

Malaysian National Digital Identity (NDID) Program



A Frost & Sullivan White Paper
In conjunction with NEC

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Executive Summary

Malaysia's National Digital Identity (NDID) initiative represents a significant strategic move driving the transformation of the country's digital services sector. NDID is a verifiable trusted system that aims to authenticate an individual's digital identity in the cyber world without replacing MyKad. Its main objective is to verify the identities of individuals who access, perform transactions, and digitally sign e-government services.

As a trusted digital identity platform or Verifiable Platform of Trust, the NDID is expected to benefit individuals, organizations, and government agencies. These benefits include reducing the time for ID verification and detecting fraud cases, increasing operational efficiency for public and private sectors, and improving the user experience. However, lack of awareness, technology immaturity, stakeholder readiness, and public concerns over data privacy and security are among the program's challenges.

This whitepaper aims to provide a comprehensive overview of the NDID program in Malaysia. It highlights the primary benefits and challenges in implementing the program and provides strategic recommendations for the country to ensure its successful implementation and sustainable growth in the long term.



Malaysia's National Digital Identity (NDID) Program

Malaysian Digital Landscape

Malaysia's tremendous growth in digital activities in the past 5 years is thanks to the widespread internet and digital devices penetration rate across societies, businesses, and government agencies. The Malaysia Digital Economy Blueprint 2021 states that the country has:¹



90.1%
of households
with an internet
connection



135.4%
mobile cellular
penetration



93.1%
of the population
use smartphones to
access the internet



70.2%
4G mobile
subscription

In addition, Malaysia has a high rate of mobile broadband access among households, with 88.8% in urban and 80.4% in rural areas. Widespread internet access and digital devices usage have led to increased activities in the digital space, with:



66%
of internet users
using mobile banking



144
e-payment transactions
per capita per year



90%
of government services
available online

The COVID-19 pandemic has accelerated the adoption of digital devices and services globally, and Malaysia is no exception. The country saw a dramatic increase in the digital space in 2021, with:²



84.2%
of the population using
the internet and 122.8%
using mobile connections



99.2%
of the total population
using smartphones



96.7%
of users accessing
the internet using
mobile devices



75.8%
of the population using
computers (laptops
and desktops)



32.3%
of the population
using tablet devices



86.0%
of the population active
on social media
networks

1 <https://www.epu.gov.my/sites/default/files/2021-02/malaysia-digital-economy-blueprint.pdf>

2 <https://datareportal.com/reports/digital-2022-malaysia>

However, the surge in internet usage and digital devices has also led to a significant rise in online fraudulent activities, mainly identity theft. From 2017 to July 2021, cybercrime and online fraud cases caused a total loss of about RM2.23 billion (USD517 million) in Malaysia.³ During this period, Malaysia recorded:

67,552 cyber-crime cases with 23,011 e-commerce scams and 6,273 investment scams

Drastic increase in commercial scams⁴ at 71,833 cases between 2020 and 2021, amounting to more than RM5.2 billion (USD1.166 billion) in losses

Continued rise in online scams:⁵

- From 13,703 cases in 2019 to 17,227 cases in 2020 and 20,701 cases in 2021
- 12,092 cases amounting to losses worth RM414.8 million (USD92.85 million) in the first 6 months of 2022

Security incidents in Malaysia also increased significantly in 2021, with:

- 319 identity theft cases from Jan to Aug 2021 compared to a total of 517 in 2020⁶
- 10,016 cyber incident cases in 2021, with 71% of them being fraud related⁷

Identity theft has become a tangible threat for Malaysians, as:⁸

- 1 out of 8 people suspect their identity is stolen
- 1 out of 14 people know for sure that their identity is being stolen

Need for a Trusted Digital ID Verification Platform

Extensive internet usage and the growing popularity of digital devices and services have led to a significant rise in digital identities. Moreover, with over 90% of government services available online and a considerable number of commercial and business activities conducted via the internet, it is critical for Malaysia to establish a reliable digital authentication platform to enable individuals, organizations, and government agencies to carry out online transactions and service deliveries swiftly, seamlessly, securely, and efficiently.

The COVID-19 pandemic highlighted the importance of establishing a centralized digital ID platform, especially when the country had to implement the Movement Control Order to contain the spread of the virus. As a result of the lockdown, both public and private organizations were forced to adopt new norms and practices to work and do business. Many government functions and services, business activities, such as retail, banking, insurance, education, and individual activities, had to move online, leading to a substantial increase in the number of digital identities and digital ID service providers.

³ <https://www.nst.com.my/news/crime-courts/2021/07/708911/malaysians-suffered-rm223-billion-losses-cyber-crime-frauds>

⁴ <https://theedgemalaysia.com/article/pdrm-over-rm52-billion-lost-scams-two-years>

⁵ <https://www.nst.com.my/news/nation/2022/09/834531/online-scam-cases-increasing-malaysia>

⁶ <https://www.experian.com.my/experian-cybersecurity-malaysia-growth-in-digital-transactions-increases-risk-of-identity-theft#:~:text=According%20to%20CyberSecurity%20Malaysia%27s%20Cyber999,totals%20of%2051.7%20in%202020.&text=Despite%20improvements%20in%20technology%2C%20cybercriminals,access%20to%20consumer%27s%20online%20accounts.>

⁷ <https://moneycompass.com.my/2022/01/14/cyber-security-kpmg/#:~:text=From%20January%20to%20December%202021,Malaysia%20Computer%20Emergency%20Response%20Team>

⁸ <https://www.nst.com.my/business/2021/04/685470/identity-theft-tangible-threat-malaysia-fico-survey>

However, government and private digital service providers offer different digital identity verification management systems, which has resulted in multiple issues, including:⁹

- System fragmentation issues resulting in longer preparation time and higher maintenance costs
- No standardization in identity verification
- Personal data security and privacy concerns
- Poor user online experience due to the lack of a unified, trusted ID platform and single sign-on (SSO) capabilities

This has led to an urgent call to establish a centralized digital ID platform to strengthen digital governance, accelerate the realization and adoption of digital services (e-services) in the public sector, and make online transactions more secure.

What is Malaysia's National Digital Identity?

The National Digital Identity (NDID) platform is a centralized and trusted system offering digital identification and verification services to government organizations, private service providers, and individuals. Its purpose is to enable secure online verification and authentication of identity, granting access to a broad spectrum of online services such as e-government, online banking, insurance, e-commerce, telcos, healthcare, education, and hospitality. Citizens (end users) can digitally verify their identity when accessing online services from government agencies and other service providers.

The NDID

Is a trusted and secure platform that verifies and authenticates an individual's identity when accessing digital services and performing any digital transaction with public and private service providers

Targets all citizens and permanent residents in Malaysia

Is designed to complement the existing MyKad as proof of citizenship and will not replace it in the following cases:

- Performing digital/online transactions anytime and anywhere
- Accessing different public and private service providers (relying parties) with seamless integration, user experience, and hassle-free usage
- Helping reduce fraud cases linked to the adoption of multi-factor authentication (MFA) in biometric technologies
- Saving time and cost of the ID verification process as users do not need to show proof of ID at physical premises (e.g., counters, kiosks, offices)

⁹ <https://www.malaysia.gov.my/portal/content/30592>

NDID Ecosystem

The NDID ecosystem has multiple key stakeholders:



Identity Provider

- The National Registration Department of Malaysia (Jabatan Pendaftaran Negara [JPN]) is responsible for citizen and resident registration and provides a National Digital ID to Malaysian citizens and permanent residents.
- JPN oversees the overall implementation of the NDID program, ensuring the privacy and security of users' personal information and biometric data.
- JPN will integrate its identity database with a host of industry leaders, including Bank Negara Malaysia, Malaysian Communications and Multimedia Commission (MCMC), Road Transport Department Malaysia (Jabatan Pengangkutan Jalan [JPJ]), and the Royal Malaysia Police (Polis Diraja Malaysia [PDRM]), to provide seamless verification and user experience.



Regulators

- Government authorities are responsible for regulating (i.e., issuing policies, regulations, circulars, laws, and acts) and supporting the implementation and adoption of the NDID program.
- These authorities are the primary industry leads:
 - JPN (issues regulatory requirements for users and service providers in issuing digital identities)
 - Bank Negara Malaysia
 - MCMC
 - National Security Commission
 - JPJ
 - CyberSecurity Malaysia



Relying Parties

- These are public and private sector service providers offering online services to users and rely on the NDID platform for digital identification and verification.
- To use the platform, relying parties can connect with their relevant industry leads, such as Bank Negara, MCMC, JPJ, and PDRM, for seamless verification and user experience.
- Relying parties are required to perform biometric identification and user know-your-customer (KYC) checks to ensure the security and authenticity of the digital identities used on their platforms.
- Key players include:
 - Government agencies (e.g., ILKAP, SPRM)
 - Commercial banks (e.g., Maybank, CIMB Bank, Public Bank)
 - Finance institutes (e.g., Alliance Financial Group, Hong Leong Financial Group)
 - E-commerce platforms (e.g., Shopee, Lazada)
 - Telcos (e.g., Maxis, Digi, TM, TIME dotCom)

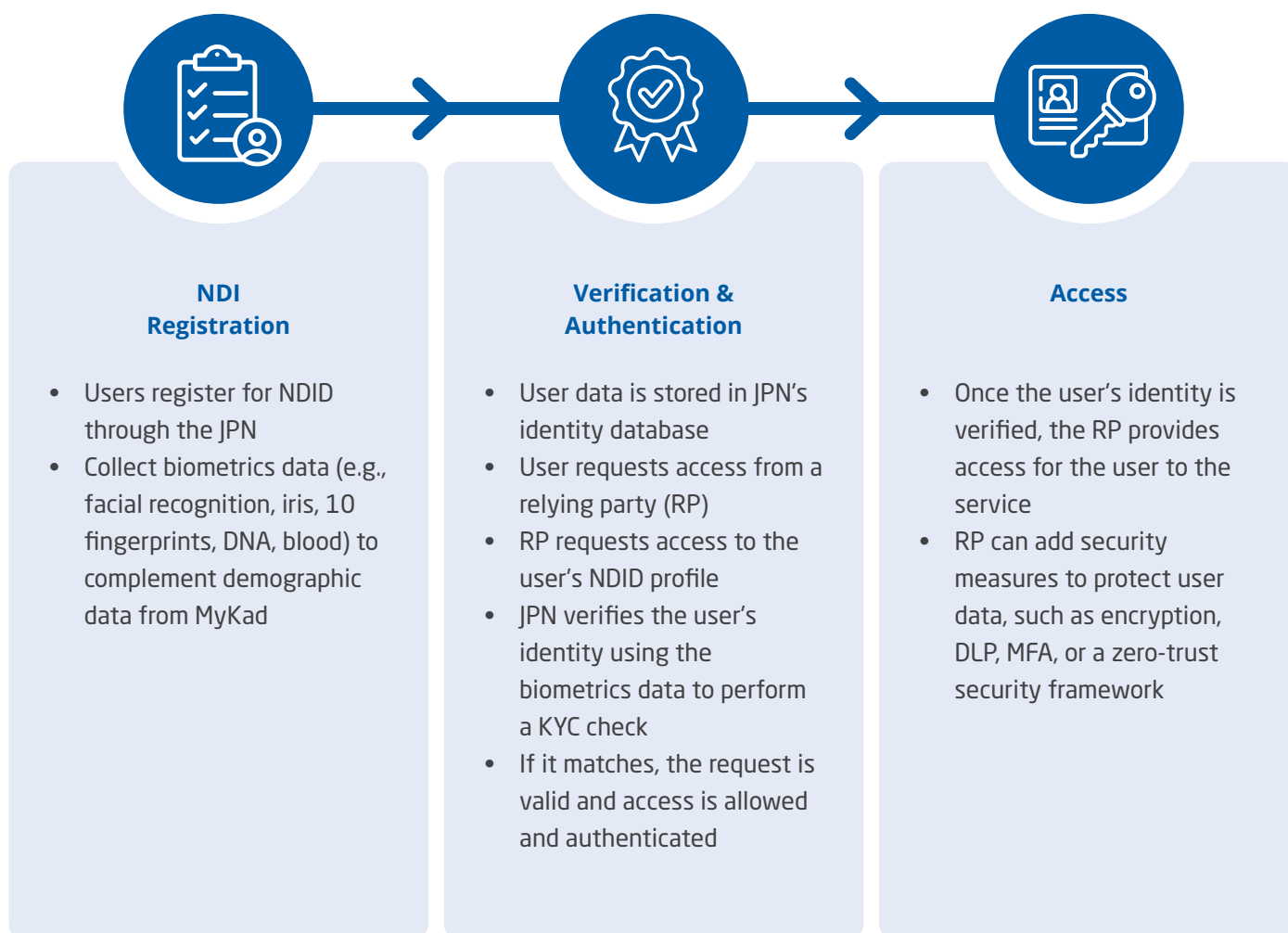


Users - Individuals

- Users refer to individuals who are Malaysian citizens or permanent residents using a digital ID to perform online transactions through services from government agencies and private companies in various sectors.

How It Works

As a centralized and trusted platform, the NDID system integrates with the databases of various government agencies and industry leads, such as the JPN, Bank Negara, MCMC, JPJ, and PDRM, to provide digital identification and verification services to government organizations, private service providers, and individuals. There are several steps for the system to work effectively.



Key Technologies in NDID

The NDID program requires various technologies to ensure successful system implementation and performance, as well as the security and privacy of users. Primary technologies include:

Authentication



- A robust model of authentication system must be established with a secure and trusted network in a digital identity management system.
- JPN will provide the authentication function using MFA technology with 2 data models:
 - Model 1: Demographic data from MyKad
 - Model 2: Demographic data from MyKad and biometric data, including facial recognition, iris, DNA, and blood type

Storage and Networking



- The system will use 3 types of storage - distributed file storage, block storage, and object storage systems - to store user data.
- NDID data will be stored in its own database separately but can be integrated with MyKad for further information exchange and verification.
- The system will leverage existing JPN and government networks (centralized under MyGov*Net - Government Integrated Telecommunications Network that interlinks networks among government agencies).

Public Key Infrastructure (PKI)



- The NDID program uses PKI (back-end core engine to issue secure digital IDs) to establish a secure and trusted communication channel between stakeholders, including government agencies, private service providers, and users. PKI requires digital certificates, encryption, and digital signatures to ensure secure data transfer.

Security



- Users access data and services via a common application programming interface (API).
- Online transaction data and communication are encrypted using cryptography technology and the latest encryption algorithms to ensure the confidentiality, integrity, and authenticity of data and transactions on the NDID platform.
- The system uses Digital Identity Management technology to protect digital identities.
- It follows the cybersecurity framework standard for the security of the digital ID by the National Cyber Security Agency (NACSA).

Benefits of NDID

The NDID program is a new form of digital identification and self-authentication using biometric technology such as fingerprints, facial or iris recognition for individuals when conducting business online. It is not meant to replace the existing MyKad system and is expected to provide benefits for individuals, government organizations, and private companies by creating a trusted authentication platform that saves time when accessing online services, such as banking, healthcare, telecommunications, and government services.

For End Users (Malaysian Citizens and Permanent Residents)

The NDID is a centralized system that allows individuals to access government and private sector services quickly and conveniently online without the hassle and cost of traditional authentication methods, such as kiosks, branch offices, and counters. With the NDID, users in Malaysia can achieve various benefits:

- Streamlined interactions between the government and private sector will lead to more productive operations, improving service delivery quality for citizens and end users.
- Faster and more convenient onboarding of multiple services (e.g., banking, telcos, e-government) with the digital ID verification system will help users save time on verification and authentication processes.
- Digital ID verification can minimize the risk of errors, identity theft, and online scams, improving user experience and confidence in using online services.
- End users, including residents in rural areas, can access various services through digital platforms, enhancing financial and social inclusivity.
- A trusted digital ecosystem will unlock new opportunities for people to explore and engage in new businesses.

For Government Authorities

Implementation of the NDID program in Malaysia is expected to:

- Support efficient government digital services and stimulate the development of the digital economy in an inclusive manner
- Increase confidence in government and private online services
- Enable faster and more secure ID verification of end users, which will help reduce the number of fraud cases and drive the nation toward digital transformation as well as elevate trust and user safety for online interactions
- Lead to improved online service quality, reduced service costs, and accelerated adoption of digital governance and services
- Create a centralized identity system that ensures security, integrity, and social benefits and aligns with other government digital initiatives

For Relying Parties (Business Services Providers)

The NDID will help:

- Improve efficiency and cost savings in user registration and maintaining digital identity verification systems
- Encourage the development of new online services in areas such as fintech, platform economy, and app economy
- Promote better management of digital identity and fraud prevention
- Create user confidence in using online services across different industries, including education, health, travel, business, communications, inter-government, and country-to-country verifications
- Improve user experience to help boost business operations and revenue through reduced time and operating expenditure

NDID in Malaysia's Digital Economy

Malaysia's digital economy is an increasingly important part of its economic landscape, with the country making significant strides in recent years to promote digitalization and innovation. The digital economy has the potential to provide a wide range of benefits and business opportunities, including:

Driving economic growth (particularly for e-commerce, fintech, education, and hospitality)

- Malaysia is on course to contribute at least 25.5% of its GDP by 2025 through the digital economy.¹⁰
- Digital transformation has the potential to generate RM257.2 billion (USD61.3 billion) in economic value for Malaysia by 2030,¹¹ contributing to the country's GDP growth, cost reductions, revenue increases, and productivity improvements.

Increasing the productivity and efficiency of individuals and business organizations

- Improving access to digital services for all Malaysians, particularly those in remote and rural areas. It is reported that nearly 97% of people utilized the internet in 2021, up from 84% in 2019. This is extremely important because ICT infrastructure is a fundamental building block of the digital economy.¹²
- The government wants to create 500,000 new jobs (e.g., software development, digital marketing, and data analytics), boost productivity by 30% across all industries, and encourage 875,000 micro, small, and medium-sized businesses (MSMEs) to utilize e-commerce by 2030.¹³

Improving the ability to integrate with the global and regional economy to enhance international competitiveness

- A crucial element of MyDIGITAL initiative is MSME digitization to boost economic competitiveness and generate more opportunities to develop and grow locally, regionally, and globally through digital revenue streams. This goal includes assisting 800,000 MSMEs with digitalization.¹⁴

10 <https://www.mida.gov.my/mida-news/digital-economy-able-to-contribute-25-5pc-towards-malysias-gdp-by-2025/>

11 <https://accesspartnership.com/wp-content/uploads/2023/03/Malaysia-Digital-Transformation.pdf>

12 <https://documents1.worldbank.org/curated/en/099063502042320186/pdf/P179681008aa910db0bca9057d2dfa76bed.pdf>

13 <https://accesspartnership.com/wp-content/uploads/2023/03/Malaysia-Digital-Transformation.pdf>

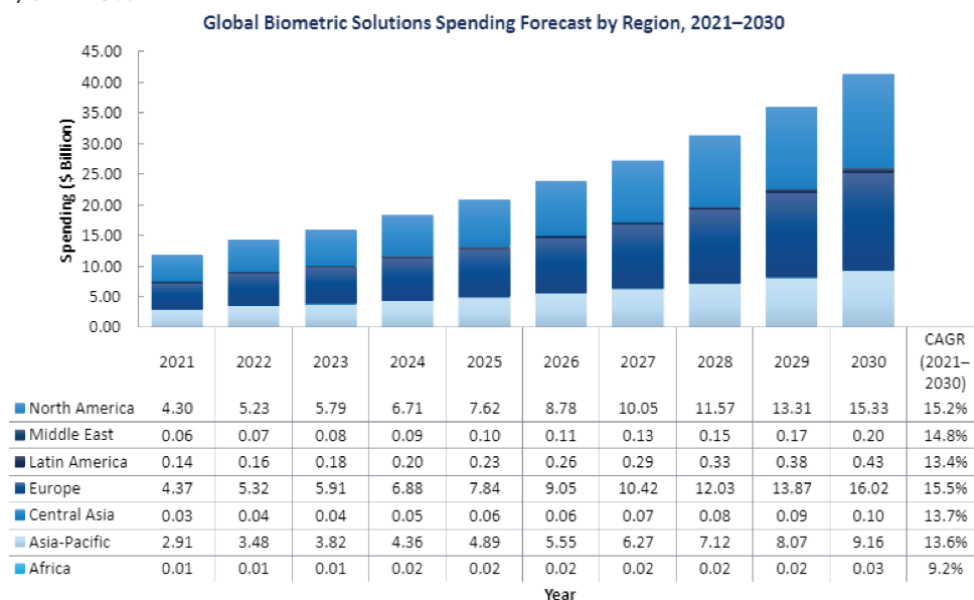
14 <https://documents1.worldbank.org/curated/en/099515009292224182/pdf/P17608901a9db608909f5b02980d48c4e28.pdf>

The NDID is based on the National Digital ID Framework developed in 2020 and is identified as one of 12 initiatives in the Blueprint under Thrust 1, "Drive Digital Transformation in the Public Sector". It is designed to serve as a trusted digital certification and verification for individuals, ensuring flexible and secure online transactions while reducing administrative costs. It is expected to play a crucial role in Malaysia's overall Digital Economy strategy.

- While NDID does not set to solve all issues, it aims to serve as a key enabler for the country's digital economy.
- The program indirectly supports other initiatives, including Government Online Services 2.0 (GOS 2.0), the Financial Sector Blueprint 2011-2020 by the BNM, KYC electronic usage, and the National E-Commerce Strategic Direction Plan by the Ministry of International Trade and Industry (MITI).
- Through secure and safe digital identity ecosystems, Malaysia can access cross-border digital services, regionally and internationally.
- Complemented by the implementation of digital signatures in public sector online services, NDID aims to enable end-to-end digital transactions for individuals, enhancing security and trust through a tamper-evident seal embedded with a person's fingerprint data permanently.
- By the end of 2025, the government aims to form a team of in-house experts who will identify and drive the adoption of digital technologies in policy formulation and decision making.
- In the second phase, the government aims to digitize 80% of government services end-to-end and achieve full implementation of the NDID program by 2025,
- In the third phase, 85% of end-to-end online government services will be integrated into the one-stop MyGovernment Online Services Portal (MOSP) by 2030.

Because of its benefits and huge role in digital economy, investment in biometric solution and digital identity management technologies are forecast to increase significantly in Malaysia and across countries globally in the next few years. A recent survey by the data analytics company FICO in its 'Consumer Digital Banking Survey'¹⁵ also showed that 78% of Malaysians are willing to provide their biometric information to their banks, including fingerprint authentication and facial scans and eye scans.

According to a recent Frost & Sullivan report,¹⁶ spending for biometric solutions in 2021 reached USD11.82 billion globally, with much of this resulting from many vertical markets finalizing biometric-based identity systems purchased during the pandemic. Investment in biometric solutions is expected to increase at varying levels. By 2026, year-over-year growth rates are forecast to stabilize between 14.3% and 14.9% annually until the end of the decade. This will result in total global spending reaching USD41.27 billion by 2030 and achieving an overall compound annual growth rate (CAGR) of 14.9%.



15 <https://www.retailbankerinternational.com/news/malaysians-show-increasing-preference-for-biometric-authentication/>

16 Growth Opportunities in the Global Biometric Solutions Industry (frost.com)

Frost & Sullivan forecasts that the digital identity management (DIM) has the potential to unlock investments worth USD79.92 billion globally by 2030.¹⁷

Investment in digital identity programs can lead to an inclusive economy and drive economic gains.

Approximately 1.1 billion people lack official proof of identity globally, of which 45% are from the poorest countries, reflecting the higher gap in economically marginalized and developing countries.

Prominent Digital Identity Program Investments, Global, 2021



Canada
USD185 million
raised in a government-led digital identity supercluster bid



Australia:
USD532 million
invested in the myGovID digital identity program



Philippines
USD583 million
budgeted for the PhilSys national ID program



Estonia
USD48 million
invested in the eID program



United Kingdom
USD218 million
investment placed in the GOV.UK Verify program



India
USD1.21 billion
spent on the Unique Identification Authority's Aadhar initiative

Note: Enrolment, registration, authentication, and security services require a combined investment of USD7-USD10 per person.



Potential Investment
in Digital Identity
Management, Global, 2030

**USD79.92
billion**

Source: Government websites and regional publications; Frost & Sullivan

A strong digital identity strategy can bolster national economic growth. Countries that fail to implement this will lose the opportunity to connect, communicate, and empower citizens in an increasingly digital-first environment. According to Frost & Sullivan's research, as people move rapidly from establishing a physical identity environment to a more versatile digital identity environment, enterprises must develop solutions that reduce or eliminate the likelihood of digital identity theft or fraud. Over 70% of identity start-ups globally focus on digital identity, authentication, and identity monitoring. Enterprises realize that identity is a core component of payments and financial services. Partnering with governments to provide digital identity, authentication, and monitoring services will open new revenue streams for businesses, particularly in emerging markets.

Challenges in Implementing NDID

Although the NDID program can offer a significant number of benefits, implementation of the program in Malaysia faces several challenges:

Lack of trust and awareness



- Most citizens are not familiar with the NDID concept. The presence of multiple disparate digital identity services could confuse and hinder the realization of the NDID program.
- The success of the NDID will depend on the level of public trust and awareness. However, the awareness and trust level of citizens and business communities toward the program remains low, making it difficult for the government to engage stakeholders.

Concerns over data management, security, and privacy



- Users are concerned about the security and privacy of the information authorities collect. "How is my personal data protected and used?" has become the most asked question regarding NDID implementation.
- As the main party to implement the program, JPN lacks the experience and expertise needed to implement security measures to protect users' personal data, particularly in the digital ID context.

User hurdles and hesitation



- Rolling out NDIs can present challenges, particularly when balancing various factors, such as ease of use, convenience, and the accessibility of essential online government services during the initial rollout phase, particularly in rural, remote areas where people have limited access to digital devices or internet connectivity.
- Public adoption of NDI enrollment relies heavily on the degree of necessity and convenience online government services offer users during the initial phase.
- The government's nationwide rollout of the system may take extensive time.

Weak regulation and law enforcement



- There is a need for clear regulations and guidelines for processing the personal data service providers and government agencies collect. Despite Malaysia having many security and data protection acts, there are grey areas and gaps in personal digital data protection.
- As the NDID is a non-mandatory program and there is no enforcement for adopting the digital ID, it will take longer for Malaysia to fully roll out and implement the system nationwide, resulting in huge losses in time and cost.
- Law enforcement in Malaysia for cybersecurity and personal data protection remains weak. There is also a mismatch and overlap in terms of responsibility between the police and JPN. While the JPN should handle digital ID management and protection, enforcement of general personal data protection is now parked under the PDRM, which has caused confusion in the enforcement process.

Technical challenges



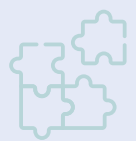
- Although Malaysia has the technology and resource readiness to implement the NDID, there are many challenges that relevant parties face. Ensuring a robust technical infrastructure, including reliable and secure networks, data storage, migration, and integration systems, have become the most critical challenges for the program.
- Data migration and integration:
 - Service providers and government agencies will need to develop application programming interfaces (APIs) to integrate with the JPN database, which will require significant time and cost investments for development.
 - However, the big question is how JPN can support API integration for data exchange between MyKad and the NDID. As JPN uses a government network (provided by MAMPU), it is difficult for private sector service providers outside the government network to integrate their APIs with the JPN system to pull data for digital verification.
 - This requires careful study and efforts in technical design to ensure that all parties involved in the program have the required infrastructure (i.e., network, data storage, security, and other supporting technologies) and applications. The challenge is that not all government agencies, regulators, and service providers have the same pace and readiness to adopt technologies and technical designs to support the program.
 - To fully utilize NDIs in the commercial space, personal data on the NDI platform must be enriched and fully integrated across the identity provider (JPN), regulators, government agencies, service providers, and other relevant parties.

High implementation cost



- The cost to implement the program nationwide is expected to be high for all stakeholders, authorities, service providers, and users. JPN is expected to charge organizations participating and utilizing the digital ID, which could discourage user participation, slowing the implementation process.
- Related costs include expenditure for NDI registration with JPN, collection fees, resources, and separate information systems for data processing, storage, analytics, and platform and application development for digital identities.

Lack of coordination among government agencies and collaboration with the private sector



- NDID implementation involves multiple government agencies and stakeholders, which can create coordination challenges. However, collaboration among stakeholders in Malaysia remains weak and slow due to the gaps in perception, interests, and business priority.
- As a result, the government needs to ensure that all agencies work together effectively and efficiently to ensure the project's success.

Key Points to Consider - A Frost & Sullivan Perspective

To overcome the challenges and ensure the successful implementation of NDID in Malaysia, it is important for the government to collaborate with industry stakeholders and citizens. Several key strategies can be considered to address the issues related to privacy, security, accessibility, and sustainability, including:

Raising awareness and building trust

- To promote user adoption and accelerate the development of digital government and business services, it is recommended that the government communicate the benefits of the NDID and address any concerns or misconceptions.
- The government can launch public awareness campaigns in collaboration with trusted third parties to build public trust.
- Engaging with citizens and other stakeholders through mass communication, social media, and industrial workshops to help promote a better understanding of the initiative.
- The government can implement a nationwide Net Promoter Score (NPS) to understand user satisfaction and prioritize improvement areas.

Strengthening privacy and data protection laws

- The Malaysian Government should consider enhancing personal data protection, privacy acts, and cybersecurity measures to ensure personal data is collected, processed, used, and protected appropriately.
- A top-down approach from the government, law enforcement agencies, and other relevant authorities can help push for digital data protection.
- The government can provide technical resources, including secure networks, software platforms, and security solutions, to help agencies strengthen their infrastructure security posture, human readiness, and processes to protect personal user data.
- Government agencies and related stakeholders, particularly JPN and service providers, should invest in security technologies to enhance their capabilities to protect data and the platform from internal and external threats.

Enhancing service accessibility

- The government should ensure that the NDID is accessible to all users by providing necessary infrastructure, such as reliable internet connectivity and digital devices.

Improving coordination and collaboration among government agencies and the private sector

- To successfully implement the program nationwide, it is vital for the government to improve coordination among government agencies and collaboration with the private sector.
- Due consideration can be given to strategic initiatives, such as making the program mandatory for all government services, establishing a clear and coordinated governance framework, and increasing the public-private partnership (PPP) model.
- The agency Unit Kerjasama Awam Swasta (UKAS) should facilitate PPPs to encourage private sector involvement, which can play an important role in providing input to the system and implementing pilot projects among key industries, such as BFSI and e-commerce, to raise awareness of the program's benefits.
- The government should consider private partners with domain expertise, technology, and experience in designing, deploying, and managing digital identity projects at the national level, particularly in countries that have successfully implemented the system, such as India, Estonia, and other Southeast Asian countries, including Singapore and Vietnam.



NEC - A Trusted Technology Provider for the Success of the NDID in Malaysia

NEC - A Trusted NDI Technologies Provider

Implementing a national-level NDI system demands a comprehensive approach, considering the readiness of the infrastructure, ecosystem, stakeholders, and user acceptance. Therefore, choosing a trusted partner capable of implementing such a large-scale project is crucial to its success. A reliable and experienced partner will ensure the program's security, efficiency, and effectiveness while protecting citizens' personal data from cyber threats. The partner should have a proven track record of delivering high-quality services, meeting deadlines, and providing valuable insights and guidance based on its experience. This is particularly important as the NDID program impacts the entire population, and any delays or failures could have severe consequences.

NEC is a global company that has provided advanced technologies, services, and expertise globally for more than 120 years. It is one of the global ICT leaders providing network, security, software applications, and other infrastructure solutions. Most notably, NEC is seen as a market leader in digital identity, including biometrics technologies and identity solutions used by over 70 countries worldwide.¹⁸

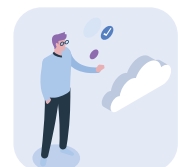
NEC has implemented over 1,000 systems utilizing its fingerprint and face recognition technologies in more than 70 countries and regions, including systems for approximately 50 airports around the world.

Figure 1: NEC's NDI Ecosystem

Benefits of NEC National Digital ID



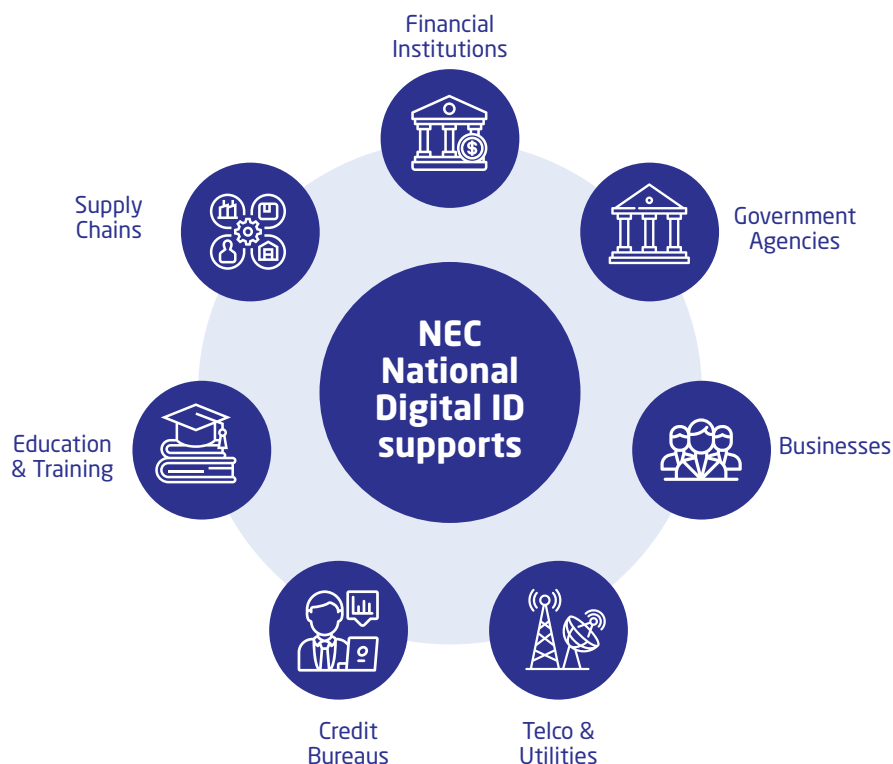
Empower Residents



Trusted Digital Ecosystem



Enables Business



Source: NEC Corporation Asia-Pacific

¹⁸ <https://www.nec.com/en/global/solutions/biometrics/index.html#:~:text=NEC's%20Biometric%20Authentication%20Technologies,their%20class%20in%20the%20world.>

As a trusted global ICT provider and specialist in original biometric authentication technologies, including facial, iris, fingerprint/palm print, voice recognition, and acoustic authentication, NEC has a proven track record of implementing successful NDID programs in many countries, such as India and Vietnam.

In India,¹⁹ NEC developed a large-scale biometric system used by the Unique Identification Authority of India for the Aadhaar Program. This national identification system uses multiple biometrics, such as facial images, fingerprints, and iris scans, to authenticate more than 1.3 billion citizens.

In Vietnam,²⁰ NEC completed the modernization of the country's national ID system using its Automated Biometric Identification System (ABIS). The Ministry of Public Security selected NEC's ABIS to upgrade Vietnam's existing system with the latest biometric technologies that support a multimodal biometric system using fingerprint and face recognition technologies. NEC's ABIS provides a secure and standardized authentication process, preventing duplicated or fraudulent identities and ensuring that the relevant services are provided to the right people.

NEC's expertise and experience in implementing national digital identity programs demonstrate its capability to deliver innovative and reliable solutions, making the company an ideal partner for any country looking to implement a similar program, such as Malaysia's NDID.

NEC's NDI solution provides a strategic and comprehensive platform that features many technologies to help government authorities accelerate the development and implementation of the NDID in Malaysia. It enables organizations to provide fast, secure, and seamless authentication and verification services for digital identities, improving user experiences and providing better security and privacy protection for their end-users.

NEC's NDI system can serve as the authoritative ID provider and complement Malaysia's existing MyKad system. It adds another layer of biometric data, including user fingerprint, blood type, iris, and facial recognition, to verify and authenticate users' identities, enabling relying parties to make accurate trust decisions based on official user information from the national identity provider (JPN). By providing SSO services, users no longer need to remember different account names and passwords for various services as they can perform digital transactions everywhere, every time, and on any device.

¹⁹ <https://www.nec.com/en/global/onlinetv/en/uidai.html>

²⁰ <https://en.pnasia.com/releases/apac/nec-s-biometrics-technology-supported-vietnam-s-new-national-id-system-353913.shtml>

NEC's NDI Key Features

NEC's NDI is designed with several built-in advanced technologies and features to protect data and prevent misuse. Key features include:

Comprehensive population coverage



NEC NDI system is designed with the flexibility to extend the service and coverage to other populations, such as foreigners with different status, to align with Malaysia's NDID program targeting its citizens and permanent residents. It also enables authorities to map a unique NDI assigned to a member in the system to their MyKad in JPN's national registration database.

Advanced biometrics technologies



NEC provides advanced biometrics technologies, such as multi-biometric matching technology, that supports fingerprint matching, facial recognition, and iris recognition, among others. These technologies are widely used globally in civil ID systems, law enforcement systems, and enterprise systems for personnel verification and deduplication of ID.

Biometrics-enforced Multi-factor Authentication



NEC's NDI supports MFA, including ID, password, OTP, PIN and passcode, digital token, and mobile authentication. It provides extra layers of protection through biometric matching technologies to reduce fraud. Users are no longer required to remember their secrets, such as PINs and passwords or use OTP for verification, which helps enhance user experiences.

Zero Trust principles



NEC adopts a Zero Trust framework to help organizations enhance security for infrastructure and data in different environments.

Advanced encryption for better data security



NEC supports end-to-end encryption for data at rest and on the move, providing the capabilities to encrypt the database and sign it to ensure compliance with regulations, data protection acts, and security standards and policies.

Support a new model of assurance



NEC's NDI solution complies with the new model of assurance specified in the NIST SP 800-63-3 Digital Identity Guideline. It supports up to NIST Level-3 Identity Assurance Level (IAL), Authentication Assurance Level (AAL), and Federated Assurance Level (FAL) for better service and security assurance.

Strong system integration



NEC's NDI system can be integrated with the existing ID database (MyKad) to enable faster user onboarding across different channels, such as mobile devices, service counters, or kiosks.

Designed with standards and best practices



NEC's NDI solution enables organizations to establish policies and regulate the governance of NDI. It is built in with many advanced security features to protect personal digital data and prevent misuse.

Extended digital ID services



NEC's NDI solution provides digital ID management, authentication functions, and other value-added functions and features as follows:

- Wallet of digital cards, such as national identity, driving license
- eKYC services for business organizations to verify and register new customers
- Member personal profile management
- Member notice and alert center
- Sharing Members' Personal Identifiable Info based on the member's consent

NEC's NDI solution provides a digital ID management system with features such as a wallet for digital cards, eKYC services for customer verification, member profile management, a notice and alert center, and secure sharing of personal identifiable information with member consent. It streamlines digital ID management, authentication, and enhances convenience and security.

Conclusion

Implementing biometric authentication and digital identity management solutions brings numerous benefits to users. These technologies enable governments and private sectors to differentiate genuine users from fraudsters, ensuring top-tier security in remote and contactless environments while respecting individuals' control over their personal data. Digital identity management solutions foster trust and transparency in partnerships between governments, public sectors, and citizens, playing a vital role in Malaysia's National Digital Identity (NDID) program.

The NDID initiative in Malaysia holds great potential for enhancing security, efficiency, financial inclusion, and access to public services for citizens. However, it faces significant challenges, including data privacy and security concerns, the digital divide, infrastructure requirements, and user adoption. Overcoming these challenges necessitates a robust legal framework, collaborative efforts between the public and private sectors, investments in IT infrastructure, and public education campaigns.

The private sector, particularly companies like NEC with expertise in digital identity projects, can contribute to the success of NDID. These companies possess the technology, experience, and resources required to address infrastructure, technology, and adoption challenges. Public-private partnerships offer an effective model for implementing NDID, leveraging the strengths and resources of both sectors to meet citizen needs while adhering to legal and regulatory frameworks.

The adoption of biometrics and digital identity management solutions has far-reaching implications for the digital economy and society. The Malaysian government is making significant efforts to promote digitalization and innovation, as the digital economy is increasingly important, given its potential to generate MYR257.2 billion by 2030. Biometric use cases, such as facial payments and contactless check-ins, are gaining momentum in the retail and hospitality industries, with their adoption expected to expand to other sectors. Digital identity management finds applications in multiple industries, including finance, smart cities, healthcare, mobility, and border security. Embracing these solutions will increase trust and security and drive the growth of the country's digital economy.

NEC has cutting-edge technologies, solutions, and extensive experience in implementing biometrics authentication/digital identity management solutions worldwide for many years. Particularly, it has provided its NDI solutions to several countries in Asia-Pacific over the last few years.



NEC creates the social values of safety, security,
fairness and efficiency to promote a more sustainable world
where everyone has the chance to reach their full potential.

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