



Helping you build simple and affordable biometric systems!

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Who We Are

- Founded in 2007
- Software development company specializing in biometric file submissions to an AFIS/ABIS
- US and International experience
 - US Government contractor supporting ABIS development for:
 - DoD ABIS (2006 – Present)
 - FBI NGI System (2011 – Present)
 - DHS HART (2017 – Present)
 - AABIS (2018 – Present)
 - Commercial products sold in multiple countries
 - See next slides for product descriptions
 - Standard Support
 - DoD EBTS 1.0 – 4.1 (with XML)
 - FBI EFTS 7.1 – EBTS 10 (with XML)
 - NATO STANAG 4715 Ed. 1 and Ed. 2 (with XML)
 - DHS IXM 6
 - Interpol

What We Offer

- Commercial SW products:
 - SDKs
 - Applications
 - Free 30-day trials
- Consulting and Integration services
- AFIS/ABIS Development
 - Law enforcement agencies
 - Government agencies
 - Mobile systems
- International standards support
 - NATO STANAG
 - Interpol

What Makes us Different

- Prevention of vendor lock-in:
 - Use any collection device
 - Connect with any ABIS
- Lower cost to competitors
- Small business agility and support
- Pure JAVA implementation
- Experience:
 - SW development and support for the 3 largest US biometric systems
 - FBI Next Generation Identification (NGI)
 - Dept. of Defense Automated Biometric Identification System (DoD ABIS)
 - Dept. of Homeland Security Homeland Advanced Recognition Technology (HART)

Biometric Products

- **Ani** – SDK for ANSI/NIST-ITL support
- **Image** – SDK for image manipulation (includes WSQ)
- **Whorl** – Application to create, read, update and validate ANSI/NIST-ITL files
- **Sequence** – SDK to provide fingerprint segmentation
- **Lakota Image Acquisition (LIA)** – SDK for scanning documentation and fingerprint cards to acquire biometric images
- **Rapid Image Acquisition & Conversion (RIAC)** – application using LIA to convert fingerprint cards to EBTS files automatically
- **Forensic Image Extraction, Clustering, and Export (FIERCE)** – application using facial recognition to automatically extract faces from multimedia files and export them to NIST files

Product Video link:

<https://vimeo.com/251334514>

Ani

The most advanced ANSI/NIST-ITL and EBTS software development kit on the market.

Features:

- Flexible design to support custom specifications
- Supports common verification file format
- Intelligently recovers data from corrupt transactions
- Pure JAVA - No native libraries
- Javascript API for custom validation
- Supports conversion to/from NIEM XML
- Supported on all major platforms



Image

Encode and decode biometric images across many platforms and mobile devices faster and easier than ever before.

Features:

- Supports numerous image formats (BMP, FAX, JPEG, JPEG-2000, PNG, PNM, RAW, VECTOR and WSQ)
- Industry-leading WSQ Performance
 - FBI-certified WSQ
- 1000 DPI to 500 DPI down-sampling algorithm
- RAW image dimension detection
- Easy-to-use interface
- Conversion to Java BufferedImage and Android Bitmap objects
- Supported on all major platforms



Whorl

The most advanced EBTS editor on the market.

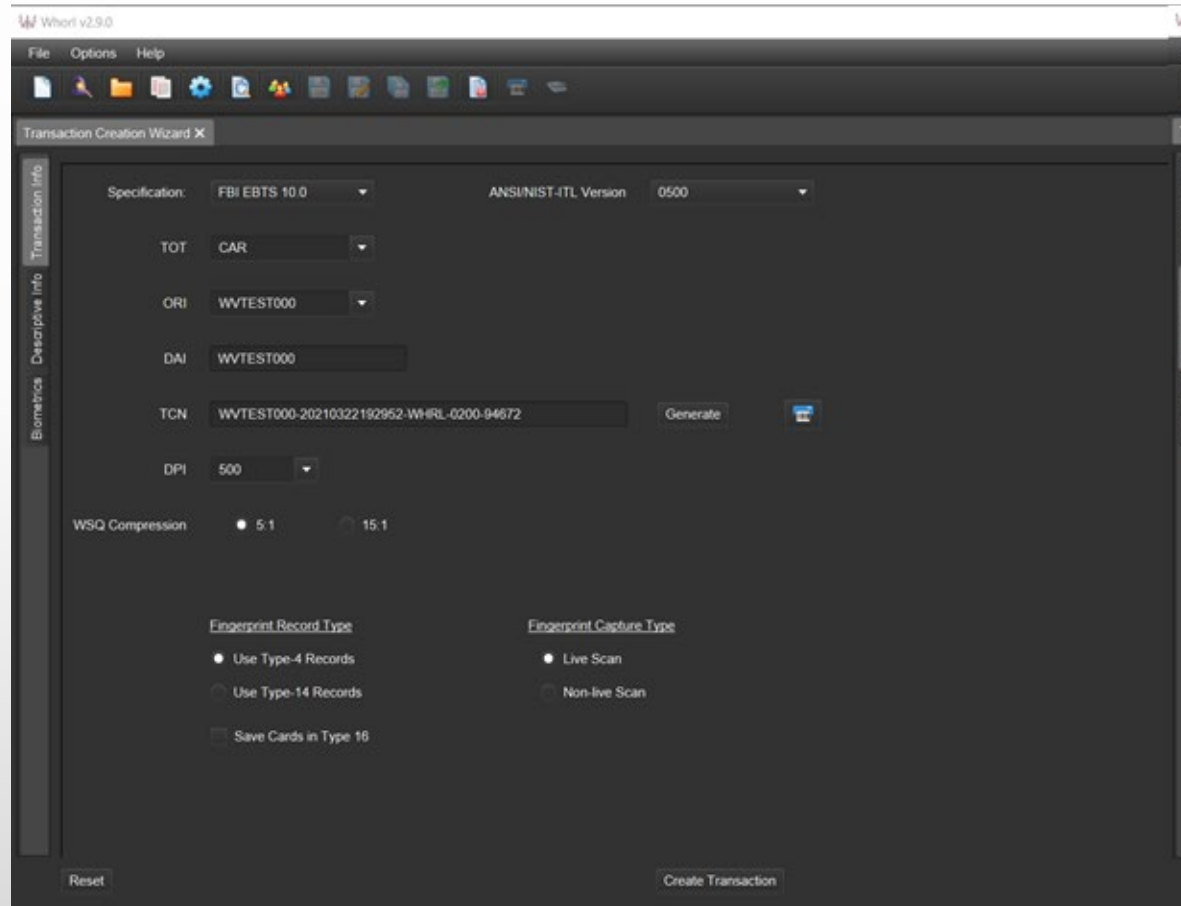
Features:

- 3-step Transaction Wizard to guide you through building compliant submissions
 - Drag-and-drop support for transaction and image files
 - Supports ANSI/NIST-ITL based specifications
 - Identifies and corrects missing and invalid data
- Create multi-modal submissions using:
 - Live scan device/palm scanner
 - Iris scanner
 - DSLR camera
 - Facial images
 - Face Transaction Wizard – create multiple face transactions from an uploaded photo
- Compare multiple files
- Batch editing



Whorl

The most advanced EBTS editor on the market.



The screenshot shows the 'Transaction Creation Wizard' window of the Whorl v2.9.0 application. The interface is dark-themed and includes a sidebar with 'Transaction Info', 'Descriptive Info', and 'Biometrics' tabs. The main area contains the following fields and options:

- Specification:** FBI EBTS 10.0 (dropdown)
- ANSI/NIST-ITL Version:** 0500 (dropdown)
- TOT:** CAR (dropdown)
- ORI:** WYTEST000 (dropdown)
- DAI:** WYTEST000 (text field)
- TCN:** WYTEST000-20210322192952-WHRL-0200-94672 (text field) with a 'Generate' button and a fingerprint icon.
- DPI:** 500 (dropdown)
- WSQ Compression:** Radio buttons for 5.1 (selected) and 15.1.
- Fingerprint Record Type:**
 - ☒ Use Type-4 Records
 - ☐ Use Type-14 Records
 - ☐ Save Cards in Type 16
- Fingerprint Capture Type:**
 - ☒ Live Scan
 - ☐ Non-live Scan

At the bottom, there are 'Reset' and 'Create Transaction' buttons.

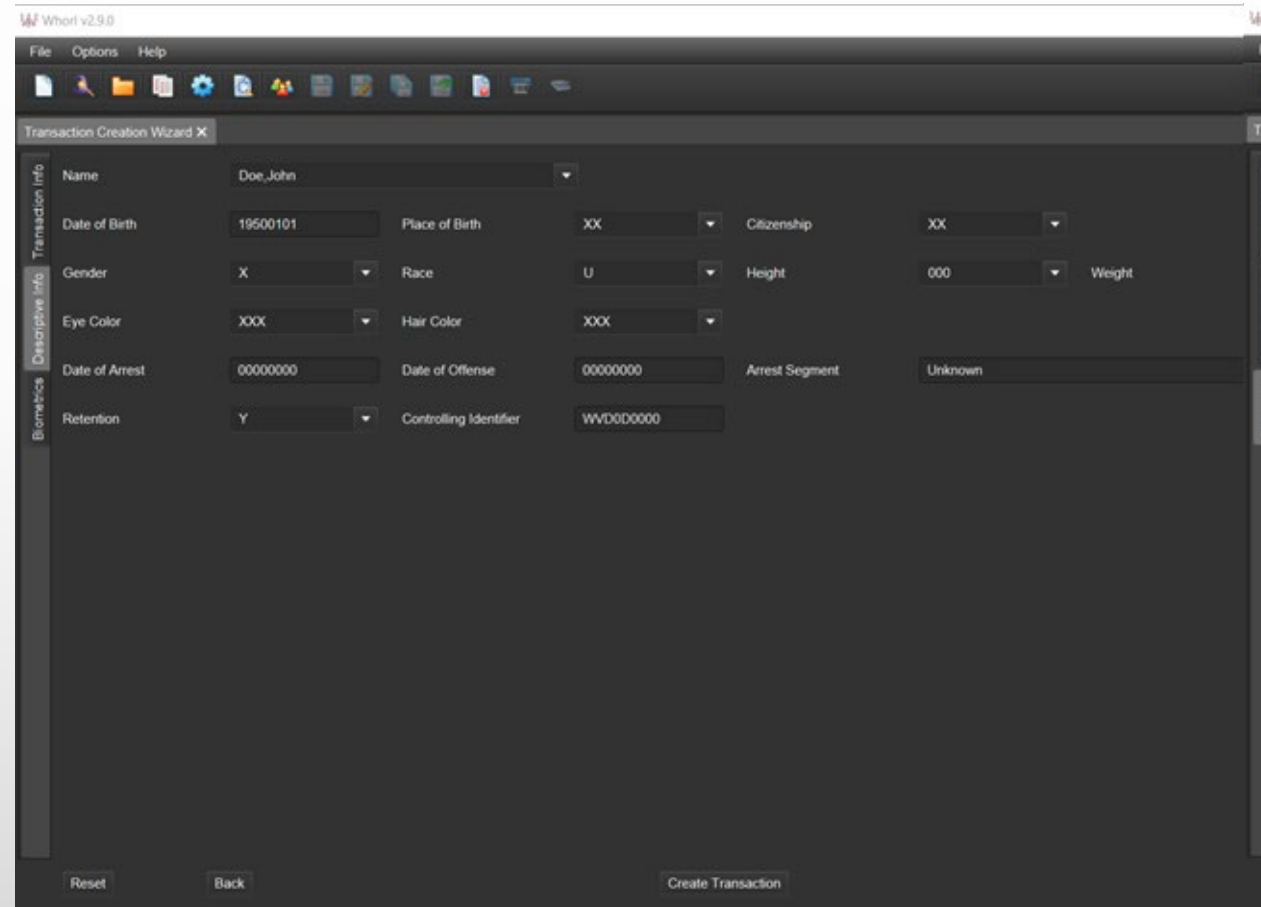
Transaction Wizard Step-by-step:

STEP 1 – Define The Transaction

Whorl

The most advanced EBTS editor on the market.

STEP 2 – Enter Biographical Information

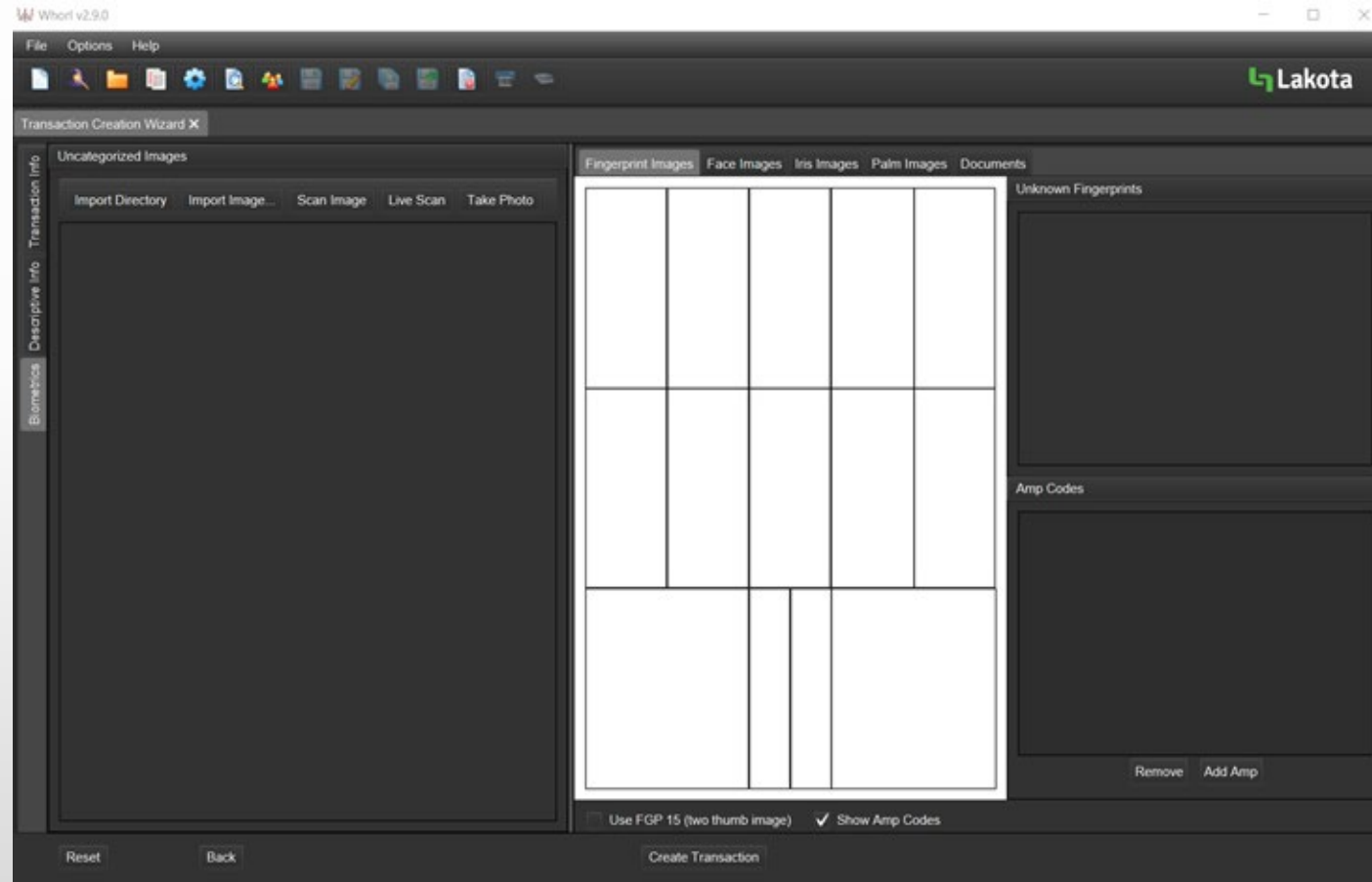


The screenshot shows the 'Transaction Creation Wizard' window in Whorl v2.9.0. The interface is dark-themed and includes a menu bar (File, Options, Help) and a toolbar with various icons. The main area is divided into sections for entering biographical information. The 'Transaction Info' section includes fields for Name (Doe, John), Date of Birth (19500101), Place of Birth (XX), Citizenship (XX), Gender (X), Race (U), Height (000), Weight, Eye Color (XXX), and Hair Color (XXX). The 'Descriptive Info' section includes Date of Arrest (00000000), Date of Offense (00000000), Arrest Segment (Unknown), Retention (Y), and Controlling Identifier (WVD0D0000). The 'Biometrics' section is currently empty. At the bottom, there are buttons for 'Reset', 'Back', and 'Create Transaction'.

Whorl

The most advanced EBTS editor on the market.

STEP 3 – Collect Biometrics



Whorl

The most advanced EBTS editor on the market.

Completed 10-print collection

Whorl v2.4.0

File Options Verification Segmentation Help

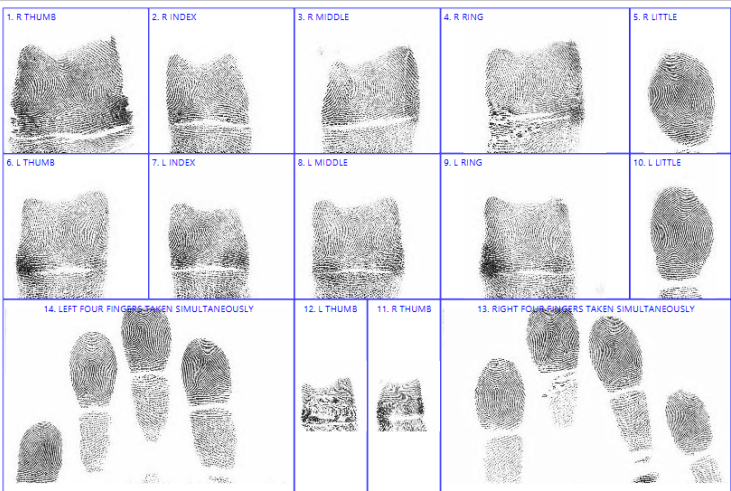
WVTEST000-20200616182125-WHRL-0200-4504.eft X

Specification: FBI EBTS 10.0

- Type 4 - High-Resolution Grayscale Fingerprint
 - Type 4 - Right Thumb - IDC: 1
 - Type 4 - Right Index Finger - IDC: 2
 - Type 4 - Right Middle Finger - IDC: 5
 - Type 4 - Right Ring Finger - IDC: 4
 - Type 4 - Right Little Finger - IDC: 3
 - Type 4 - Left Thumb - IDC: 10
 - Type 4 - Left Index Finger - IDC: 6
 - Type 4 - Left Middle Finger - IDC: 7
 - Type 4 - Left Ring Finger - IDC: 9
 - Type 4 - Left Little finger - IDC: 8
 - Type 4 - Plain Right Thumb - IDC: 11
 - Type 4 - Plain Left Thumb - IDC: 12
 - Type 4 - Plain Right Four Fingers - IDC: 13
 - Type 4 - Plain Left Four Fingers - IDC: 14
 - Type 17 - Iris Images
 - Type 17 - Iris Image - IDC: 15
 - Type 17 - Iris Image - IDC: 16

Location	Value	Mnemonic	Description	Type	Length
4.1.1.1	68738	T4_LEN	Logical Record Length	B4	2-8
4.2.1.1	1	T4_IDC	Image Designation Character	B1	1-2
4.3.1.1	1	T4_IMP	Impression Type	B1	1
4.4.1.1	1	T4_FGP	Finger Position	B1	1-3
4.5.1.1	0	T4_ISR	Image Scanning Resolution	B1	1
4.6.1.1	800	T4_HLL	Horizontal Line Length	B2	1-5

Fix Sequence Check Sequence Clear Sequence



Whorl

The most advanced EBTS editor on the market.

**Whorl also
allows you to
compare
multiple files**



Sequence

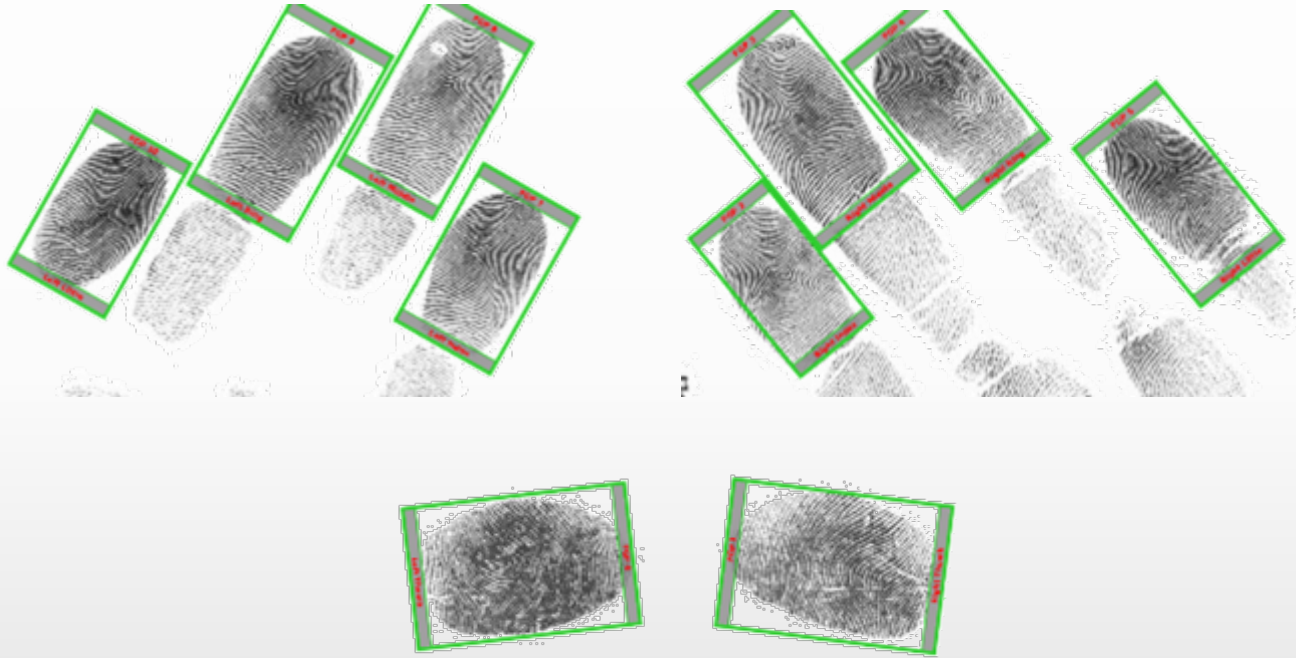
State of the art segmentation and sequence checking.

Features:

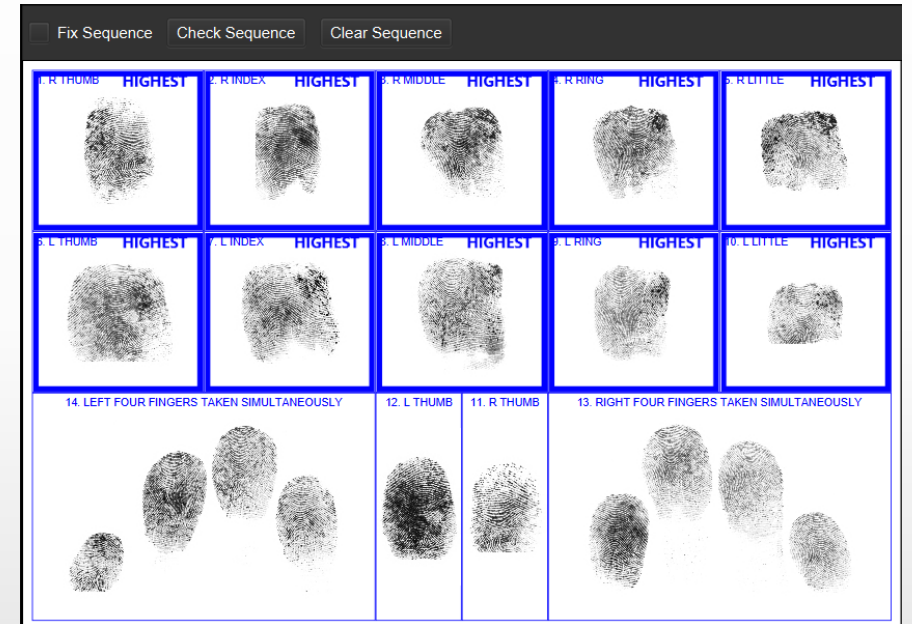
- 360° orientation detection
- Advance finger position detection
- Performed well in NIST SlapSeg II test and SlapSeg III test
- Performs exceptionally well at off nominal cases



Sequence: Examples



Segmentation being performed at extreme angles

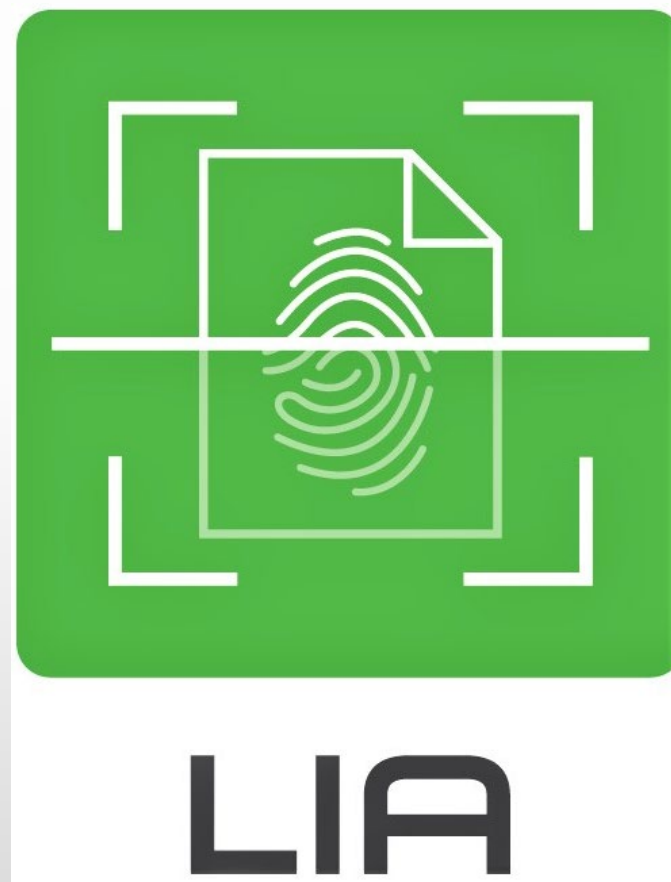


Sequence check being performed in our Whorl app

Lakota Image Acquisition (LIA)

Features:

- FBI Appendix-F certified Java library
- Scan fingerprint cards and documentation to obtain images
- Certified with Fujitsu fi-7600 and Epson V800 Flatbed scanners
- Supports duplex and multiple resolutions (500dpi for certified scans)



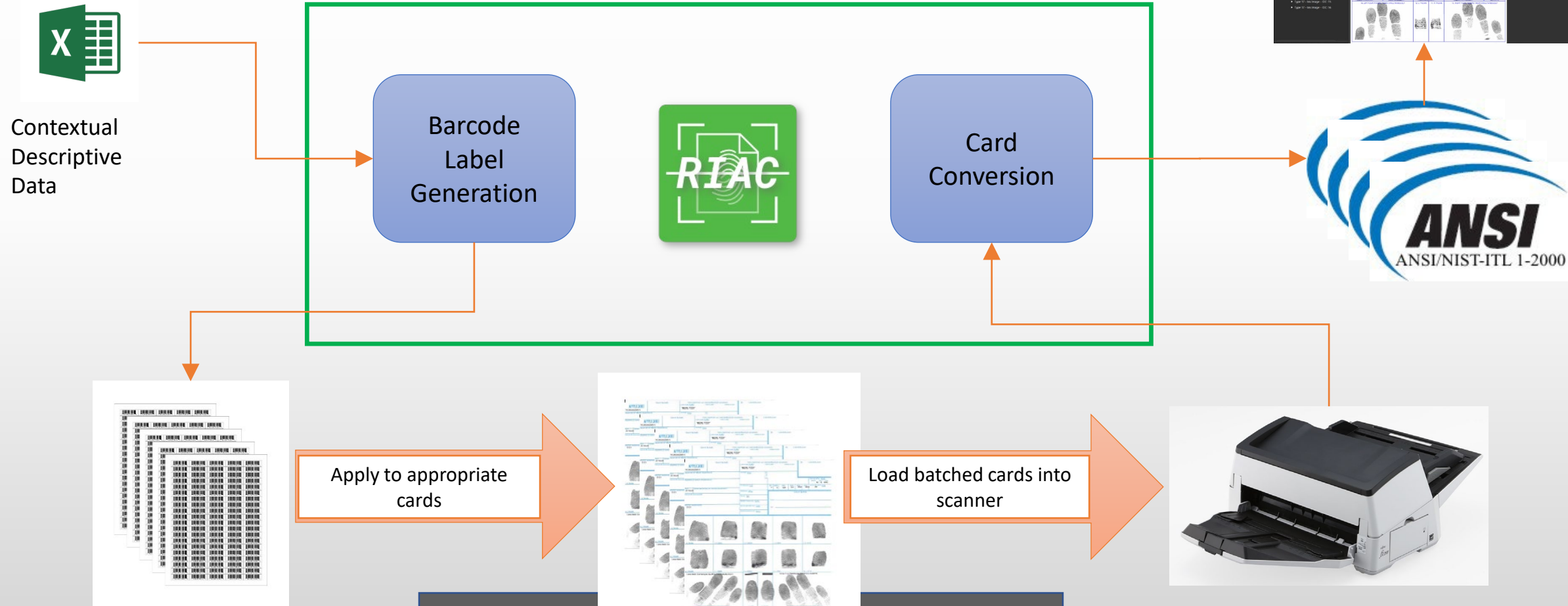
Rapid Image Acquisition & Conversion (RIAC)

Features:

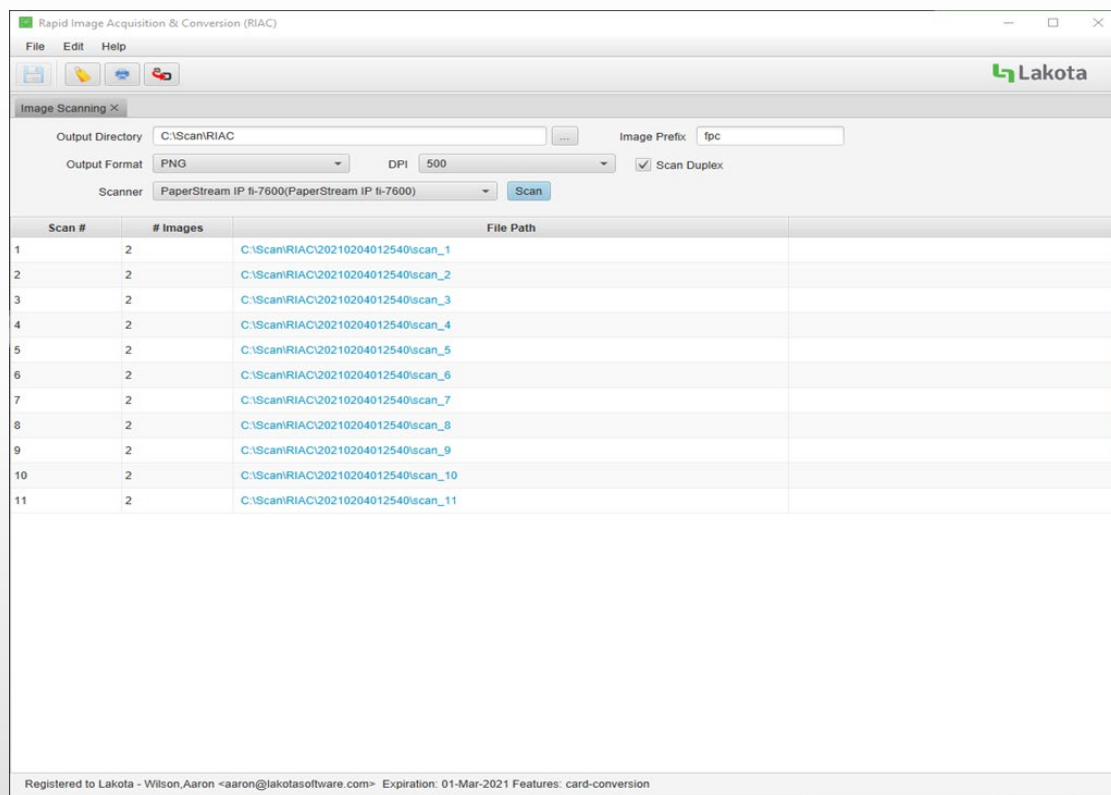
- **Rapid fingerprint/palmprint card image collection** from a document scanner using our LIA SDK
- **Automatic card segmentation and conversion** to ANSI/NIST-ITL (e.g. FBI EBTS) transactions
- **Extraction of contextual/descriptive data** from 2D barcodes and map to specific locations within the converted ANSI/NIST-ITL (e.g. EBTS) transaction



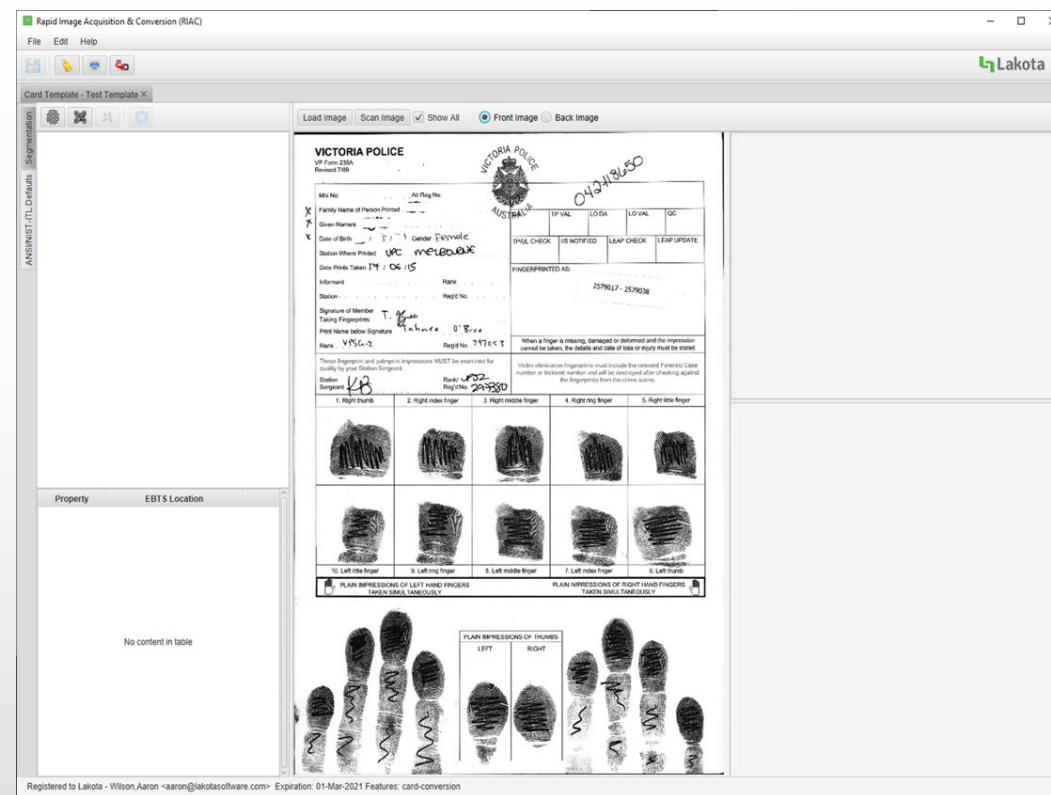
RIAC Card Conversion Workflow



Rapid Image Acquisition & Conversion (RIAC)



Main interface with scanned document list



Scanned document example; can define template from initial scan

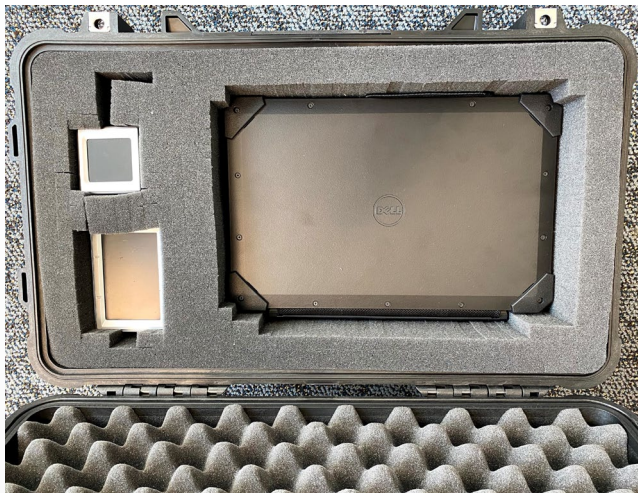
Forensic Image Extraction, Clustering, and Export (FIERCE)

Features:

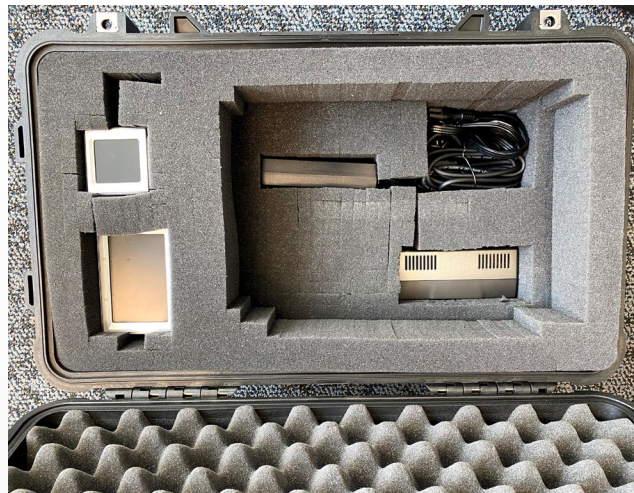
- Automates media extraction processes and increases examiner efficiency
- Gather and sort facial images into unique identities and select the “best” set of images from each identity
- Output images are cropped and aligned properly regardless of pose
- Supports all poses (frontal, left/right angle, left/right profile) and demographic extractions (Sex, Race, Age range)
- Integrating accepted standards as published by NIST OSAC, FISWG, and the IAI



Mobile Enrollment Workstation



Layer 1: Tablet and IB Five-o & Watson devices



Layer 2a: Power Supply and IRIS ID R100 camera



Layer 2b: IB Kojak device



Carry-on-approved, protective Pelican case
Contains:

- Dell 7220 Tablet w/ detachable keyboard
- Integrated Biometrics Five-o, Watson, & Kojak fingerprint collection devices
- Iris ID R100 camera
- Cables/storage/Power Supply*

*Workstation can be configured to fit inside Acumentrics Carry-On Power Case™

More Examples of Lakota Software Integrations

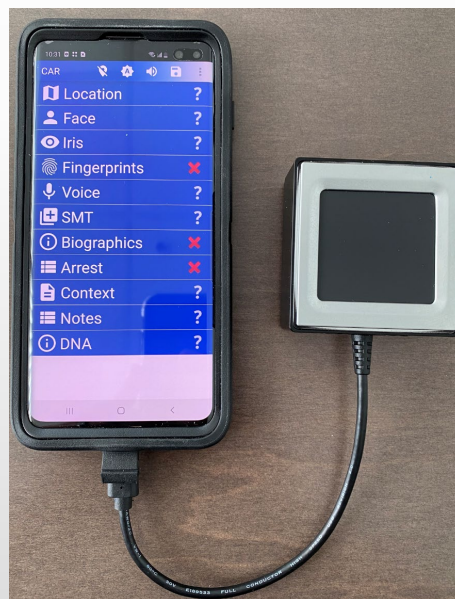
Northrop Grumman BioSled
mobile collection device
(Using our Ani SDK)



BioSled handheld device by Northrop Grumman

http://www.northropgrumman.com/Capabilities/IdentityManagement/Documents/BioSled_datasht.pdf

Northrop Grumman
BioMobility Android
application
(Using our Ani SDK)



Lakota RapiID kiosk



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