

Integrated Security Solutions



Breakthroughs in Public Safety

Public safety has long been a key consideration for government, public transit and business. Some organizations simply require higher levels of security — but how do they get it? Maintaining security in facilities begins with controlling who is granted access to the property and the information. Whether airport terminals, business campuses or power plants, access control is central for uninterrupted operations and the safety of citizens.



Ideally, integrated security solutions for preventing illegal entrance, and theft or financial loss must be infallible. Although no single system can claim to be completely flawless, layering multiple security technologies can leverage the capabilities of each technology, overcoming the limitations of any single technology.

From a practical standpoint, security solutions must be cost-effective, and simple to deploy and maintain. Improvements in reliability, accuracy and convenience have spurred the adoption of biometric solutions. Another widely accepted option is surveillance solutions to detect intruders.

Modular, Flexible & Secure

The key to effective security solutions is blending modular security technologies for the optimal speed, convenience, precision and usability. In addition to typical documentation verification, NEC offers security solution integration services that include technologies like multi-biometric identification and video surveillance.

Although smartcards offer an adequate level of security for some companies, it is not sufficient security for all organizations. Integrating multi-biometric technologies with smartcards ensures that each ID card is held by the correct person. The reliability and accuracy of fingerprint recognition systems — even on fingerprints that are sweaty or manipulated — is the highest among non-invasive biometric identifiers.

Facial authentication offers the advantage of not requiring direct contact. Face images can be captured from a distance, and authentication can be run discretely in crowds without causing congestion. NEC's NeoFace® facial recognition technology can match images regardless of the vantage point and changes in appearance, such as hats, glasses, facial hair or expression.

The simplicity of integrating biometric technologies with security solutions helps to minimize wait times for identification and reduce operational costs — without compromising security.

Among surveillance technologies available at NEC are high-sensitivity CCTV (closed-circuit television) cameras, uncooled infrared cameras and fibre optic sensors. CCTV

As a solutions provider, NEC layers its modular security technologies to improve the overall effectiveness of security solutions.

- Fingerprint identification
- Facial recognition technology
- Surveillance — High-sensitivity CCTV cameras, infrared cameras, video analysis, intrusion detection fibre optic sensors
- License plate matching



cameras are able to provide outdoor surveillance even under faint lighting conditions. Regardless of time of day, uncooled infrared cameras are capable of detecting intruders or abnormal temperatures within the facility, and are not affected by ambient light. Fibre optic sensors detect vibrations or pressure caused by potential intruders.

NEC also offers a vehicle license plate matching system that confirms authorized access against a registered database. Utilizing these technologies, NEC provides end-to-end integrated public safety solutions including conceptual design and specification of the system, as well as deployment and maintenance.

Civil Identification

Governments require dependable identification systems to ensure national security and prevent fraud. Incorporating biometric technologies into national ID systems serves to accurately authenticate valid national ID cards, and avoid the risk of issuing duplicate cards to citizens.

Leveraging its leading multi-biometric recognition solutions, NEC offers systems integration services to deliver reliable identity verification solutions quickly. Based on international standards, NEC's multi-biometric National/State ID solution offers both 1:1 verification and scalable 1:n identification allowing intramodal or multimodal fusion matching for broader applications.

For fast and accurate verification of each voter's identity on Election Day, governments are able to employ biometrics and a centralized voter ID database with all eligible voters' data to prevent election fraud. Employing the world's fastest and most accurate biometric identification technology, the speed and accuracy of NEC's Voter ID solution ensures that eligible voters are identified quickly to avoid long queues.



First Election in Bolivia Utilizing Biometrics



With a population of approximately 10 million people spread over a wide geographic area, Bolivia has lacked a reliable electoral voter list. The National Electoral Court of Bolivia [Corte Nacional Electoral (CNE)] required a new cost-effective biometric voter registration system deployed in just 75 days. Even with such an aggressive goal, NEC was able to meet the requirements of the CNE, and Bolivia held its first presidential election with an electoral voter list using biometric data in 2009.

NEC delivered 3,000 full enrollment terminals with NEC's latest fingerprint identification technologies to register

fingerprint, facial, and signature data as part of the voter registration process. In addition, NEC trained the voter registrars, provided comprehensive technical support during the registration process, and delivered the cleansed biometric voter database. For individuals whose fingerprints were not clear enough to scan, NEC's state-of-the-art facial recognition solution, NeoFace®, was used to collect the biometric data.

The new biometric voter database enabled the CNE to purge close to 3,000 duplicate voters from the list. Many disenfranchised voters—including disabled people, people living in isolated areas, and overseas residents—were finally able to register to vote. The new voter list consequently swelled from 3.5 to 5.2 million voters, allowing a truly democratic election for the first time in many years.

Nowhere else in the world has a project of this scope been carried out successfully so quickly. "NEC worked as our partner and demonstrated a high degree of efficiency and commitment, working long hours in many cases," said Antonio Costas, then-president of the CNE. "NEC's commitment allowed us to clear all the hurdles, resulting in the successful registration of Bolivian voters."

Safeguarding Facilities

Securing facilities and property, such as power plants and airport terminals, can be quite complex. Externally, unauthorized vehicles or trespassers may attempt to breach the campus; potentially threatening unattended objects may be left onsite; or the facility may come under a much more organized assault.

Early detection of suspicious behaviour or individuals in restricted areas, and preventing illegal entry is the best approach to averting serious damage or injury. Vehicle access control is possible through NEC's license plate matching system. Not only matching license plates automatically against a registered database, it uses facial authentication to confirm the face of the driver, and surveillance cameras to scan the undercarriage of the vehicle.

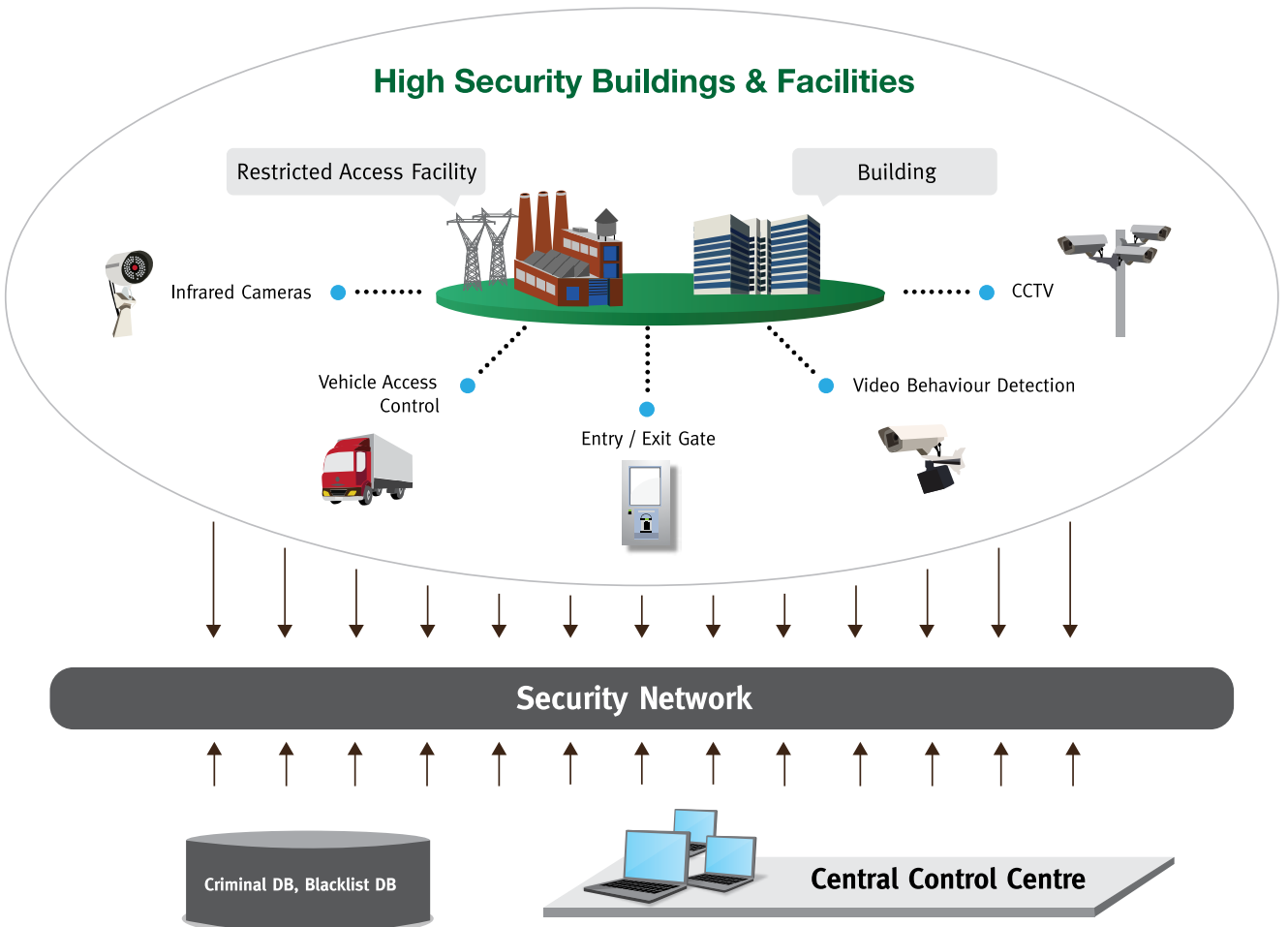
Integrated security solutions all feed into a central control centre. High-sensitivity

CCTV and infrared cameras are used to detect intruders, unidentified objects, unusual behaviour, fire and any type of environmental abnormality. A high-end video behaviour detection system monitors behaviours and flags any actions defined as unusual. A video clip is sent instantly to security personnel capturing the activity that triggered the alarm. There's no need for guards to select cameras and search video. They can assess each alert within seconds to determine the appropriate response.

NEC offers end-to-end access control throughout the building to meet each customer's desired security level for their facilities. Entrance and exit control — both externally and internally — ensures that only authorized individuals are granted access. The first point of control is NEC's fast and accurate multi-biometric verification and authentication entry/exit gate, which includes a kiosk station for visitor registration.

Upon entering, visitor and personnel actions continue to be trailed by surveillance cameras and internal access gates. Fingerprint and facial identification for authenticating network access provides additional safeguards for company assets. If a variation is detected by NEC's access control system, including misuse of ID cards, tailgating, an intruder, or if a blacklist and criminal match is made, security personnel are alerted immediately.

Integrating entrance/exit access control and internal security is the key to creating an end-to-end security system, and empowering businesses to manage the entire facility cohesively and achieve a higher level of protection. NEC works closely with its customers to determine the level of security required for each location to provide the optimal integrated access control solution.



Controlling Borders

Border control has a basic mandate to regulate the cross-border movement of goods and people, but with increasing international travel and trade this mandate has never been as complex or as difficult to maintain as now.

Traditional document-based methods of identification are labour-intensive and time-consuming. They are limited by the accuracy of biographic information obtained from suspects who may use aliases and other false data, and complicated by the fact that criminal history and immigration records reside in different, non-integrated systems.

Identity technology is crucial to securing borders. Biometric passports, or e-passports, combine a traditional paper passport with a contactless smartcard containing biometric information. Biometric information about the passport holder is authenticated against information on the chip. This aids

Benefits of Biometric Passports

- Secure method for accurate identification
- Forgeries, aliases or false data easily identified
- Search non-integrated systems quickly
- Faster processing time at checkpoints
- Risk of human error eliminated
- Improved efficiency of management and personnel

in document security by deterring forgeries and by tying the passport to the individual in a secure, verifiable method. Currently more than 100 countries are issuing e-passports at a rate of 100 million books per year.

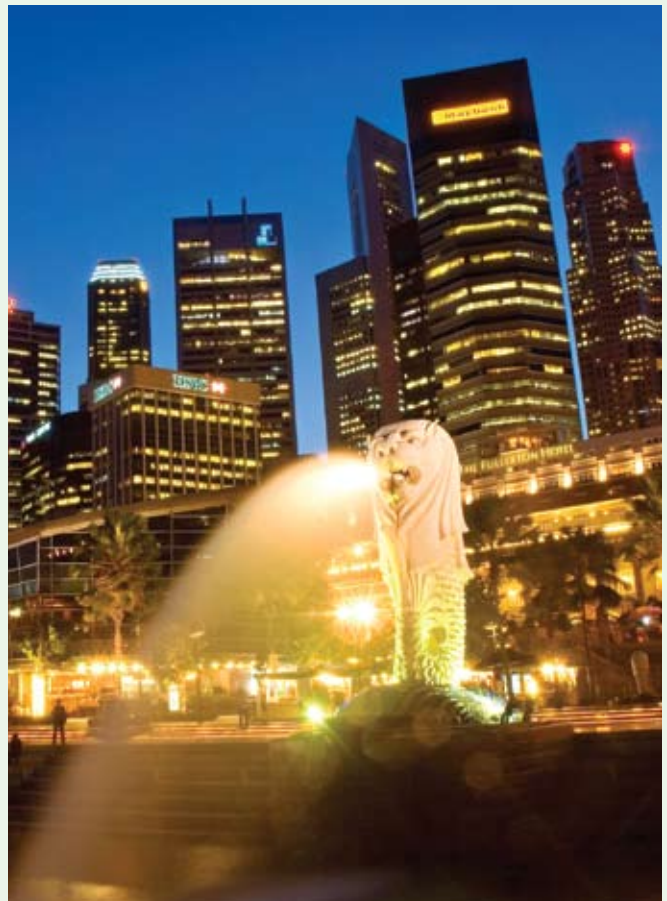
Singapore Among First with e-Passports

The bridge and causeway connecting Singapore to mainland Malaysia is among the world's busiest border crossings. Known as one of Asia's most prosperous financial centers and trading ports, over 200,000 people cross the causeway each day. The Immigration & Checkpoints Authority of Singapore (ICA) was one of the first immigration authorities in the world to implement e-passports for secure immigration clearance at the checkpoints.

NEC designed and deployed a state-of-the-art homeland security solution that included its biometric passport solution. The eIACS (Enhanced Immigration Automated Clearance System) authenticates the identity of travellers with a smartcard and fingerprint matching to enable them to clear immigration through automated lanes in less than 12 seconds. Greater security and processing speed means that security personnel can be assigned to more critical assessment roles.

When used at automated immigration lanes, e-passports will become the future global standard

for immigration systems, providing enhanced security, along with the added benefit of faster processing times.



Airport Security Takes Flight

Early detection of suspicious behaviour or individuals at an airport is the best approach to preventing serious damage or injury. Ensuring passenger security can be quite complex at a high-traffic airport, and NEC's security solutions for protecting facilities is ideal for airport security.

Throughout an airport terminal, there are many opportunities to verify passenger identities and ensure only authorized individuals are gaining access. Typically, passenger flow throughout an airport terminal begins at check-in when a passenger receives their boarding pass and checks luggage. An automated airline self-service check-in kiosk expedites processing of passengers. NEC's multi-biometric kiosks for e-boarding include fingerprint readers and cameras for facial authentication.

NEC's automated bi-directional boarding gate solution, eGate, utilizes NeoFace® facial recognition and

fingerprint scanners to ensure only authorized passengers are roaming among the airline gates. It is easy to operate, and serves as a convenient method for processing passengers boarding an airplane.

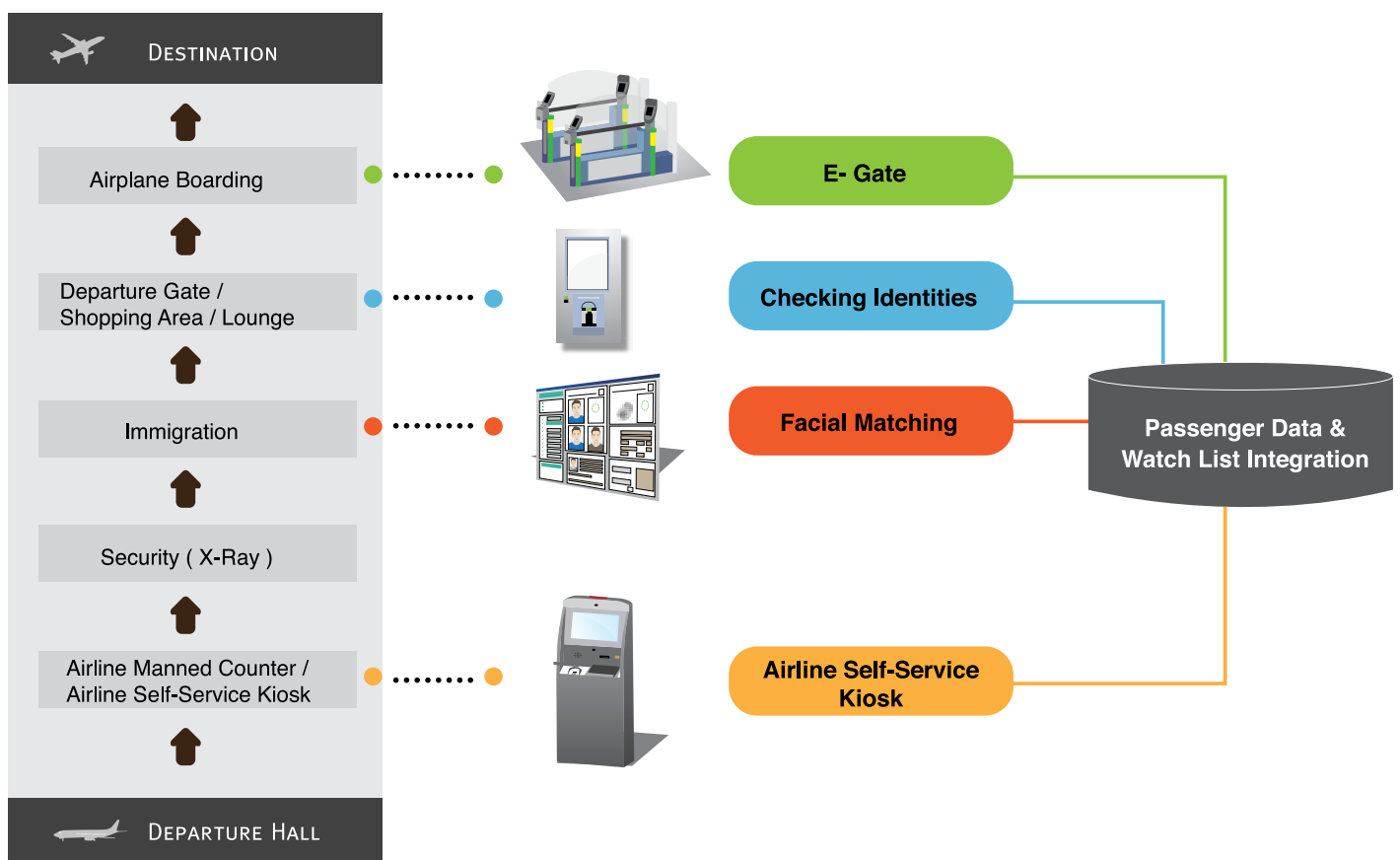
Breaches in clearance or procedure can be detected, including tailgating, jumping the gate, bringing oversized luggage, or leaving luggage. The NEC eGate system is able to process all types of travel documentation in 10 seconds or less.

NEC's NeoFace® facial recognition system can also be deployed in the aerobridge and security check areas to conduct real-time list matching. This is dedicated to detecting individuals of special interest who may be blacklisted, seeking asylum, or on a watch list.

Integrated security solutions are the most fail-safe approach to providing public safety and protecting assets. For organizations that require an extra degree of security, NEC has the



technology, experience and know-how to deliver end-to-end solutions. From scoping and designing the integrated security solution, to delivering and maintaining it, NEC is committed to working with our customers to leverage our solutions to protect employees, customers and property.



Decades of Security Innovation

For more than 100 years, NEC has built inspired technologies in IT and networking with the purpose of improving the quality of people's lives. Developing cutting-edge biometric identification technologies is one of the key ways that NEC is helping to keep societies safe and secure.

NEC, a \$37 billion global powerhouse with over 120,000 employees worldwide, has a proven track record with multi-biometric solutions, including fingerprint identification and facial recognition, e-passport, and national ID systems. For more than 40 years, NEC has been dedicated to the research and development (R&D) of fingerprint identification technologies.

The performance of fingerprint authentication systems is largely determined by sensor-scanning, image-processing, and verification technologies. These were developed by NEC in-house. NEC now leads the world in number of patents on sensor

NEC's Proven Record in Public Safety

- More than 100 years of technology and service excellence
- Company holds most patents on sensor and matching technologies
- Most accurate fingerprint technology (NIST*, 2009)
- More than 40 years of fingerprint identification R&D
- Face recognition technologies ranked number one in MBGC "Still-Face" Challenge Problem (NIST*, 2009)
- Nearly 20 years of facial recognition R&D

NIST: National Institute of Standards and Technology * NIST test results do not constitute endorsement of any particular system by the government. For more information, visit www.nist.gov.

and matching technologies, and delivers unsurpassed AFIS (Automated Fingerprint Identification System) latent fingerprint identification accuracy and speed.

Since 2004, NEC has been awarded first place ranking in accuracy worldwide on the Evaluation of Latent Fingerprints Technologies (ELFT) test carried out by the National Institute of Standards and Technology (NIST), commissioned by the U.S. Department of Homeland Security.

NEC's facial authentication technologies have also achieved number one status in the NIST Multiple-Biometric Evaluation 2010 Still-Face Track testing. While achieving the highest accuracy rating, NEC's average time to process a query from a total of 1.6 million images was by far the fastest among all participants. In addition, NEC also earned the highest score and top position in the NIST Multiple Biometric Grand Challenge's (MBGC) "Still-Face" Challenge.

With fingerprint and facial authentication technologies deployed to over 1,000 customers in more than 30 countries, NEC credits nearly 20 years of R&D and experience in facial authentication for its outstanding results.

NEC enjoys the distinction of being one of the few companies that can supply all levels of integrated security solutions — from hardware and networking to applications and service. This dedication has distinguished NEC's multi-biometric solutions, and positioned the company as a premier integrator of security solutions.

NEC's advanced security solutions meet the complex and ever-changing needs of its customers.

For more information, please visit www.nec.com/security or contact your nearest NEC.



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Public Safety Demands Every Advantage

A partnership with NEC offers you the best single-source Integrated Security Solutions, featuring the most accurate biometric authentication available and multiple state-of-the-art surveillance technologies, all tailored to fit your specific needs. See why so many countries around the world trust in NEC to provide their public facilities, border crossings and airports with proven, top-of-the-line security.

Secure the Protection You Need With NEC

Learn how NEC can partner with you



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