the continued research, development, test and evaluation efforts, pilot tests may be conducted. The purpose of these pilot tests is to continue to evaluate effectiveness; identify potential operational component concerns and issues related to the usability and functionality of the FAST/Passive project; determine training programs; identify potential concepts of operations; and establish maintenance requirements. If pilot tests collect PII, this PIA will be further updated.

Privacy Impact Analysis

The System and the Information Collected and Stored within the System

The change to the FAST study is the identification and effectiveness of additional audio, visual, or tactile stimuli, in addition to verbal stimuli. The initial evaluations will include visual stimuli—predominantly non-word images as they allow for the most control.

Per the FAST Privacy Impact Assessment (December 15, 2008),[1] FAST continues to use non-intrusive sensors (i.e., sensors that collect data without requiring physical contact) to collect video images, audio recordings, and psychophysiological measurements (e.g., heart rate, breathing pattern, eye movement, and electrodermal activity) from the volunteers. In the preliminary stages of laboratory testing, researchers may use sensors that make physical contact with the volunteer participant in order to ensure that the non-intrusive sensors' sensitivity is sufficient to accurately collect physiological responses to the stimuli.

Research methodology has been approved after a thorough review by an independent Institutional Review Board (IRB). Researchers obtain advance informed consent outlining the information to be collected and the research methodology from all participants.

Researchers retain data until they can document results and prepare required reports upon completion of evaluations and screening experiments and as required by IRB processes. Baseline data collected will help validate experimental results. Information that is retained for research or IRB purposes is stored in a locked cabinet (paper documents) or in an access-controlled, password-protected system (electronic files).

Uses of the System and the Information

The change in the study is the type of stimuli being used to induce a response from research subjects in the FAST/Passive study. In addition to verbal stimuli, research may explore the identification and effectiveness of additional audio, visual, or tactile stimuli.

Researchers use the information collected to determine whether the passive stimuli evokes the physiological or behavioral indicators of malintent in the research subjects. Researchers use all collected information solely for the purpose of conducting ongoing research and development on the FAST/Passive project. The disclosure of any PII (such as video image or audio recording) to anyone outside the laboratory research team only occurs with the express, advance written consent of the individual.

---

[1] DHS/S&T/PIA-012 Future Attribute Screening Technology (FAST) Project, December 15, 2008 (*PDF, 20 Pages - 195 KB*) http://www.dhs.gov/xlibrary/assets/privacy/privacy_pia_st_fast.pdf

Retention

There is no change to the retention of data as outlined in the FAST PIA. A retention schedule is not required because S&T does not have access to, and does not retain, the information collected by researchers.

Internal Sharing and Disclosure

There is no change to the internal data sharing procedures and disclosure. All identifiable human subject information (e.g., name, phone number, address), including video recordings of subjects, is only transferred within the laboratory research team with the approval and written permission of the project's Director of Research. In the unlikely situation where PII will be shared upon participant's request, the circumstances will be considered on a case-by-case basis by the Director of Research.

Data transfers of identifiable video or thermal data are password-protected and encrypted. Transfer of additional, anonymous research data stored on spreadsheets, and anonymous psychophysiological data that does not contain video images of participants, shall follow the same safeguards as identifiable human subject information as outlined above.

External Sharing and Disclosure

No information is shared with external organizations other than anonymized aggregate results in official test reports.

Notice

No additional notice is required regarding the collection, uses, sharing, or retention of the data as the type of data being retained is unchanged. Individual participants explicitly consent, in writing, to provide the information (baseline demographic information, video images, audio recordings, and psychophysiological measurements) voluntarily, and they receive detailed written notice (informed consent form, approved by appropriate IRB) of all information to be collected and how the information will be used. Individuals may, at any time, withdraw from the test or decline to provide PII without penalty. If a participant elects to withdraw from the study, the individual may request that all electronic data (including audio and video recordings) pertaining to that individual be destroyed, including any PII associated with that individual.

Individual Access, Redress, and Correction

There is no change related to access, redress, and correction of data with this update and no additional privacy risks have been identified. Individuals directly provide baseline demographic information to the researchers and expressly consent to participate in the testing process, including the collection of data by the sensors in the FAST/Passive study. If an individual has concerns that his or her baseline demographic information was given incorrectly, he or she can review this information for accuracy and revise it, if necessary. After the

laboratory research team obtains sensor information, individuals cannot access it. (The informed consent form notifies individuals of this fact.) Providing participants access to the research sensor data could potentially reveal the capabilities and system performance of the FAST/Passive technology, which could facilitate the development of countermeasures that render the technology useless. Researchers check sensors for accuracy in the laboratory prior to the test.

Technical Access and Security

There is no change to the technical access and security of data with this update and no additional privacy risks have been identified.

Technology

There is no change to the technology identified in the existing PIA and no additional privacy risks have been identified. The major change in this update is the use of non-verbal, passive stimuli to induce a response from research subjects.

Responsible Official

Robert D. Middleton, Jr.
Program Manager
S&T Directorate
Department of Homeland Security

Approval Signature

Official signed copy on file with DHS Privacy Office.

_____

Mary Ellen Callahan
Chief Privacy Officer
Department of Homeland Security