



White Paper

ID*ENROLL KIOSK Height Adjustable Multi-Biometric Enrollment

Virtual In-person Proofing Technology Capable



As a part of the ID*ENROLL line of products, the NextgenID KIOSK is an highly automated, wizard driven enrollment and authentication KIOSK specifically designed for the secure capture of multiple biometrics and associated personal identity information. Its design and features were engineered to be the most sophisticated and feature rich kiosk in the world for all levels of identity assurance proofing and customer service use.

This design delivers automation, speed, trust and security to the US Government's smart card credential programs (PIV, PIV-I, PIV-C (CIV), TWIC, CAC and FRAC), as well as global and international identity initiatives requiring the most innovative and reliable credentialing methods on the market.

Further to its innovation, the NextgenID KIOSK has been integrated with the first and only Virtual In-person Proofing (VIP) capability in the Identity and Access Management market. VIP technology reduces cost, strengthens security and accuracy in addition to providing special services when needed by kiosk users. VIP provides a remote operator function as if they were standing in front of the kiosk directly servicing a user. VIP provides the necessary visual capabilities of the user, the surroundings, their documents and interactions with the kiosk.

VIP further reduces required operational budgets for on-site training of staff and for that of underutilized local staff required to cover days of the week and hours of the day availability to users.



Featuring the first and only Virtual In-person Proofing (VIP) enrollment capability in the Identity market – performing in-person enrollments of applicants over operator assisted virtual sessions.

Identity Management Solutions are critical foundations in today's world that all begin with trusted enrollment. As a critical component of this solution, the ID*ENROLL KIOSK integrates with systems through a Web-Service interface specifically created to interface with third party systems.

EMPOWERING TRUSTED IDENTITY

Post enrollment, the KIOSK can provide secure activities such as smart card activations, re-enrollment and attribute associations to name a few. As such, the KIOSK can be configured to perform a number of different applications, transaction types and validation activities, all from the same unit.

The NextgenID KIOSK is multi-application capable and designed to operate free standing in any chosen enrollment location. It can operate in multiple modalities ranging from self-service, Virtual In-Person (VIP) operator, Local IN-Person (LIP) operator and supervised, and maintenance support.

The KIOSK facilitates the complete and accurate capture of all required personal identity documentation and includes a full complement of biometric capture support for face, fingerprint and iris. Regardless of requirement, the KIOSK has been engineered with National Institute of Standards and Technology (NIST) certified (FIPS 201 and 140) certified components to meet the highest DOD and Federal government standards requirements.

Built to accommodate a wide-range of custom configurations, the NextgenID KIOSK meets a wide-range of customer specific requirements without the need for redesign.

The KIOSK further provides the user with comfortable and efficient processing combined with a complete array of capture components that support any and all types of required enrollments coupled with an efficient integration of all components. It supports the Americans with Disabilities Act (ADA) and comfortably accommodates all users regardless of special needs or height.

The KIOSK's design is a revolutionary step forward in automation and human factors that eliminates multiple sources of error, inconvenience, cost, resources and negative user experiences. These include aspects such as enrollment time, environmental influences, data storage and transfer, data capture accuracy, operator and process related errors, technology integration and user convenience.

A Cross-Section of the KIOSK Design Specification include:

- Reconfigurable and flexible to support a number of processes and services including multiple application capabilities, 3rd party product integration and value added service functions
- High quality and automatic biometric image capture with automated quality checks against required standards
- Height adjustability to ensure optimal biometric capture and serves for all users regardless of need or height. (Equality Act in UK, ADA in US and future requirements)
- Secure and durable construction for public area use and long life in high traffic, high use areas
- Ease of maintenance and support – easy access and simple component replacement
- Complete security and privacy including IP video surveillance and black-box recording
- Ease of use and administration with minimal training needed
- High transaction speed for minimum processing and wait time – Best in the industry!
- Customer branding and color scheme customization ready



Standard KIOSK components include:

- Motorized lift that allows the kiosk height to be adjusted to accommodate each and every users personal requirements, as for example wheelchair bound people to people that are seven feet tall.
- KIOSK main module that mounts on the lift and incorporates core components including lights and camera for face image capture, iris unit to capture both eyes, user and scene cameras; 19" touch screen monitor, microphone and speakers and provision for card readers; and keyboard, fingerprint scanners (2) and signature capture device, plus up, down and emergency stop controls. Internally the main module contains the computer, power-supplies and power distribution, USB distribution and the cable harnesses that interconnect devices and sensors.
- Left Pod, beside the main module lower tray, incorporates a full-sheet page scanner for identity documents and/or additional information that can be up to 8 ½" wide by unlimited length long and two sided.
- Right Pod, beside the main module tray, incorporates a passport scanner that also reads chip based ICAO compliant passports, contact and contactless smartcard reader and an insertion reader for convenient reading, scanning and authentication of driver's licenses or similar ID's. The scanner array provides the ability to capture ID-1, ID-2, ID-3 and any 8.5 inch x varied length document requirements.





Visit the URL below to view a video demonstration of the ID*ENROLL KIOSK in action:

<https://youtu.be/c8hoEM1YBNc>



The Highest Quality Biometric Capture on the Market

The MBE KIOSK integrates best-in-class biometric cameras and sensors to ensure superior performance and value.

Biometric Face Image Capture

Regardless of height, the MBE KIOSK console positioning system places the facial image camera at the enrollee's eye height, ensuring a standards compliant facial image that is captured without distortion or pose angle violations.

The high resolution Biometric Camera provides high definition image quality and maintains a high "pixel between the eyes" resolution for best performance in facial recognition use cases.

Integrating NextgenID's real-time image quality verification solution, BIOassure, for biometric image optimization, the MBE KIOSK ensures high performance automated facial image capture that delivers fully compliant ISO/IEC and ICAO grade images. This provides very high accuracy face and eye capture and the ability to measure pose angle (with a threshold of +/- 5 degrees), face illumination checks, background consistency and background shadows.

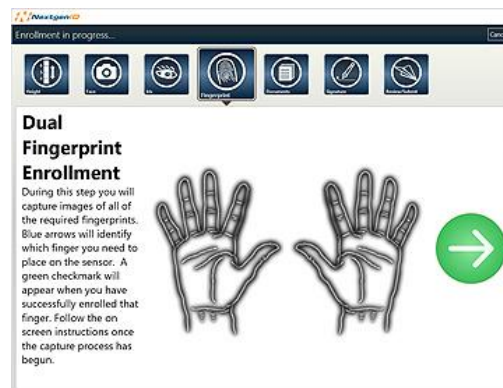
This KIOSK process automates image centering, scaling, cropping and image quality validation, while tailoring the output image compression ratio to the storage requirements of the credential.

Biometric Iris Capture

The MBE KIOSK utilizes an "at a distance" sensor to capture iris images from both eyes simultaneously. This provides the enrollee with a comfortable and simplified, single action capture, eliminating repetitive actions and wasted enrollment time.

Biometric Fingerprint Capture

The MBE KIOSK includes dual finger capture devices for simultaneous left and right finger capture. MBE software ensures the highest fingerprint quality through the use of NIST Finger Image Quality (NFIQ) checks of each captured fingerprint while processing the images to the necessary designated requirements for fingerprint imagery and templates. Optional KIOSK configurations can include a 4+4+2 style wide platen 10-print live fingerprint reader to capture flat or rolled prints.



Signature Capture

A backlit signature capture device is provided with a tethered stylus. The KIOSK validates that the signature is clear and within defined requirements.

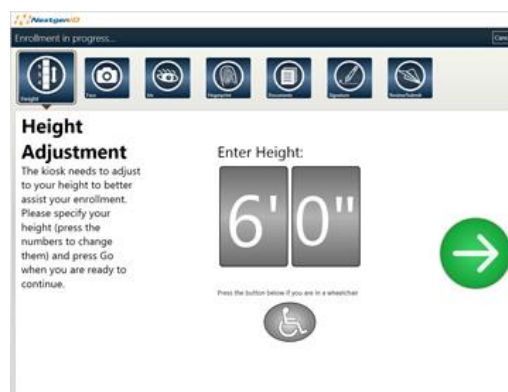
Voice

The MBE KIOSK houses a high fidelity microphone and speaker. Voice samples can easily be requested and captured.

Accessibility

Accessibility to public services for the disabled is the law. In the UK, it is governed by the Equality Act 2010 and in the USA by ADA 1991/2010. The highlights of the accessibility design are:

- Height adjustment of kiosk to accommodate enrollees of all sizes and with disabilities
- Open space under the kiosk's main tray that provides for wheelchair maneuvering and positioning
- All MBE KIOSK devices are within enrollee reach requirements for accessibility
- Headphone jack with volume adjustment is provided for the hearing and vision impaired
- Screen designs are in accordance with accessibility best practices
- Provisions are made to support multiple languages for both display and audio



To fully meet these accessibility requirements with the range of capability provided, it was necessary to break the mold of the typical airport check-in kiosk or automated teller, which work well, but assume that accessibility exceptions will be dealt with at secondary counters or through support personnel.

KIOSK Reliability and Maintainability

This MBE KIOSK is designed for heavy use in varying physical locations. It is both durable and reliable based on:

- Front wear surfaces are cast aluminum with powder coat finish
- Lights are long life LED type, so there are no light bulbs which burn out quickly
- Cameras are behind protective security glass
- Keyboard is industrial grade
- Scanner is industrial grade straight through paper pass with easy document extraction if paper jams occurs
- Monitor and card readers are industrial grade
- Fingerprint readers are high grade commercial quality and have been proven in harsh environments

For best results, routine maintenance is recommended. It is suggested that the fingerprint platen be wiped clean daily. This exercise is simple and effective. It can be performed more frequently in high traffic locations, if necessary.

The KIOSK is built with the most proven and reliable components in the industry. Maintenance is recommended for maximum performance and longevity. All KIOSK maintenance can be performed from the front of the unit. Locked access doors open to expose all internal components for maintenance and replacement, as required.

The initial installation and/or unit replacement can be accomplished quickly and easily by a qualified service technician. The KIOSK is shipped as three sub-component assemblies, the lift, the KIOSK main body and the side pods. Each sub-assembly can easily be handled by an installer. Installation steps are as follows:

- Fix lift sub-assembly unit to floor or freestanding base
- Bolt KIOSK main body sub-assembly unit to lift (4 bolts)
- Bolt pod(s) to KIOSK core unit (4 bolts)
- Connect cable connectors for each sub-assembly
- Connect power and network cable to KIOSK base
- Confirm auto power up and operation of KIOSK

Security and Privacy

The MBE KIOSK has been designed with many layers of security:

- It is recommended that the KIOSK be located in a secure and trusted facility and within sight of a trained counter attendant
- KIOSK transactions can be supervised remotely, so it would be very difficult for collusion or substitution to occur
- The included scene camera has a wide angle lens so that it can record the full field of view from the applicant's face to the keyboard and sensors - there is an audit trail for each enrollment that includes a complete video of the entire enrollment of each enrollee
- For dependent or operator controlled enrollment, a second person may participate, but this can be watched remotely so that the remote operator can both assist and assure that the transaction is completed properly
- The image quality is checked and where possible the person's identity is confirmed biometrically against existing photos or fingerprints
- The captured biographical, biometric and breeder document information is retained in encrypted form on the KIOSK only as long as it is needed to transmit the information and receive confirmation of receipt from the central collection site service. Each collected piece of personal identity information is individually encrypted and then the overall enrollment record file is encrypted and transmitted to the central collection location.
- No personal information is retained on the KIOSK after the completion of the enrollment transaction.
- Transaction data is visible during the transaction, but is not retained on the remote operator station if this process is being utilized

- Differential Access to enrollment data at the central collection system is controlled and granted to authorized personnel only.
- Details of authorized personnel and association of required data elements, is determined with each customer and configured appropriately post agreement
- Tampering with the KIOSK will activate an accelerometer, which will ensure that the tampering is recorded by the scene camera and will also alert the remote operator to investigate. A local audible alarm can be initiated, if required.

Ease of Use

Foreign Residents may be using the MBE KIOSK at times, so operation of the KIOSK was designed to be simple, intuitive and to the greatest extent possible, language independent. The KIOSK design incorporates the following:

- Text guides for the user are supported by animation or video
- Green flashing light bars showing the exact order of each device to be used, indicate the next step in the work-flow. For example, the bars beside the fingerprint readers will flash when it is time to place your finger on the reader.
- Remote operator device assistance is provided. Provision of this service in selected foreign languages will be investigated, if required.
- The KIOSK is designed for easy ergonomic use independent of body shape or size.
- KIOSK feedback advises the user to make adjustments or retake a photo or biometric capture.
- Full visibility of the scene and the capture results by the remote operator.



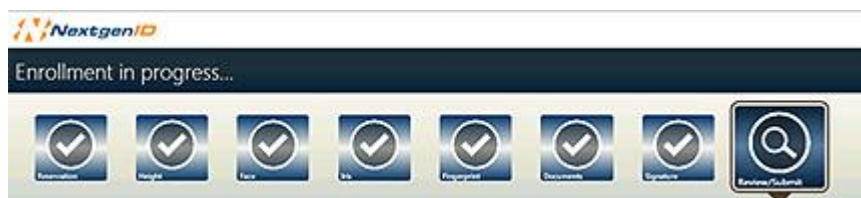
Minimum Transaction Time

To provide maximum convenience, minimum transaction time benefits those that are waiting for the user and delivers expedited throughput at each MBE KIOSK during peak periods. Minimizing transaction time is very important to reduce incurred downtime of enrollees and to increase user adoption and adaptability.

In recent customer trials, the typical enrollment time, with users that had never seen or used the MBE KIOSK before, was between two and three minutes. This contract test utilized a driver's license, capturing a passport, capturing face, iris, two fingerprints and a signature, scanning one breeder document and submitting the enrollment record to the central collection service and Card Management Systems. In contrast, all other competition was significantly slower with some to the point of being completely unacceptable.

The customer trials attributed the key difference in increased enrollment time to:

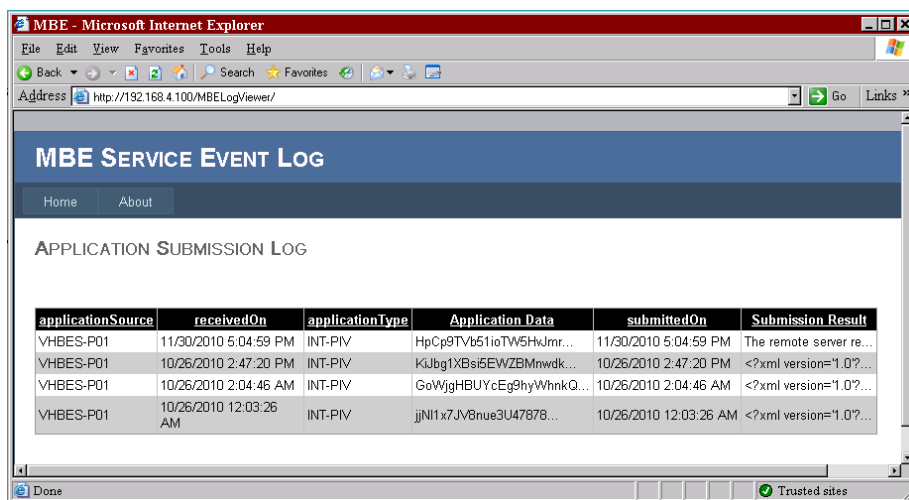
- Efficient capture at each step. For example, instead of taking one photo and then checking to see if it is ok and then taking another, the KIOSK technology takes many picture frames, extracts the faces, checks the quality and then selects to best compliant image all automatically.
- Clear and simple transitions between capture steps. The KIOSK is aided by graphics and green flashing light bar cues, making each step in the process virtually mistake proof.



Transaction Audit Trail

Each enrollment transaction incorporates an audit trail of the captured enrollment information plus related transaction information including:

- Enrollment Information
 - Cropped, quality checked face image
 - Iris for right and left eyes
 - Fingerprints
 - Signature
 - Copies of scanned documents
- Related transaction information, as for example:
 - Scene camera video of the transaction period
 - Audio record of the transaction
 - Date and time information for each sub-transaction and overall transaction time
 - Results of any biometric identity verification matches
 - Quality metrics of all captured biometrics
 - Operator and location data
 - Any anomalies in the process (e.g. two faces in the enrollment image could suggest an assisted enrollment or an issue)



applicationSource	receivedOn	applicationType	Application Data	submittedOn	Submission Result
VHBES-P01	11/30/2010 5:04:59 PM	INT-PIV	HpCp9TVb51ioTW5HJmr...	11/30/2010 5:04:59 PM	The remote server re...
VHBES-P01	10/26/2010 2:47:20 PM	INT-PIV	KJlbg1XBs55EWZBMrwdk...	10/26/2010 2:47:20 PM	<?xml version="1.0?...
VHBES-P01	10/26/2010 2:04:46 AM	INT-PIV	GoWjgHBUYcEg9hYWhnkQ...	10/26/2010 2:04:46 AM	<?xml version="1.0?...
VHBES-P01	10/26/2010 12:03:26 AM	INT-PIV	jjN1x7JV8nue3U47878...	10/26/2010 12:03:26 AM	<?xml version="1.0?...

The Data Dictionary in the MBE KIOSK system shows more than 170 data items, so there is sufficient information to perform significant analysis and proactive system support. For example:

- If the fingerprint image quality is consistently lower at one location, is this an indication that the platen is not being cleaned as regularly as needed?
- If the transaction times are consistently higher in one location, is that an indication that renewed training is required?

The solution, however, is to have this information readily available to the administrator or data analyst, yet ensure that the protected data stays encrypted. Technically, the encryption is at the object level and thus provides enforced role based access at a fine granularity. The screen shot below shows one view of such data.

The screen shot shows the Enrollment Source (the source ID*ENROLL KIOSK), the time received from the source, the Enrollment Type (for which organization was the information captured), the date submitted (data can be transmitted to the sponsoring organization immediately or aggregated and submitted periodically, say daily) and the Submission Result to a 3rd Party system (in this case the Card Management System) along with a confirmation of receipt).

Performance Reporting

Performance reporting is done centrally based on transaction and equipment availability information from each KIOSK. A generalized reporting tool is provided to allow user defined and ad hoc reports. Typical reports include:

- Transaction reporting for gross transactions in a period, transactions by locations in a period, transactions by time of day by location in a period
- Steps that had to be re-performed overall and by location
- Transaction step times - to assess if there are anomalies in the process or the equipment in a location
- Successful transactions vs. abandoned transactions – and exact step at which a transaction was abandoned.
- Equipment unavailable reporting

As noted above, the rich selection of transaction data allows effective analysis of the information. Generally, the transaction data with fine grain role based encryption is moved to an appropriate database to allow more in depth analysis, backup and disaster recovery, and reporting.

Standards Based

Biometrics and enrollment services are all about standards. The MBE KIOSK is designed to meet the prevailing and applicable biometric, health and safety standards.

Examples of current integrated standards are:

Fingerprint:

FBI, PIV-071006, FIPS 201, ANSI
INCITS-378

Face Image:

ANSI INCITS-385, ICAO, ISO/IEC
19794-5

Iris:

ISO/IEC 19794/19785

Document Scanner/Readers:

IATA: TAT and ATB ICAO 9303 ISO
14443B

KIOSK:

ADA 1991/2010, Equality Act 2010
CSA, UL, FCC, CE

Data Security:

ANSI X9.69, ANSI X9.73



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