M2SYS™

ACCELERATED **BIO**METRICS

Facial

Iris

Palmprint

Fingerprint
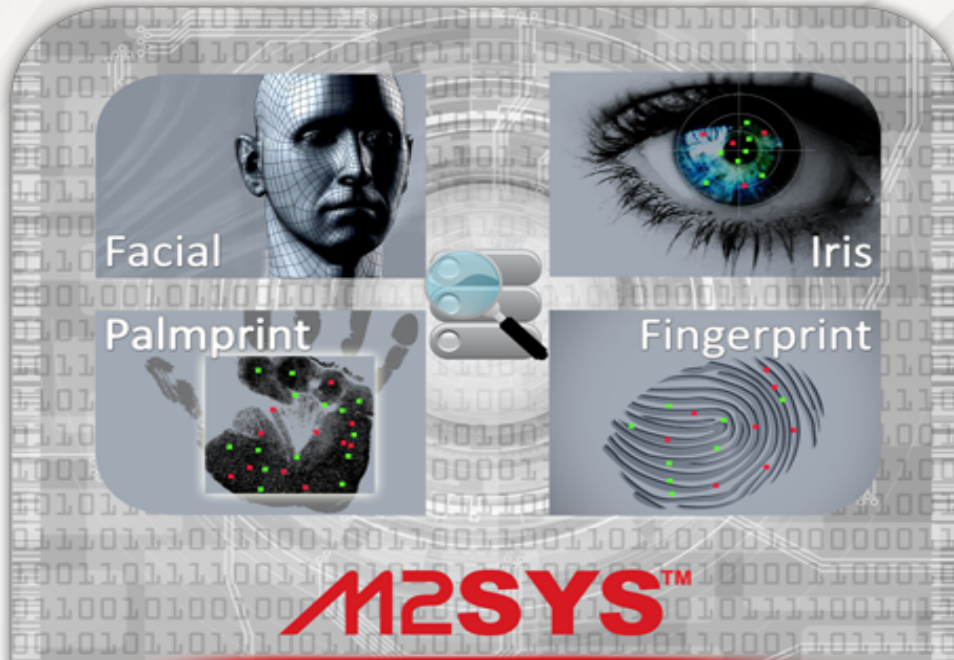
M2SYS™

Automated Biometric Identification System™ (ABIS)

M2SYS at a Glance

M2SYS provides technology that makes biometric software affordable, simple to integrate, and inexpensive to support, while enabling customers to easily utilize the right form of biometric technology for their needs. Our software accelerates the adoption of biometric technology, leading to a faster and more widespread delivery of its many benefits.

M2SYS' mission is to pioneer the high-tech industry by delivering long-term value to customers, employees and partners through continued innovation and excellence in all aspects of our business. M2SYS continues to innovate, build and bring to market leading-edge biometrics solutions that revolutionize the industry and expand the applicability of biometrics technology in our marketplace.

M2SYS takes great pride in delivering leading-edge technology and exceptional service. We operate in a number of vertical markets, including Law Enforcement, Government, Education, Membership Management, POS, Time and Attendance, Banking, child care, transportation security, and Healthcare. M2SYS has hundreds of software companies all over the world that have integrated our technology and thousands of end user customers.

- **Award-Winning** Biometrics R&D Company
- Primary Markets Served: Public Safety – Law Enforcement, Electoral, Healthcare, Banking, Education, POS, Childcare, Transportation, Workforce Management, Membership Management, Application Security
- Over 500 enterprise software integrators
- Tens of Thousands of Customer Deployments in 95 Countries Worldwide
- Winner of **2007** Frost & Sullivan Biometrics Technology Innovation of the Year Award & **2011** North American Biometrics Industry New Product Innovation Award
- Unique Hybrid Biometric Platform™ for rapid biometric adoption and deployment
- Headquarters in Atlanta, GA with Satellite Office in Asia

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M2SYS AFIS/ABIS

The M2SYS AFIS system is a scalable and customizable software package that allows you to perform a wide variety of tasks for processing, editing, searching, retrieving and storing biometric templates and subject records. Separate from our standard AFIS system, we offer a multi-modal automated biometric identification system (ABIS) which can combine fingerprint identification with an iris or facial recognition modality. Characterized by the utility to tailor deployment models based on unique needs and market conditions, our military grade system is specially designed to meet government agency requirements and delivers fast, secure and reliable results. M2SYS AFIS ensures quick and efficient service while providing information safety through the use of fault tolerant architecture, disk mirroring, automated database backups, and disaster recovery options.

Key Features of M2SYS ABIS/AFIS

- High powered searching capability
- Scalability
- Speed
- Reliability
- Multi-level data integrity and access protection
- User-friendly dashboard navigation
- Multitasking environment
- Powerful latent print image enhancement tools
- Extensive database inquiries
- Searching of both rolled and flat records for finger latent search
- Auto image placement on Tenprint/Palm records during scanning operation
- Automatic image processing that includes minutiae extraction, quality check, and sequence check
- Tenprint vs. Tenprint search with auto-confirm (lights out) function
- Tenprint vs. Unsolved Latent search
- Finger Latent vs. Tenprint search

- Finger Latent vs. Unsolved Finger Latent search
- NIST interface for LiveScan workstations
- Auto composite record construction
- Demographic history
- Support of multiple card formats for scanning operations
- High functional flexibility and adaptability of the system to the requirements of end users, including country- specific standards
- Unlimited possibility for system expansion and subsequent productivity increase

Certifications for M2SYS AFIS/ABIS

- NIST
- FBI
- ISO
- ANSI

USAGES of M2SYS ABIS/AFIS

Latent Print Matching

National ID

The M2SYS AFIS and ABIS biometric identification solution is a comprehensive tool for the issuance and maintenance of national ID documents to assure positive identities for both government and private sector enterprise that rely on accuracy and identification veracity to operate in efficient and just environments.

Many countries are seeking to adopt national ID cards for citizens to protect privacy and secure national population registers which often act as a base resource for health and welfare benefit distribution, voter registration and other national privileges. The M2SYS AFIS and ABIS national ID biometric identification engine justifies the data integrity of a national ID card database and provides government peace of mind that their security framework is protected from attack from hackers and criminals intent on compromising the data for their benefits.
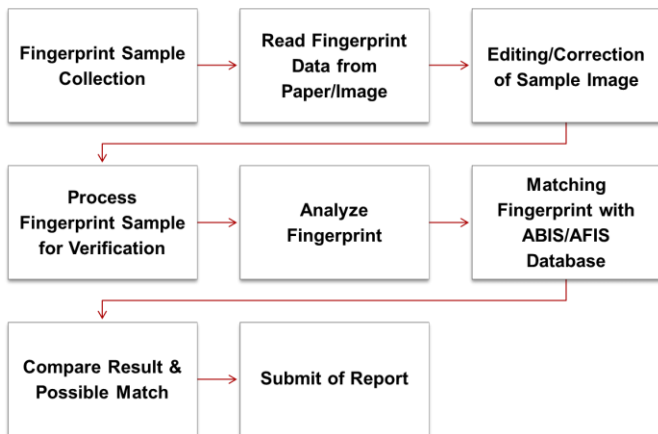
The M2SYS AFIS system is designed as a secure latent print repository with the flexibility to easily edit, manage, search, track and store records. Our AFIS technology allows law enforcement agencies to obtain and store latent print images directly from evidence or a variety of sources including scanners, high resolution digital cameras, and industry standard digital image formats. We offer latent print image enhancement tools, which simplifies verification and smoothens the process of editing including print rotation, image reversal, contrast/brightness adjustments and comprehensive search and review. Additional features include:

- Cards scanned with FBI-certified system
- Fingerprint & (optional) palm print capture
- EBTS formatting
- FBI-certified WSQ compression
- 500/1000 ppi options available
- Converts tens to hundreds of thousands of fingerprint cards to EBTS-formatted files
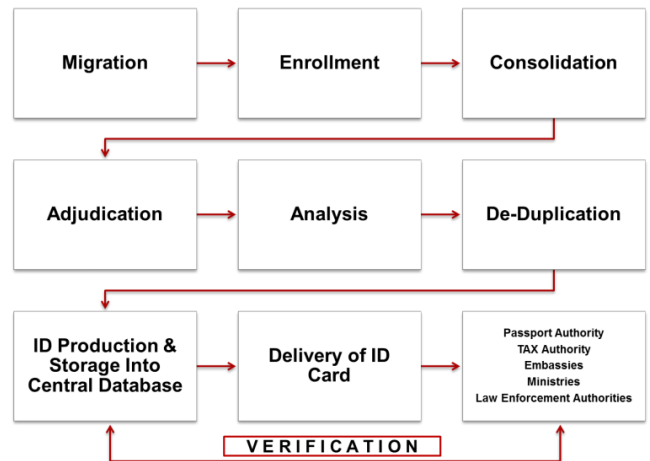
Public Safety

The M2SYS AFIS public safety software solution is a fail-safe way to properly launch and administer an inmate identification platform that complies with all FBI Appendix 4, NIST, ISO, and ANSI standards. Our user-friendly AFIS dashboard allows law enforcement to easily navigate through the system to set up, access and change records, even allowing for session multi-tasking to maximize productivity. Our AFIS biometric hardware and public safety software allows for ten-print roll and flat print high quality image capture with superb resolution and outstanding quality to allow forensic fingerprint examiners to cross check inmate identities for possible matches within the database. Our AFIS solution provides the ability to perform

- Tenprint vs. Tenprint search with auto-confirm
- Tenprint vs. Unsolved latent search
- Finger latent vs. Tenprint search
- Finger latent vs. Unsolved finger latent search
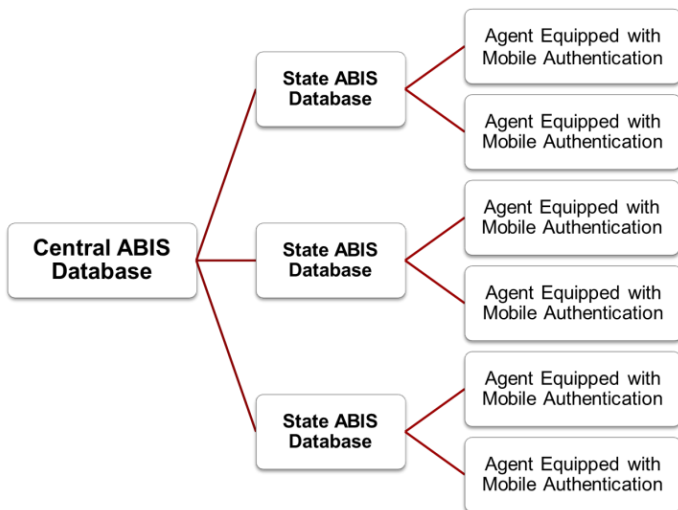
ePassport

Working seamlessly as an identity assurance platform with a powerful and versatile architecture that has the ability to search millions of records per second to ensure fast response times, the M2SYS AFIS/ABIS technology delivers a reliable identity assurance platform, the backbone of any ePassport initiative. The M2SYS multi-modal ABIS allows ePassports to combine fingerprint identification with an iris or facial recognition modality creating an unrivaled level of security and protection against fraudulent identification papers.

The M2SYS ABIS technology successfully combines our biometric capture and storage technology with an efficient management structure that contains the highest attainable security and traveler privacy protection. Whether you are an end user looking for a trusted ABIS system to launch an ePassport program or a software Integrator seeking a powerful biometric identification database with the ability to accurately search and identify travelers in seconds from millions or records, we have a solution that will fit your needs.
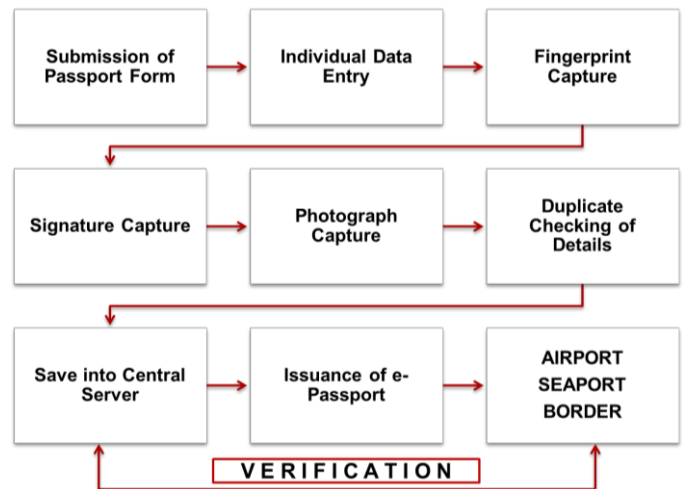
Voter Registration

M2SYS AFIS/ABIS helps to establish a biometric identification mechanism that secures the 'one citizen, one vote' mandate and maintains just and accurate voting registries. Designed to facilitate accurate voting registration, prevent duplicate registration maintain voting lists and provide a mechanism to verify the true identity of voters at polling stations, M2SYS AFIS/ABIS is an affordable solution that comprehensively implements the safeguards of biometric identification at each step of the process, including:

- Enrollment Software
- Duplicate Checking & Data Cleansing
- Matching Software

M2SYS AFIS/ABIS is perfectly suited to act as the trusted identification mechanism for the National ID subset of identities that constitute the voter registration rolls or as an independent identification source. Our AFIS and ABIS system fits within the framework of the International iDMC biometric education standards that have recently materialized to help promote the understanding and benefits of biometrics in the voting registration and election process. Additional features of our system include:

- Complete voter registration software and back-end biometric identification system

- Scalable AFIS to process voter de-duplication comparisons and quickly identify fraudulent applications
- Seamless database segmentation to perform real-time, 1:N comparisons at state level during registration
- Flexible architecture maximizes system performance and efficiency while reducing system stress and downtime
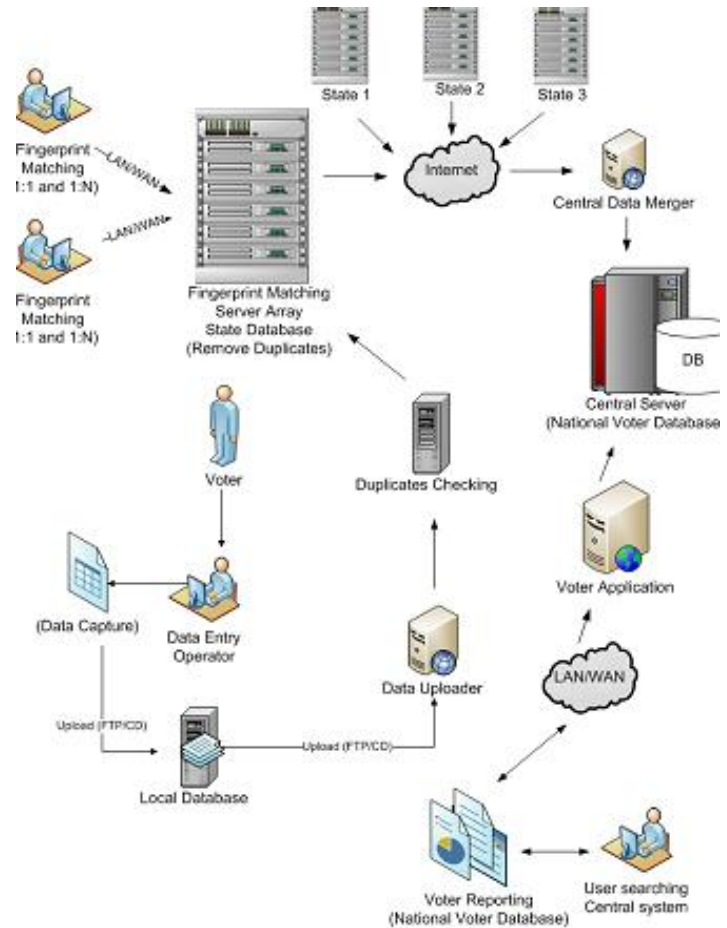
Healthcare & Welfare

The M2SYS AFIS biometric database is perfectly positioned to act as the smart card or national ID identity data repository for the efficient administration of these health and welfare programs providing quick verification and guaranteeing accurate data authentication. Closing any loopholes for fraud by proving a secure data network infrastructure for the identification of citizens, the M2SYS AFIS system architecture is built and designed to handle millions of records and can be customized to handle uni-modal or multi-modal fingerprint, iris or facial registrations. Since identity fraud can wreak havoc on the administration of an efficient and effective healthcare and social welfare system, undermining its credibility and significantly driving up costs for the programs, using a system like the M2SYS AFIS biometric database helps to support interoperability and keeps costs in check to facilitate improvements in medical care and benefit distribution. Our biometric software works as a tool to develop societal parity so that every individual is recognized, unique and provided with the resources that are their right as citizens.

Border Control

Border management agencies can use the M2SYS AFIS biometric identification to quickly and accurately confirm traveler identity to verify that someone is who they claim to be. The automation of identification checks for border security helps to stop criminals intent on using fake identification to cross borders and commit crimes plus it facilitates fast, safe, and smooth crossing for common travelers to facilitate growth in commerce and tourism.

M2SYS AFIS border control identification technology strikes a balance between security and convenience so agencies can easily integrate biometric identity checks at all the key traveler touch points including check-in, baggage drop, security, boarding and then again at the border. M2SYS ABIS can use one or a combination of unique biometric identity characteristics (fingerprint, facial recognition, iris) for precise, reliable identification that is affordable with an intuitive and user-friendly interface.
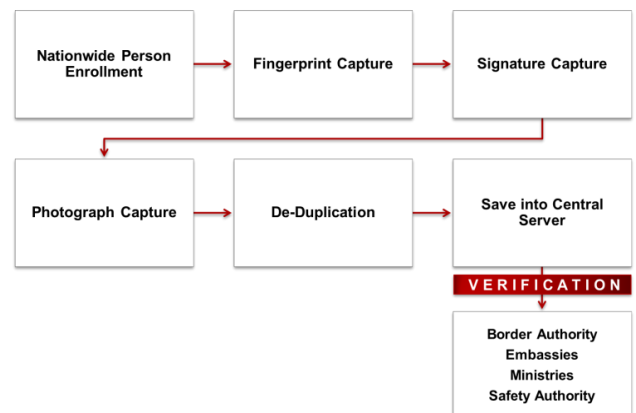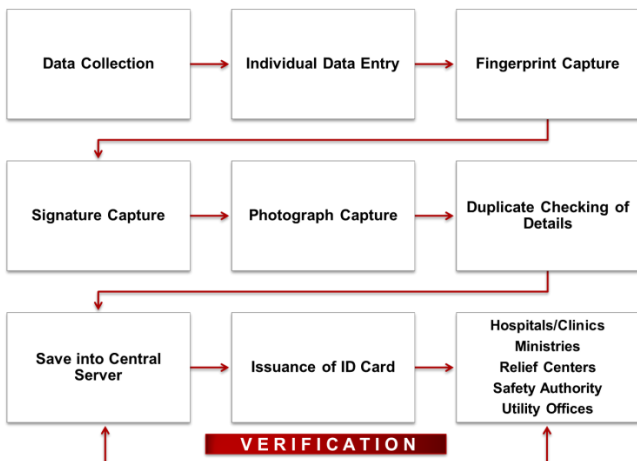
Solution Overview

- M2SYS ABIS/AFIS Integration Software (SDK)
- M2SYS ABIS/AFIS Biometric Data Enrollment Kit
- M2SYS ABIS/AFIS Duplicate Checking/Data Cleansing Kit
- M2SYS ABIS/AFIS Biometric Matching System

M2SYS ABIS/AFIS Integration System (SDK)

Software developers can easily integrate the M2SYS ABIS/AFIS engine for their own solutions in a matter of hours, avoiding the hassles of a low level Software Development Kit (SDK). Our ABIS/AFIS SDK will also provide developers the complete technology package including fingerprint, palmprint, iris and facial recognition ensuring a single operating platform.
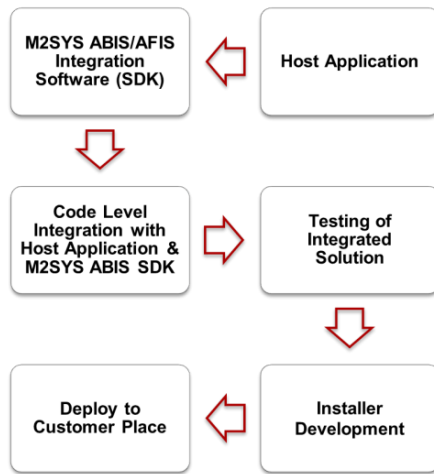

The Package includes:

- Pre-developed ABIS/AFIS Matching System
- Duplicate Checking Tool
- FBI/NIST Conversion tool for image template generation after enrollment

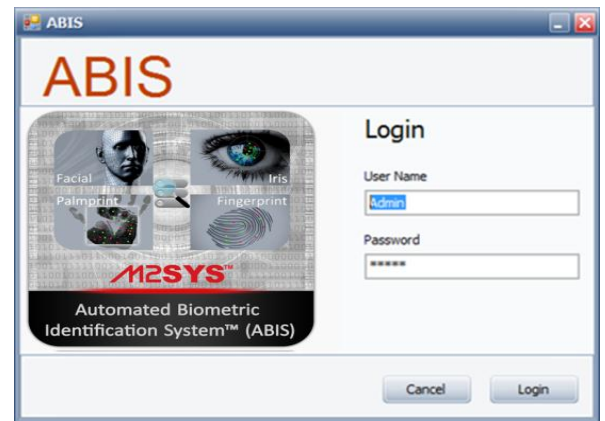## *M2SYS ABIS/AFIS Data Enrollment Kit*

With M2SYS ABIS/AFIS Enrollment Kit the solution users/authority can enroll individual with adding their complete demographic details and biometric information

including their fingerprint, plamprint, iris and facial data into the database.
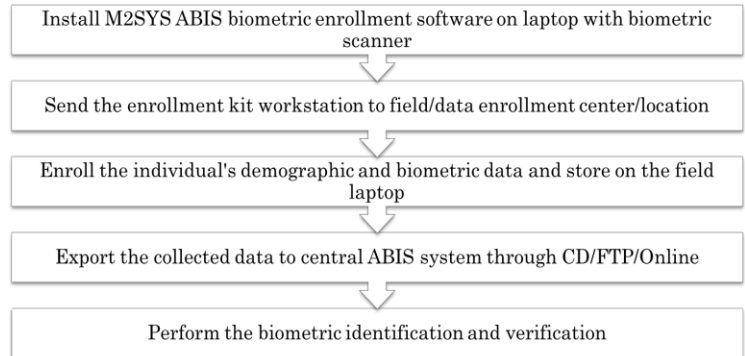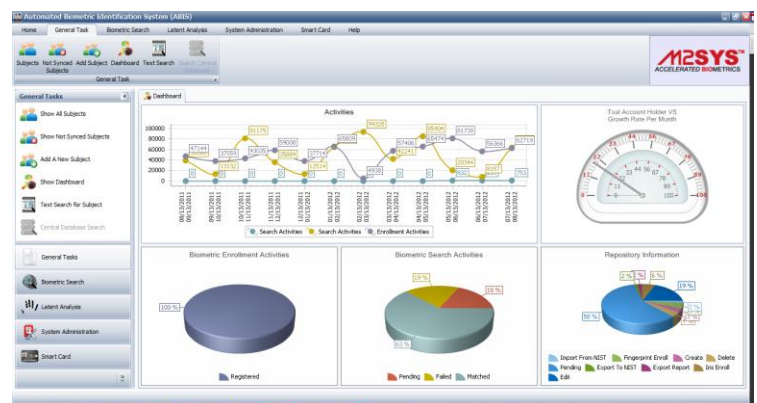

Application Login & Overview
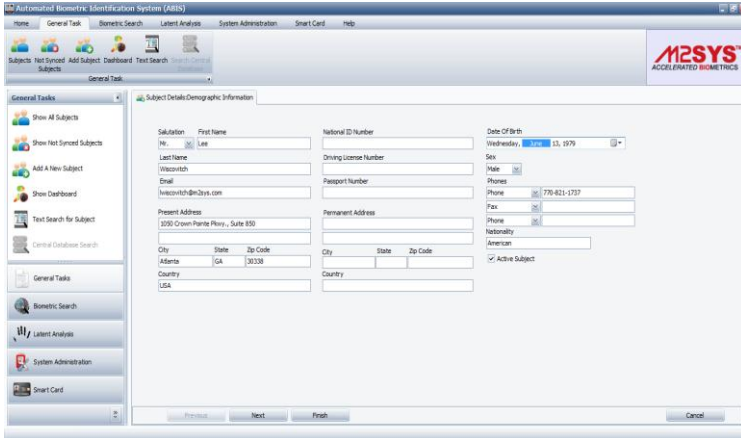
Login into M2SYS ABIS/AFIS solution

Default Home Screen of M2SYS ABIS/AFIS
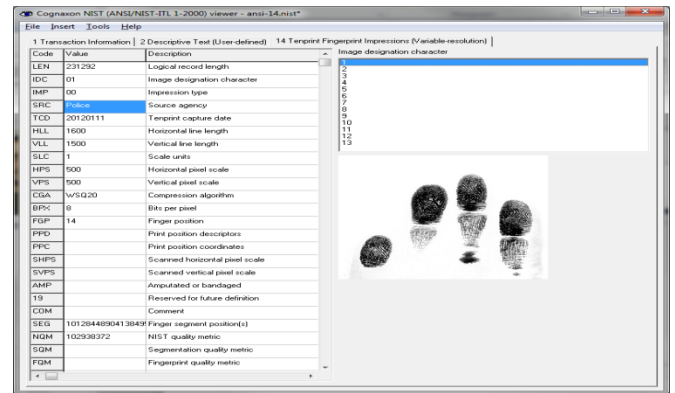
Demographic Data Enrollment of Individual

Basic information of an Individual to enroll into the system

Live Finger Enrollment & Processing

Fingerprint enrollment screen
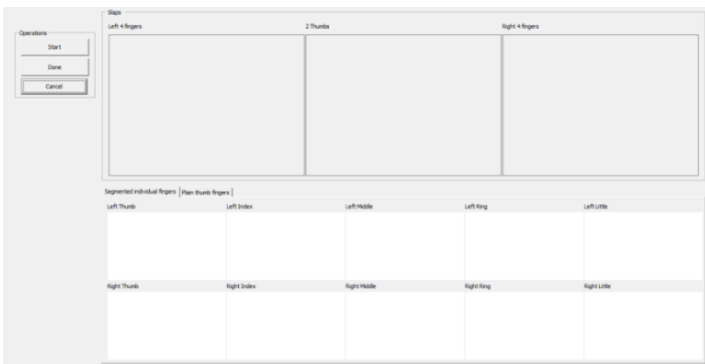
Capturing the left four finger with live view

All fingerprints have been captured & system allocated automatically each fingers in appropriate box

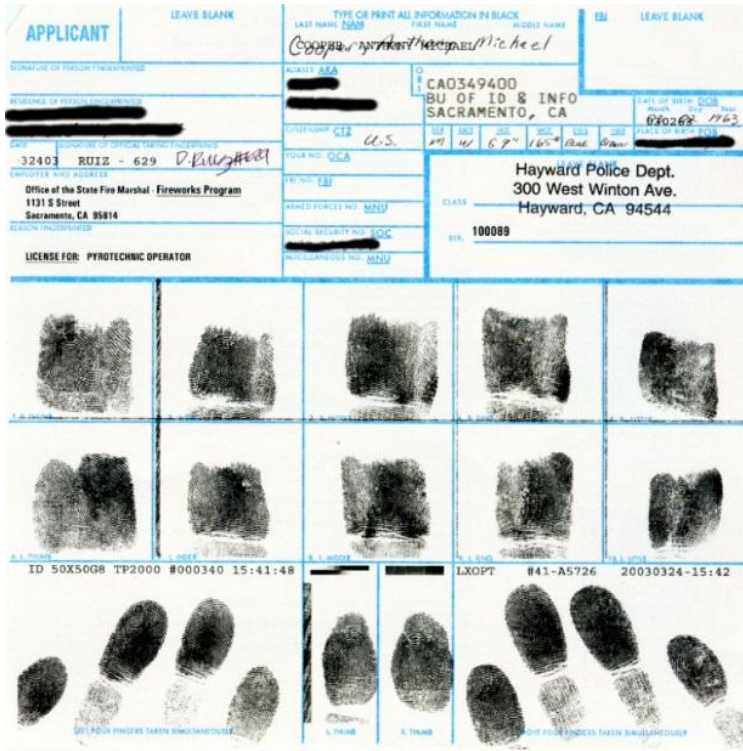**The fingerprint data has been stored into the database in NIST/FBI compatible format**

Latent Print Processing: Paper Fingerprints

*** Biometric fingerprint raw images (fingerprint impressions) require the following items:

- Specialized fingerprint raw image collection paper
- Specialized fingerprint Ink

We recommend this data collection paper for remote areas where electrical items like laptops and biometrics scanners can't be used. The agency can collect the individual biometric data with this paper. M2SYS has a specialized solution to read the fingerprint image from the paper, make the NIST compatible fingerprint template and export into any AFIS system for fingerprint authentication.
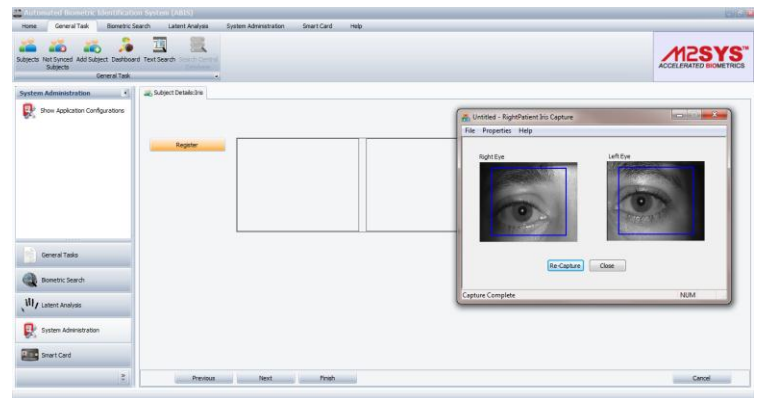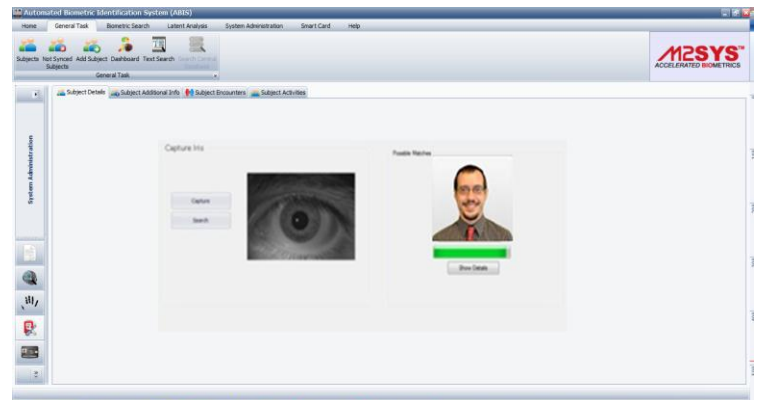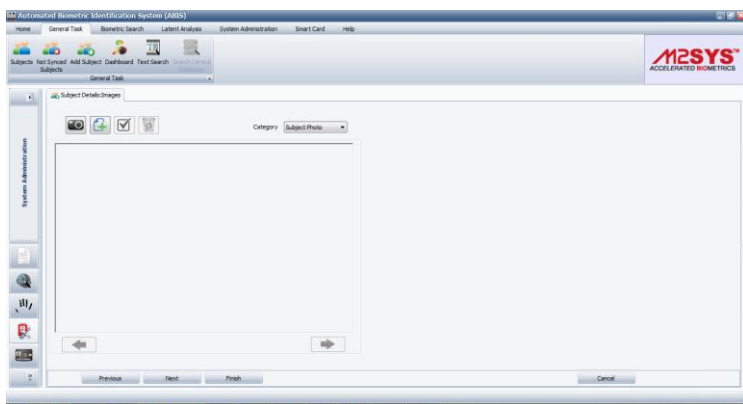

Capturing Photograph

Iris enrollment process

Verification through iris scan

Subject's Photograph Capture Process
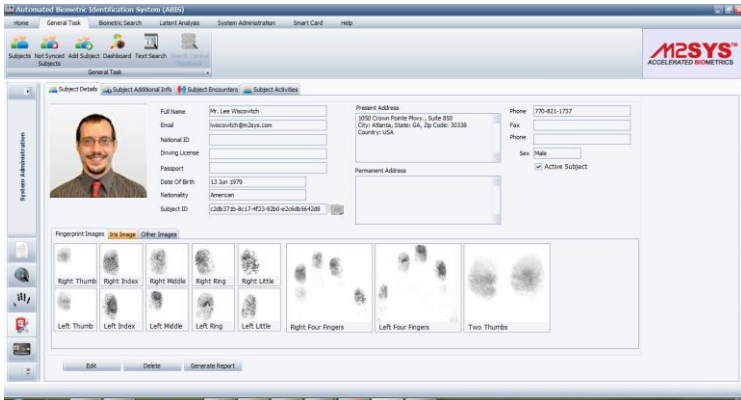
Verification result & complete profile after successful enrollment with all details


projects with government and private third parties. The matching system has already been NIST and FBI performance tested and supports fingerprint, palm print, iris & facial images. It is characterized by high functional flexibility and adaptability of the system to the requirements of end users, including country-specific standards.

Supported Technology with M2SYS ABIS

- Fingerprint Authentication Technology
- Palmprint Authentication Technology
- Iris Authentication Technology
- Facial Authentication Technology

M2SYS ABIS/AFIS Duplicate Checking/ Data Cleansing Kit

The M2SYS ABIS/AFIS solution also operates as a separate or integrated part of the mail software to identify duplicate entries in the database. Once the data collection is completed by live enrollment or by entering a latent image, the duplicate checking system

allows users to find and cleanse duplicate entries with the synchronized database to make sure the database is unique to the Authority.
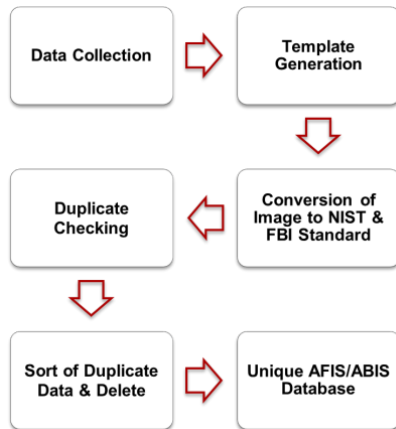
Reliability and Performance Testing Results

Speed Testing Results

M2SYS ABIS is a perfect solution for national-scale biometric identification projects with millions of people enrolled into a database to match them accordingly as per the Authority demands. M2SYS ABIS is a perfect solution for national-scale biometric identification projects with millions of people enrolled into a database. The solution can match 3,700,000 Fingerprints & 5,400,000 irises with a Standard PC but matching of 37,000,000 fingerprints or 54,000,000 irises per second can be achieved with a pre-configured M2SYS server based on individual requirements.
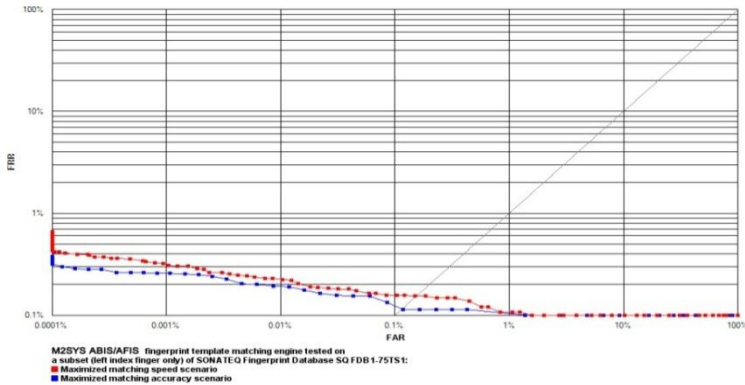
M2SYS ABIS/AFIS Matching System

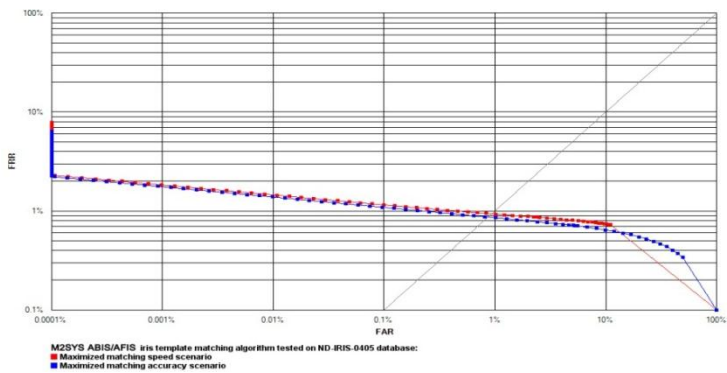M2SYS ABIS/AFIS has a world class high speed matching algorithm which can be used for any large scale national
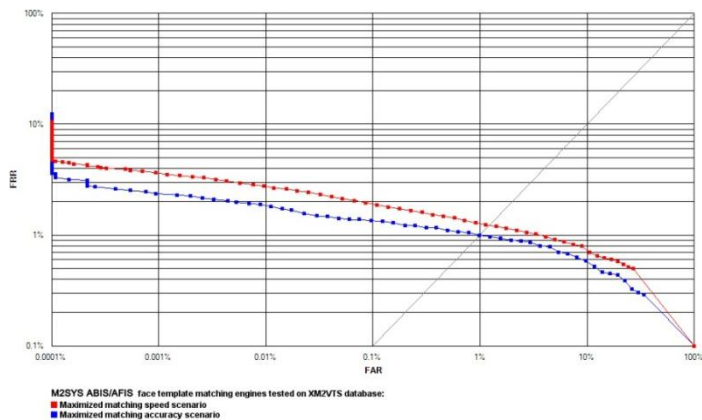
FAR & FRR Testing Results

Fingerprint test result

M2SYS ABIS/AFIS fingerprint template matching engine tested on a subset (left index finger only) of SONATEQ Fingerprint Database SQ FDB 1-75TS1:
■ Maximized matching speed scenario
■ Maximized matching accuracy scenario

Iris test result

M2SYS ABIS/AFIS iris template matching algorithm tested on ND-IRIS-0405 database:
■ Maximized matching speed scenario
■ Maximized matching accuracy scenario

Facial test result

M2SYS ABIS/AFIS face template matching engines tested on XM2VTS database:
■ Maximized matching speed scenario
■ Maximized matching accuracy scenario

System Requirements

Standard PC Requirement: For Enrollment & Local Server

- 2.26 GHz Dual Core or Better
- 320 GB HDD
- 3 MB Cache or better
- 4 GB DDR 3-1033 BUS Memory
- Compatibility USB 2.0 or higher
- Built-in Webcam
- Windows® XP, Windows® VISTA, Windows® Seven, Windows® 2003/2008 Server Operating System 32/64 Bit

Matching Server Requirement: For Best Performance

- HP ProLiant DL585 G7 Server
- 12-Core AMD OpteronT Processors Model 6176SE (2.3 GHz, 105W)
- HP 32GB PC3-10600R 8x4GB 1Rank Memory
- 12-Core AMD OpteronT Processors Model 6176SE (2.3 GHz, 105W)
- HP 32GB PC3-10600R 8x4GB 1Rank Memory
- HP Processor/Memory Board
- Microsoft® Windows® Server 2008 R2 Standard Ed w/Windows 2003 R2 Media for
- Exercising Downgrade Rights Not Pre-Installed SW
- Embedded P410i/ZM (SAS Array Controller)
- HP 500GB 3G Hot Plug 2.5 SATA 7,200 rpm MDL Hard Drive
- HP 500GB 3G Hot Plug 2.5 SATA 7,200 rpm MDL Hard Drive
- HP 500GB 3G Hot Plug 2.5 SATA 7,200 rpm MDL Hard Drive
- HP 500GB 3G Hot Plug 2.5 SATA 7,200 rpm MDL Hard Drive
- RAID 1 drive set (requires matching 2 hard drives)
- HP Embedded NC375i Quad Port Multifunction Gigabit Server Adapter
- HP 1200W CS HE Power Supplies
- Integrated Lights Out 3 (iLO 3) Management

Supported Biometric Devices

M2-DualScan™
Two-Finger Fingerprint Reader

M2-LiveScan™ Ten-Print
Fingerprint Reader

Cross Match Guardian®
Livescan Reader

IrisID TD100 Iris Camera

Cross Match I Scan 2 Iris Camera

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