



# SPECIAL OPERATIONS FORCES INDUSTRY CONFERENCE

Special Reconnaissance, Surveillance, and Exploitation

**Mr. MICHAEL FITZ**

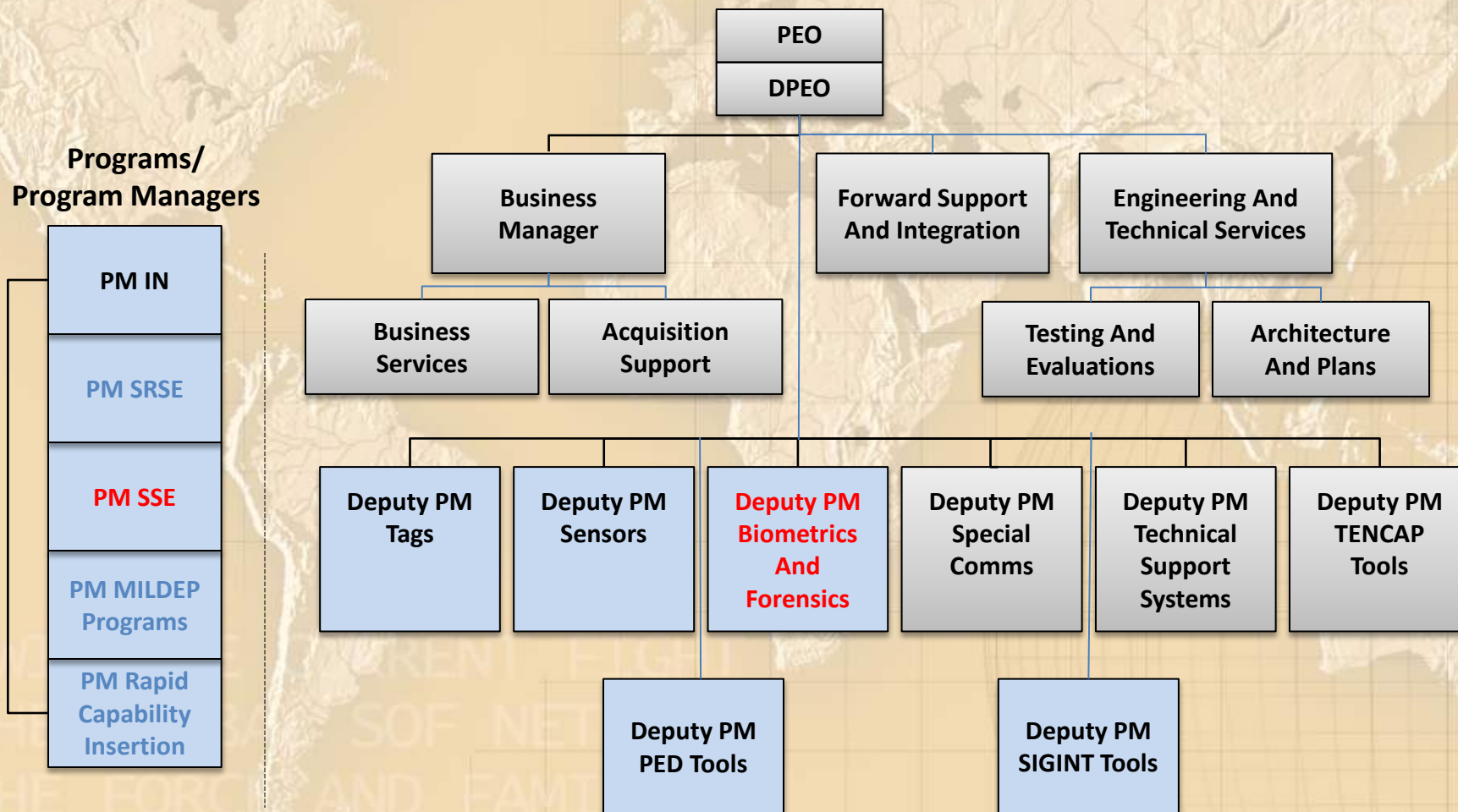
**Program Manager**

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Sensitive Site Exploitation



## Operating Structure





# Sensitive Site Exploitation

- Capability To Exploit Personnel, Documents, Electronic Data, And Material On A Sensitive Site/Objective
- Collects And Transmits Unique, Measurable Biometric Signatures

## ACQUISITION STRATEGY

Commodity Procurement Program

## PERIOD OF PERFORMANCE

Annually Fields Capital Equipment Replacement And Technology Refresh To Component Kits

## MILESTONES

Fielding: Annually  
User Testing: Annually  
Commodity Procurements: Annually  
New Equipment Training: Continuously  
Fielding And Deployment: Continuously

## POINT OF CONTACT

Michael Fitz  
[Michael.fitz@socom.mil](mailto:Michael.fitz@socom.mil)  
813-826-7429

## FUNDING

FY13 Procurement: \$11.1M  
FY14 Procurement: \$15.3M

## CURRENT CONTRACT/OEM

Multiple

# Sensitive Site Exploitation (SSE)



Cross Match Guardian-R  
Fingerprint Scanner

Cross Match SEEK II  
Fingerprint & Iris Imager

## Enrollment (EN) Kit



Cross Match SEEK II  
Fingerprint And Iris Imager

## Identification (ID) Kits

## Biometrics



Metal Tec 1500

## Metal Detector

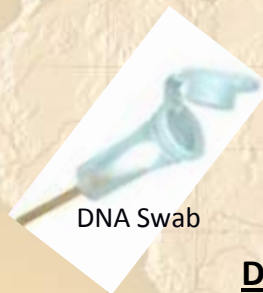


IDEX Pens

## Explosives And Trace Element Detection



Field Forensics EL-1003



DNA Swab



Latent Print  
Collection Kit

## DNA And Latent Print Collection



Forensic Lights

USASOC  
Enabler Kit



3G SIMIS



XRY/XACT

## CELLEX



ADF G-2

## Low-Level MEDEX



Tableau TD-2  
Imager



Digital Intelligence  
FRED-L

## High-Level MEDEX

## Data And Information Extraction

## Tactical Site Exploitation (Forensics)

# Exploitation Analysis Center (EAC)



Latent Print Copy Station



EAC Shelter  
(Shown: 1 of 2 Shelters)



Griffin 460



Latent Print Fuming Chambers

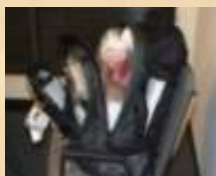


AFIX Tracker  
Latent Print Examiner



AHURA  
First Defender

AHURA  
TruDefender



Latent Print  
Collection Kit



BattleLite  
Forensic Lights



TracER Laser Lite



SABRE 5000

## Latent Print Extraction Modalities

## Trace Element Analysis Modalities

# Biometrics Development Opportunities

- Non-optical Imaging Sensors For Fingerprint Capture And Matching
- Rapid DNA Matching
- Stand-off/Remote Facial Recognition And Matching
- Stand-off/Remote Iris Capture
- Dustless Latent Print Collection
- Deception Detection

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# Forensics Development Opportunities

- Hidden Chamber And Hidden Material Detection
- NRT Document/Cellular Phone Translation/Gisting
- Improved Presumptive Tactical Explosives/Nitrates/Narcotics Kits
- CELLEX Cable Testing
- Portable Radio Frequency/Cell Phone Detection
- Hand-Held Metal Detector With Adjustable Sensitivity
- SIM Card Detector
- Portable, Automated 3-D Room/Building Mapping Device
- Portable X-Ray Device To Safe Cell Phones/Computers



## In-House Broad Agency Announcement (BAA)

- FY2011-2012 SORDAC Consolidated BAA (HG9222-10-BAA-SORDAC-KI)
  - Efficient Contract For Relevant RDT&E Efforts
  - Updated Annually Within Special Reconnaissance, Surveillance, And Exploitation (SRSE) Areas Of Technological And Scientific Importance
  - Valid Through 2014

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# Tactical Biometrics Evaluation 2012 (TBE-12) Summary Report

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## Background







- DoD increasingly relies on tactical biometric devices for identity management
- Vendors do not have a well documented set of operational requirements
  - Operating procedures vary and data format standards are often ignored
  - Quality of collected data varies widely
- Influx of new tactical biometric devices on the market
  - Each claims ‘best’ performance
- USSOCOM posted a call for devices in FedBizOps in October 2012
  - Vendors provided devices and training in November
  - Testing was conducted in December

### Key Question

*“Which devices are capable of collecting high-quality, matchable data and maintaining that collection standard across tactical environments?”*



## TBE-12 Devices Tested

Vendor Model Type	L-1 HIIDE 4 Baseline	Cross Match SEEK II Baseline	Cross Match Avenger New	Wyle DCS New	RaptorID RaptorPad New	AOptix Stratus New
Image						
Dimensions (inches)	5 x 8 x 3	8.7 x 5.5 x 3.5	9.5 x 6.2 x 1.8	6.9 x 3.7 x 1.1	5.5 x 9.7 x 1.8	6 x 3 x 1.4
Weight (lbs)	2.18	3.6	3.2	0.79	2.6	0.89 (including iPhone)
Iris Collection	<ul style="list-style-type: none"> <li>640x480 (VGA) camera</li> <li>Single-iris capture</li> </ul>	<ul style="list-style-type: none"> <li>Dual-iris capture</li> <li>Shielded iris sensor to block ambient illumination</li> </ul>	Simultaneous dual-iris capture using two iris cameras	<ul style="list-style-type: none"> <li>Dual-wavelength IR LEDs</li> <li>Simultaneous dual-iris capture</li> </ul>	Single-iris capture	Dual-iris capture
Fingerprint Collection	<ul style="list-style-type: none"> <li>Capacitive 500dpi sensor</li> <li>Single-print capture</li> </ul>	<ul style="list-style-type: none"> <li>Optical sensor</li> <li>Dual-print capture</li> </ul>	<ul style="list-style-type: none"> <li>Active capacitance sensor</li> <li>Dual-print capture</li> </ul>	Three capacitive sensors capture three prints simultaneously	<ul style="list-style-type: none"> <li>Active capacitance sensor</li> <li>Dual-print capture</li> </ul>	<ul style="list-style-type: none"> <li>Capacitive sensor</li> <li>Single-print capture</li> </ul>
Face Collection	640x480 (VGA)	1.3 MP camera	5 MP camera	UV illumination	<ul style="list-style-type: none"> <li>Rear: 5MP camera / LED Flash (SAP 42)</li> <li>Front: 1.3MP camera</li> </ul>	Through native iPhone camera
Notes	Fielded in conflict zones around the world	Fielded in conflict zones around the world	User interface identical to Cross Match SEEK II	Android-based	<ul style="list-style-type: none"> <li>Software provided by Incadence.</li> <li>Android-based</li> <li>Runs MARS client.</li> </ul>	<ul style="list-style-type: none"> <li>iPhone based</li> <li>Sleeve holds iris, fingerprint sensors</li> </ul>

## Test Scenario 1: STERILE

### Sterile (STER)

- Environment in which biometric devices are traditionally tested
- Not representative of an operational environment
- Subject is seated and fully cooperative
- Indoors with controlled lighting and a stationary platform (table top)
- Operator is unencumbered by other tactical equipment



## Test Scenario 2: COOPERATIVE

### Tactical-Cooperative (COOP)

- Represents a tactical access control scenario
- Subject is cooperative
- Operator faces challenges with the environment
- Collection is outdoors
- Operator is wearing an urban tactical kit, which may include shooting gloves, helmet, vest and a rifle



## Test Scenario 3: UNCOOPERATIVE

### Tactical Uncooperative (UNCO)

- Represents a hostile post-objective scenario
- Subjects actively impede collection of biometric data by clenching their fists, closing their eyes, and generally resisting operator instructions
- Subject is handcuffed, irritated, and combative
- Collection is outdoors
- Operator is wearing an urban tactical kit and may be carrying additional equipment



5/20/2013



## Test Scenario 4: NIGHTTIME

### Night Tactical-Uncooperative (NIGHT)

- Represents a hostile nighttime post-objective scenario
- Subjects actively attempt to impede collection of their biometric data by clenching their fists, closing their eyes and generally resisting operator instructions
- Subject is handcuffed and irritated/combative
- Operator is wearing urban tactical kit, a headlight, and may be carrying additional equipment



## Test Scenario 5: EKIA

### Enemy Killed in Action (EKIA)

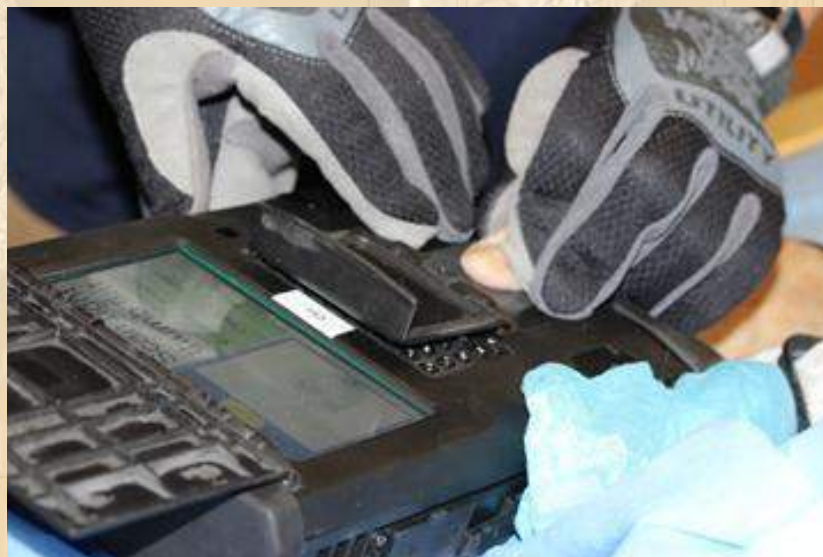
- Represents a post-objective scenario at night when operator encounters a deceased enemy combatant
- Operator is instructed to maintain light discipline while performing the biometric collection





## Morgue Testing

- Prior to TBE-12, five of the six collection devices were used by experienced operators to collect fingerprint and iris images from cadavers.
  - Assess device utility to collect and match iris images from deceased individuals
  - Confirm the ability of the active capacitance sensor to collect fingerprint images from deceased individuals.








## Test Resources

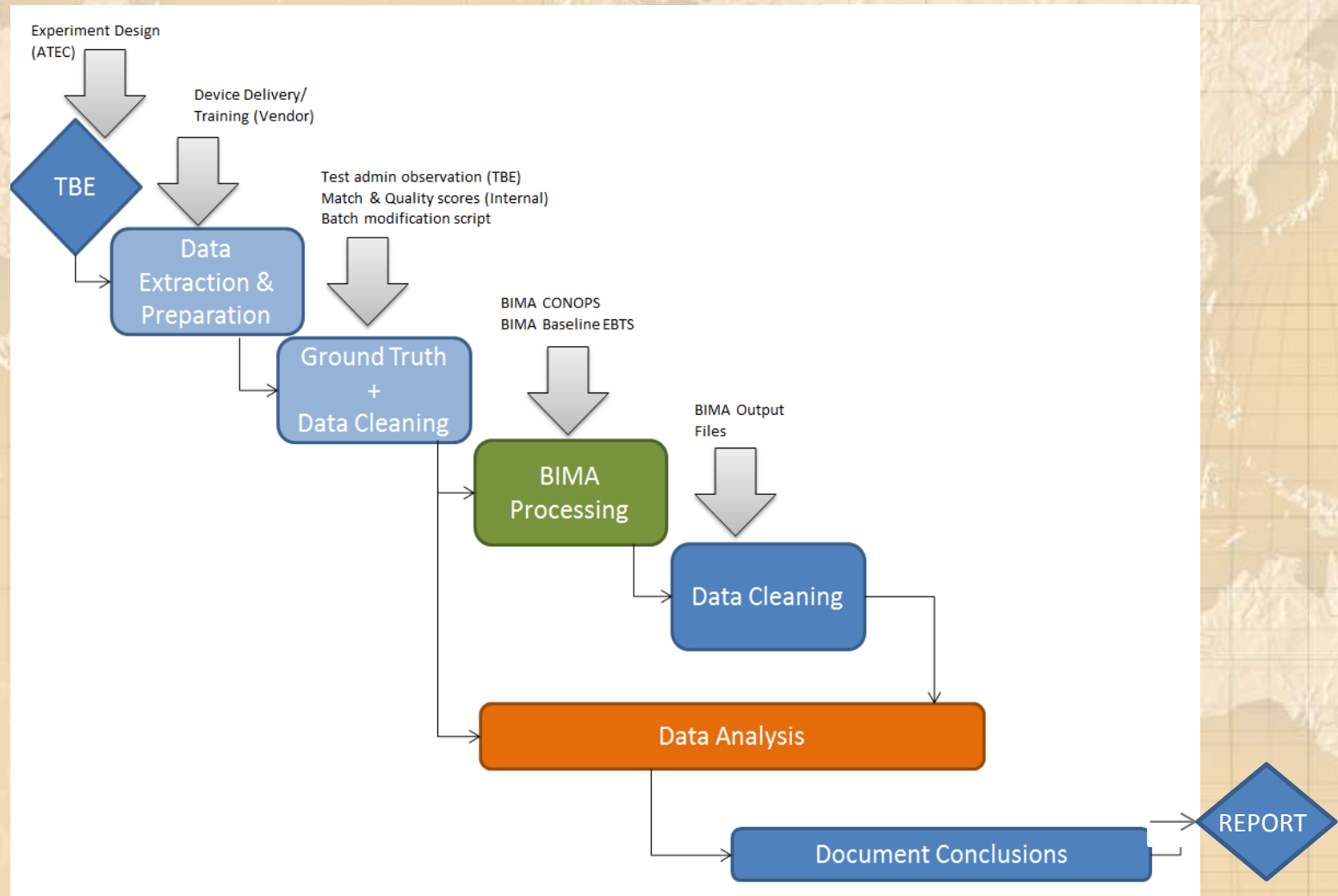
- Leadership: Southern Methodist University
- Design of Experiments (DOE) collection: ATEC
- Devices and training by vendors
- Participants selected
  - 12 Military operators
  - 12 Arabic role players
  - 6 Test administrators
- Five Test scenarios



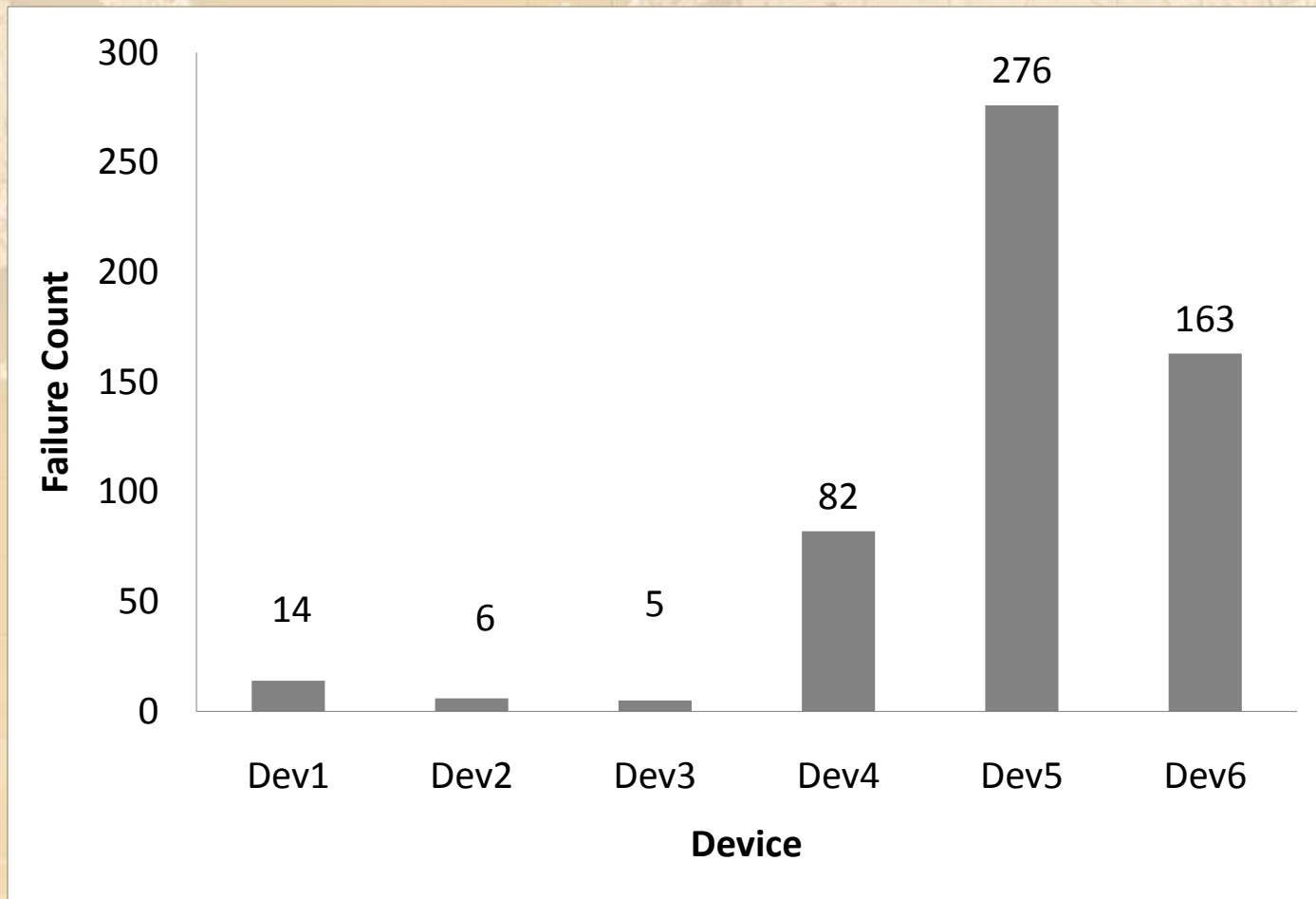
## Reference/Ground Truth Collections

Modality	Collection Device	Collection Method	Example Image
Fingerprint	Ink and Paper (Roll & Slap)	Collection by certified collectors from BIMA with operational field experience; each subject collected twice. Prints of highest quality for each subject were used in the evaluation.	
Face	Canon Powershot D90 with standard backdrop	Indoor collection with uniform passport background, neutral subject expression, collected at 1 meter.	
Iris	IrisID [LG] 4000	Images inspected manually using the IrisID ICAP quality tool	

## TBE Analysis Plan



# Total Fingerprint Operational Failures



# Tactical Assessment

- Subject Matter Experts (SMEs) with substantial operational experience and expertise in tactical biometric collection served as the Tactical Assessment Team.
- During the assessment, SMEs subjectively determined the threat level for each device based on the amount of visible light emitted during nighttime biometric collections.
- Observations were made from 25 to 50 meters during collections in the EKIA scenario.

Device	Threat Rating	Comments
Device 1	Level 3 - <b>Low Threat</b>	Device had a low light signature - device produced no more visible light than headlamp used by operator; however, the user needed headlamp light in order to capture face and iris - blinking red LEDs on back of device were visible.
Device 2	Level 2 - <b>Medium Threat</b>	Device's fingerprint platen emitted no light; however, the screen was significantly brighter than the screens of the other devices, increasing the device's signature and somewhat illuminating the collector and subject.
Device 3	Level 1 - <b>High Threat</b>	Both the fingerprint platen and the screen emitted significant light, enough to illuminate the collector and the subject.
Device 4	Level 3 - <b>Low Threat</b>	None
Device 5	Level 3 - <b>Low Threat</b>	Device produced no more visible light than headlamp used by operator.
Device 6	Level 3 - <b>Low Threat</b>	Blinking red LEDs on device were visible during collection.

**Operational Impact.** The Tactical Assessment Team noted that all of the devices posed a threat when the operators collected face and iris images because the device must use illumination to collect these modalities.

## Final Assessment & Lessons Learned

- No new device showed **significant** improvement over the baseline devices
  - Some devices performed better in certain areas
- Vendors are largely unaware of operational requirements for tactical devices
  - Test scenarios and evaluation results were briefed to vendors in April
  - Vendors can use feedback to improve performance
- Vendors are not implementing Development Test & Evaluation procedures
  - Substantial number of software and interface based errors observed
- The tactical biometrics community now has an established process to plan and execute relevant Operational Test & Evaluation of devices in tactical scenarios
- A follow-up Tactical Biometrics Evaluation will likely be used to reassess improved products once the vendor community has had time to assimilate results



Questions?

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