

## Leveraging NEC's Advanced Biometric Solutions for Robust Digital Identity Verification and User Authentication



# Unpacking the Biometric-Based Technology, Verification Methods, Platform Support, and Integration Options of the Digital ID Solution

## Introduction

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Establishing trust in online interactions is vital with an ever-increasing digital presence today. NEC's Digital ID solution leverages 50+ years of R&D investments to produce innovative, world-class facial recognition technology.

These investments allow NEC to provide a secure and easy-to-use identity verification and authentication system for businesses of any size. Our solution offers a robust way to verify and authenticate identities, reduce fraud, and enhance user experiences, aligning perfectly with the current demand for digital security and seamless online experiences.

NEC's advanced biometric solutions, including face recognition and matching algorithms, are certified as a trusted leader in protecting communities and ensuring public safety. In fact, the National Institute of Standards and Technology (NIST) matching algorithm recognition benchmarks have consistently proven that NEC's biometric technologies have the fastest and most accurate face and fingerprint recognition algorithm and have the most resilient facial recognition technologies for viewing low angles, low-resolution images, and poor image quality.

- **Enhanced Security:** Through facial recognition and liveness detection, our Digital ID solution significantly lowers the risk of identity theft and fraud, fostering a safer online environment.
- **User Convenience:** By eliminating the need for complex passwords and enabling faster verification processes, our solution offers users a seamless and efficient experience. Plus our service is quick and easy to deploy, cloud managed and you can get started right away with little to no upfront cost.
- **Versatility:** Our Digital ID solution can be integrated into various industries and applications, from banking and healthcare to retail and education, enabling digital identity verification wherever it's needed.

## Solutions

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### Digital ID (DID) SDK (Software Development Kit) / API (Application Programming Interface)



Customers can use NEC's Digital ID Software Development Kit (SDK) and Application Programming Interface (API) to build custom solutions incorporating biometric digital IDs with the NEC IDMS (Identification Management System). The SDK provides pre-built modules for biometric recognition, simplifying the integration process. The API ensures seamless communication between the customer's system and NEC's biometric technology. With these tools, customers can create secure, user-friendly solutions, boosting their capacity to authenticate users and verify credentials with superior accuracy and security.



## Digital ID -

A **Digital ID** paired with Facial Recognition Biometrics takes online identity verification to a higher level of security and convenience. It is a trustworthy online representation of an individual, established by verifying unique facial attributes. Here is how it works:

- **Authentication:** The system ensures the claimed identity by analyzing the person's unique facial features, thereby establishing digital trust. Unlike passwords, facial features are special to each individual and cannot be easily replicated or stolen. This biometric attribute and static identifiers like a username constitute multi-factor authentication, further enhancing security.
- **Authorization:** Once the system successfully authenticates an individual through facial recognition, it determines what resources or services the authenticated entity can access. For example, once the facial recognition system verifies a user's identity in a banking scenario, it can authorize transactions, providing a secure and user-friendly method for online banking.

Therefore, a Digital ID using Facial Recognition Biometrics offers a robust and intuitive solution for verifying identities, enhancing security and user experience in digital interactions.

## Digital Wallet

A Biometric Digital ID, combined with NEC's advanced technology, can significantly enhance the security and functionality of a digital wallet. It operates by using the unique biological traits of an individual for authentication purposes.

- In the context of a digital wallet, NEC's Facial Recognition Biometrics can be used to authenticate online and at physical point-of-sale locations. It involves a simple scan of the user's face, which compares the biometric data against the Digital ID stored within the system, thus verifying the user's identity and authorizing transactions.
- Additionally, a biometric digital wallet could store other identification documents like driver's licenses or health cards. These can also be authenticated through facial recognition, verifying the holder's credentials when needed. For instance, the digital wallet could confirm the age of a buyer when purchasing age-restricted goods.

In this way, NEC's Biometric Digital ID technology provides a higher level of security and convenience to digital wallet users, offering a seamless and secure method for conducting electronic transactions and authenticating user credentials.

## Benefits

Our Digital ID solution, integrating NEC's innovative biometric technology, offers an unparalleled defense against fraudulent activities, ensuring data protection and robust user authentication. This advanced system is engineered to fend off various attacks, such as camouflage and spoofing attempts, drastically decreasing the possibility of identity theft or data breaches. It further strengthens authentication processes and enables swift and reliable age or identity verification, adding an extra layer of security.

**Key benefits of this solution include:**

- **Superior Fraud Protection:** Advanced biometric algorithms provide high-level security, effectively preventing camouflage and spoofing attacks.
- **Robust Data Security:** The solution minimizes the risk of data breaches by authenticating users through unique biometric data.
- **Swift and Accurate Authentication:** Users are quickly authenticated based on their unique biometric data, ensuring seamless and efficient access to services.

# Unpacking the Biometric-Based Technology, Verification Methods, Platform Support, and Integration Options of the Digital ID Solution

- **Easy Integration and User-Friendly Interface:** With the help of NEC's SDK and API, integrating the Digital ID solution into existing systems is straightforward, providing a user-friendly experience.
- **Versatile Identity Verification:** Beyond basic identity authentication, the solution can verify a user's age or other attributes, broadening its applicability across multiple sectors.

## The Technology Behind the Digital ID

### Biometrics

Our Digital ID solution leverages advanced biometric technologies to ensure secure and accurate identity verification. Here's a look at how these technologies work together in our solution:

- **Face Recognition:** We utilize sophisticated facial recognition algorithms that analyze multiple facial features to create a unique biometric profile for everyone. This profile is then used to verify identity in real-time, enabling secure access and transactions. The system is designed to adjust to variations in lighting, facial expressions, and aging, maintaining high accuracy levels at all times.
- **Face Matching:** Our solution further improves identity verification accuracy through face matching. This process involves comparing the live facial image captured at the verification point with the biometric profile stored in the system. A match confirms the individual's identity, ensuring only authorized persons gain access or perform transactions.
- **Liveness Detection:** To combat injection, deep fake and spoofing attempts like the use of photos, videos, or masks, our solution integrates liveness detection capabilities. This feature discerns between live human faces and imitations by analyzing elements such as eye blinking, facial movements, and texture patterns. It adds a layer of security to our Digital ID solution, providing robust protection against fraudulent activities.

### Identify Verification

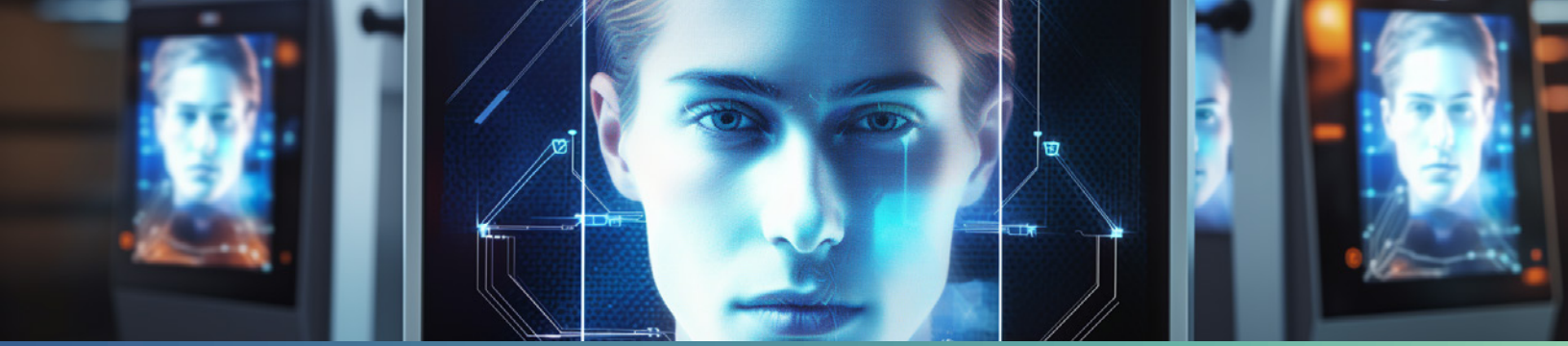
Our Digital ID solution harnesses two primary methods for identity verification:

- **Image to Image:** This method compares two images – one captured in real-time and another previously stored. Using advanced algorithms, the system matches facial features from both images. If the features align accurately, identity is verified. This method is beneficial in scenarios where one-on-one verification is necessary, such as comparing a person's live image with their ID card image.
- **Image to Database:** Our solution compares a captured image with a database of stored biometric profiles. The system scans the database to find a matching profile, verifying the identity when a match is found. This method is vital for large-scale verifications like user logins, where the image is compared to a database of authorized users to grant or deny access.

### Platform Support

Our Digital ID solution is versatile, integrating with multiple platforms to streamline and enhance identity verification processes:

- **Mobile Applications:** Our solution is compatible with mobile applications, extending its functionalities to on-the-go scenarios. It's a perfect fit for businesses aiming to leverage biometric verification on mobile platforms, such as banking apps requiring secure user authentication or retail apps enhancing user experience with personalized suggestions based on identity attributes.



- **Self-Service Desktop Portals:** Businesses can integrate our solution into their existing self-service portals. This provides an additional layer of security and convenience, simplifying login processes, strengthening access control, and ensuring that only authorized individuals gain access to sensitive data.
- **Scanning Kiosks:** Our Digital ID solution aligns seamlessly with biometric kiosks, enhancing their accuracy and reliability. The integration offers businesses robust protection against theft and corruption while ensuring GDPR (General Data Protection Regulation) compliance. Kiosks equipped with our technology can offer secure visitor management, further strengthening office security and enhancing health and safety measures.

The beauty of our solution is that these platforms can function independently, but they're also designed to work synergistically, creating an interconnected network of secure, reliable, and efficient identity verification points.

## Integration

Our Digital ID solution provides flexible integration options to meet various business needs:

- **BaaS (Biometric-as-a-Service):** Our BaaS offering allows businesses to leverage advanced biometric technology without requiring extensive infrastructure investment. This cloud-based solution facilitates quick deployment, seamless updates, and scalable functionality. The advantages include reduced upfront costs, pay-as-you-go pricing models, high scalability, and easy access from anywhere. It's ideal for businesses aiming for rapid digital transformation with minimal disruption.
- **On-Premises:** Our solution can be implemented on-premises for businesses requiring more control over their data. This model allows full control over the data, infrastructure, and security protocols, catering to organizations with strict regulatory compliance or data sovereignty requirements. While this requires a more substantial upfront investment, it can be more cost-effective for organizations with high data volumes or specific security needs overall.

Regardless of the chosen model, our Digital ID solution ensures high security, efficiency, and reliability in identity verification.

## Application of Biometric Digital ID

Our Digital ID solution, powered by NEC's state-of-the-art biometric technology, serves various applications across various sectors. It integrates seamlessly into existing processes, from access verification to customer analytics, facilitating more secure and efficient operations. This technology opens a world of possibilities for enhancing user experience and improving business functions, providing a robust, reliable, and versatile solution.

- **Authentication:** Ensuring the authenticity of a user before granting them access.
- **Mobile Account Registration:** Enhancing the registration process of mobile accounts with biometric identification.
- **Access User Verification:** Verifying user identity before granting access to certain services.
- **Transaction Verification:** Securing transactions by verifying the identity of the person making the transaction.
- **Securing Mobile Banking:** Enhancing the security of mobile banking applications with biometric identification.
- **Credit Card Theft Prevention:** Using biometric identification to prevent unauthorized usage of credit cards.
- **Preventing Fraud in Money Transfers:** Ensuring the legitimacy of money transfers through biometric verification.
- **Physical Access Control:** Regulating physical access to premises with biometric identification.
- **Patient Identification:** Using biometric identification to accurately identify patients in healthcare settings.
- **Secure Access to Medical Records:** Using biometric identification to protect access to sensitive medical records.
- **Healthcare Insurance Fraud Prevention:** Utilizing biometric identification to prevent fraudulent insurance claims.

- **Profile Authenticity:** Ensuring the authenticity of online profiles with biometric identification.
- **Age Verification:** Using biometric data to verify a user's age.
- **Preventing Duplicate Profiles:** Using biometric identification to avoid duplicate profiles in databases.
- **Seamless Checkout Experience:** Streamlining the checkout process in retail through biometric identification.
- **Attendance and Time Tracking for Employees:** Using biometric identification for accurate attendance and time tracking.
- **Self-Service Kiosks:** Enhancing the security of self-service kiosks with biometric identification.
- **Contactless Deliveries:** Securing contactless delivery services with biometric identification.
- **Customer Service Improvement:** Enhancing customer service through quicker and more secure identification processes.

And these are just some of the potential applications. Biometric Digital Identification can be employed in many other contexts as well.

## Why NEC Biometrics

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NEC's biometrics algorithms are rated #1 for speed and accuracy by the National Institute of Standards and Technology. It leads the industry in verification across demographics and with nose and mouth covered by a face mask. Liveness detection to prevent spoofing is built into the NEC digital identification Platform.

NEC maintains its standing as a pioneer and innovator in the biometrics and digital identity services space by continually investing in and improving its algorithm with a robust R&D budget.

## Contact Us

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Contact our Digital ID experts today for insights on tailoring our solution to your specific needs.

For more information, please contact us at [digital\\_id@necam.com](mailto:digital_id@necam.com) or visit <https://necam.com/digitalid> and complete our contact registration form.