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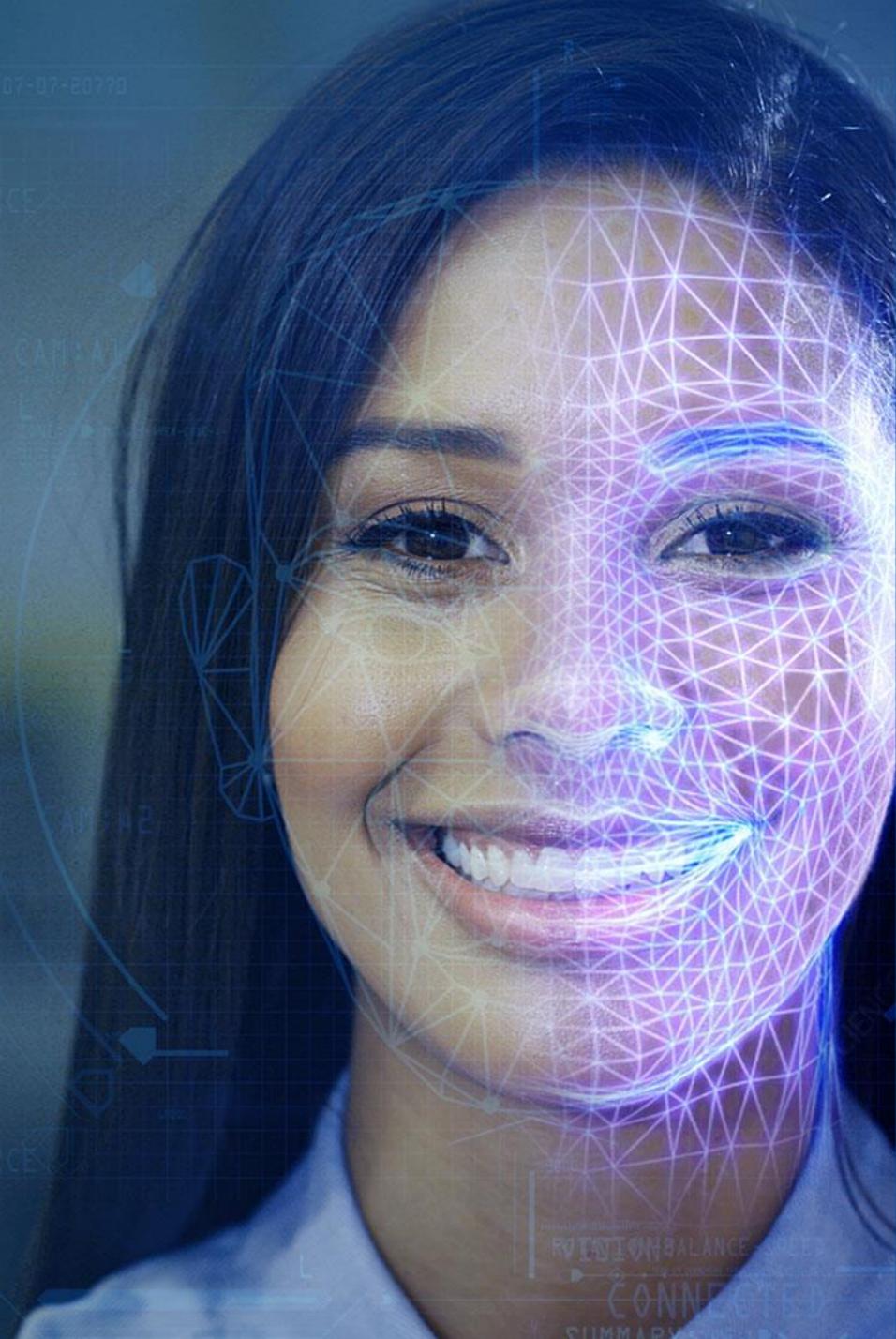


INTERPOL

Joint ICAO/INTERPOL Biometric Forum

Following TRIP2023

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A Race Against Time: Digitization of Deteriorating Fingerprint Cards Through the Use of Artificial Intelligence to Support Global Counter-Terrorism Efforts

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PROBLEM

- Law Enforcement and military organizations around the world have been collecting fingerprint cards and photographs for decades, but unfortunately many of these records have not been digitized. Therefore, organizations have been unable to match their records against crime scene latent prints or modern biometric databases.

Because records are not digitized:

- Large archives of historic criminal fingerprint records are unmanageable and deteriorating
- Terrorists and Criminals are not being identified
- Unsolved crime scene latent fingerprints remain unidentified



SOLUTION

NCIS TSFO-IA can provide access to the following capabilities at no cost to the partner:

- **Subject Matter Expertise:**
 - Conduct customized site-surveys and develop hand tailored biometric digitization solutions
 - Provide biometrics training
 - Properly Digitize partners biometrics holdings through **Rapid Ingest Scalable Entity Resolution (RISER)**
 - Access to Certified and experienced latent print and facial examiners who can encode, search, and identify matches
- **Rapid Searching & Matching:**
 - Submission to US Govt. databases for automated matching under a Foreign Information Direct Route (FIDR) Type of Transition (ToT)
 - Process crime scene latent prints against partners newly digitized biometrics data
 - Biometrics matches and actionable information provided back to partner in near-real time
- **Reduced Storage & Integration:**
 - Copy of digitized data provided back to partner in requested biometrics formats for inclusion in Country Automated Fingerprint Identification System (AFIS) and/or INTERPOL Biometrics Database

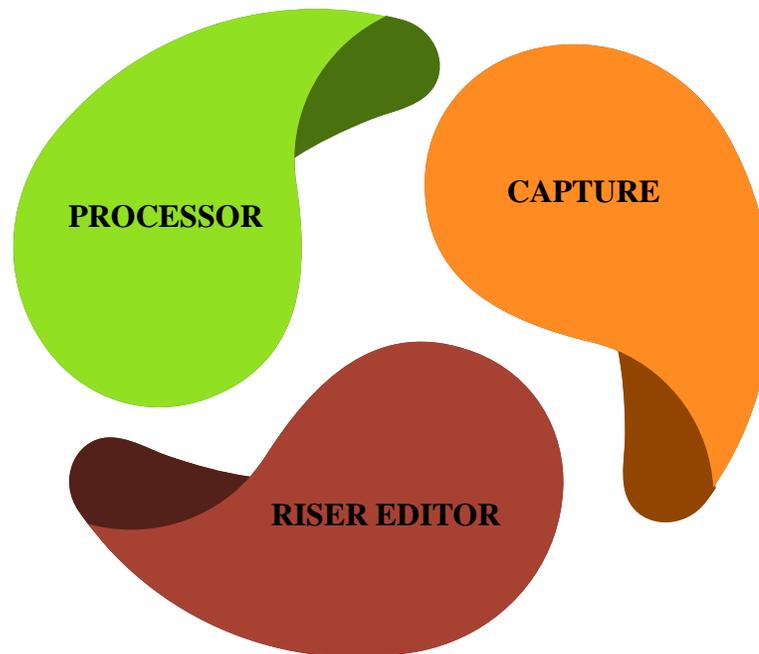
BIOMETRICS DIGITIZATION THROUGH THE USE OF ARTIFICIAL INTELLIGENCE:

— Rapid Ingest Scalable Entity Resolution (RISER 4.0)

5

RISER PROCESSOR

- Deep Neural Network (DNN) trained to automatically detect single fingerprints, slaps, palmprints, and faces anywhere on the page.
- Automatically determines page orientation to rotate the page right-side-up using a combination of machine learning models.
- Optical Character Recognition (OCR) technologies for biographic identification and extraction.
- Performs fingerprint sequence detection to verify finger order using NBIS tools to perform fingerprint matching.
- Image processing techniques applied for noise removal and fingerprint image verification.
- Creates a ANSI NIST Binary biometric file with original image of the fingerprint card saved within the biometrics file.
- Creates log files, reports, and spreadsheets for further dissemination and/or verification.



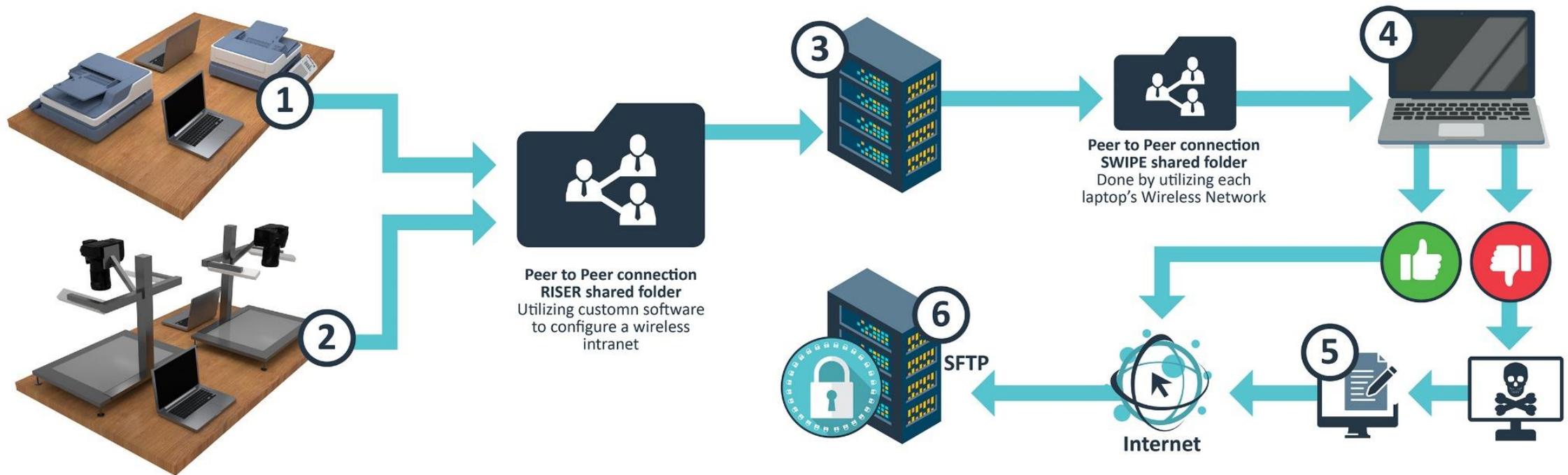
RISER CAPTURE

- Hardware
 - GOTS capture platform designed to capture 500 and 1000 dpi biometrics and documents
 - Plexiglass overlay on scan platform allows user to flatten malformed cards
 - Uses a Sony Alpha a7RIII Cameras with Sony FE 50mm F2.8 Macro lens instead of Scanner
 - Uses foot pedals to capture image and create new identity allowing for hands to rapidly move cards on/off platform
- Software
 - Interface allows operator to check, modify, or delete 3 most recent identities captured
 - Allows user to update the Machine Learning Algorithms to work with new card types
 - All captured information is organized into single identity folder

RISER EDITOR

- Easily allows you to traverse and correct the fingerprint crops and adjust other modalities contained in the file
- Has the ability to add template overlays for more efficient file correction

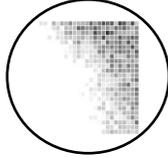
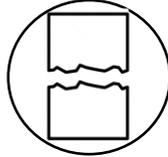
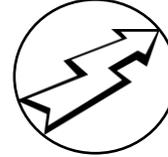
RISER WORKFLOW



1	2	3	4	5	6
SCANNING LAPTOP <ul style="list-style-type: none"> Utilizes Rapid Fingerprint Digitization (RFD) Tool Capable of quickly interfacing with the scanner Allows functionality to create folders based on Identity Users can add as many scanned images to folder/identity as necessary, quickly move to the next identity As soon as you move on to the next identity the finished folder is pushed to the share folder in real time. 	RISER CAPTURE <ul style="list-style-type: none"> Capable of quickly capture latent or fingerprint cards Allows functionality to create folders based on identity Users can add as many images to folder/identity as necessary quickly move to the next identity As soon as you move on to the next identity the finished folder is pushed to the share folder in real time. 	RISER NEXT UNIT of COMPUTING (NUC) <ul style="list-style-type: none"> All identities collected are automatically processed by RISER using a NUC RISER creates a biometric file and places it in an output folder The output folder is accessible by SWIPE laptops 	SWIPE TABLET <ul style="list-style-type: none"> SWIPE is a program that allows users to review biometric files quickly and efficiently by interfacing with the touch screen, mouse, or arrow keys of the laptop SWIPE lets you quickly bucket the biometrics from "GOOD" or "BAD" "GOOD" files are sent in real time to the DoD ABIS sFTP via the Mission Control Program 	SWIPE/RISER EDITOR <ul style="list-style-type: none"> "BAD" files are quarantined in SWIPE Files are manually processed using EFT Editor and sent to DoD ABIS's sFTP in real time 	DoD ABIS sFTP <ul style="list-style-type: none"> Biometric files are submitted to the sFTP via the Mission Control program are automatically uploaded to DoD ABIS

The RISER Architecture addresses cost, accuracy, and time commitment for card scanning missions

CARD SCANNING VERSATILITY

									
	DPI	Assembly	Latent Prints	ADF	Poor Card Quality	Captures Per Hour	Cost	Size / Weight	DOCEX
Fujitsu 7600 	500/1000	5 Min				~580	~\$4,800	17.25"x24.5" ~40 pounds	Standard
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RISER CAPTURE 	500/1000	15 Min				~450	~\$8,900	31.59"x20.47" ~50 pounds	Non Standard

QUESTIONS

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