NEC Safer Cities

Creating Cities that are Safe, Secure, Fair, and Efficient

By 2050, the global population is expected to reach 9.8 billion people, while the urban population will almost double to reach 6.3 billion. This rapid concentration of people in cities will likely stimulate the movement of people and things, promote economic development, and generate new value. However, it may also increase the risk of natural disasters brought about by climate change, as well as crime or acts of terrorism. The ever increasing movement of people and things across national borders and different sectors will surely give rise to unprecedented challenges.

In addition, developed countries are also expected to have to deal with issues related to maintaining and managing social infrastructure, increased social security costs, and lower productivity, in light of the declining workforce as a result of the aging of society. There is an urgent need for digital solutions to such issues. NEC has a long track record of helping to realize safer and more secure cities around the world.

With its long proven history of providing solutions for society, NEC will collaborate with customers and partners to develop new initiatives, "NEC Safer Cities." We will then apply these solutions around the world, while fully respecting people's right to privacy and other fundamental human rights.

This report explains what NEC envisions cities will be like under the "NEC Safer Cities" and outlines the various measures we are implementing.

NEC Safer Cities

Creating Cities that are Safe, Secure, Fair, and Efficient

Under "NEC Safer Cities," NEC aims to resolve the many different challenges facing the world, combine safety and security across cities to create more fulfilling urban lifestyles, and realize fairer and more efficient societies where all citizens can enjoy freedom and reach their highest potential.

This line of thinking is often referred to as "smart cities" but NEC is aiming for something more than that. We believe that safety and security must be guaranteed for all activities and every aspect of daily life.

NEC has long contributed to the creation of safe and secure cities around the world. Our efforts have been underpinned by a range of Internet of Things (IoT) solutions and Artificial Intelligence (AI) technologies, including biometrics solutions, such as fingerprint, face and iris recognition, and video analytics, as well as by our network capabilities.

This report outlines NEC Safer Cities, the technologies that support it, and examples of co-creation with our customers and partners, in Public Safety, Smart Transportation, Digital Government, City Management, and Digital Healthcare.
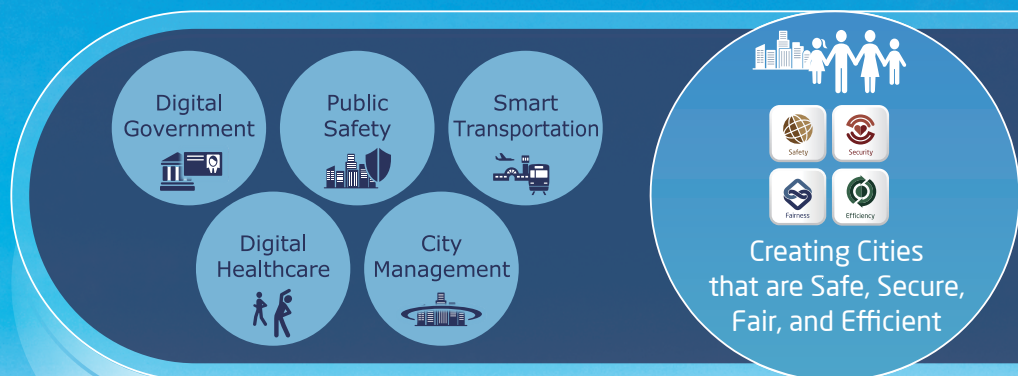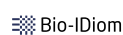
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- **NEC Smart Connectivity:** Connecting people to people, people to things, and people to contexts, to give new value to data
- NEC the WISE

  NEC the WISE: Portfolio of over 20 cutting-edge AI technologies, many of which are the best or unique in the world
- Bio-IDiom

  Bio-IDiom: Portfolio of world-class or unique biometric authentication technologies
- **Cyber Security:** Cybersecurity technologies to protect data and privacy

NEC Safer Cities

Digital Government

Public Safety

Smart Transportation

Digital Healthcare

City Management

Safety   Security   Fairness   Efficiency

Creating Cities that are Safe, Secure, Fair, and Efficient

NEC Smart Connectivity

NEC the WISE   Bio-IDiom   Cyber Security

Orchestrating a brighter world   NEC

Urban safety – its importance and new challenges

Safety as the most important aspect for people living in cities

The world is seeing population growth in addition to rapid urbanization. The proportion of people living in urban areas is forecast to reach 70% by 2050. Sustaining public safety in society as well as ensuring the security and safety of infrastructure is more important than ever before as urbanization and globalization progresses.

In the YouthfulCities Urban Millennials Survey,[1] millennials (people 15 to 34 years old) residing in 34 next-generation cities around the world were asked to choose from 21 urban attributes they consider to be important. Safety ranked first, above education and health. However, the survey also measured actual performance, for which safety ranked 14th. 54% of millennials also expressed the desire to move between urban areas in the next ten years. The assurance of safety was an essential factor for them in selecting which city to move to.

What is a safe city

What does it mean to be a "safe city" in a generation where the importance of urban safety is ever growing? For example, The Safe Cities Index published by The Economist Intelligence Unit (EIU) defines personal security, digital security, health security, and infrastructure security as four thematic categories, and evaluates the safety of cities worldwide based on factors such as "whether or not measures were implemented" and results such as the number of accidents and the crime rate. In order to create safe cities, better balance is needed between these four factors.

1 https://www.youthfulcities.com/urban-millennial-survey
2 https://www.nec.com/en/press/201904/images/0201-01-01.pdf

## Urban safety and resulting considerations in an age of evolving digital technologies

Security and safety are indispensable to desirable urban development and must be continuously pursued. Continued efforts to minimize crime and other risks (security), and to eliminate people's concerns over crime and other issues (safety) are needed.

However, responding to diversifying and expanding risks is not easy as manpower and financial resources are limited. Against this backdrop, in recent years, the advancement of safe urban development worldwide has been aided by evolving digital technologies such as image recognition technology.

At the same time, the continued digitalization of security measures has also given rise to subjects such as privacy, human rights, ethics and relevant legislation, and sparked global debate. Governments are developing systems to protect citizens' privacy. For example, the European Union has enacted the General Data Protection Regulation (GDPR) and issued the Ethics Guidelines for Trustworthy AI. In addition, ensuring data security has become a key issue and the concept of "privacy by design," which involves ensuring privacy in products or systems from the design phase, has gained prominence.

In April 2019, the NEC Group established the "NEC Group AI and Human Rights Principles"[2] to guide employees of NEC to recognize respect for human rights as the highest priority in each and every stage of its business operations in relation to social implementation of AI and utilization of biometrics and other data and enable them to take action accordingly.

Expansion of the application range of digital technology in public safety

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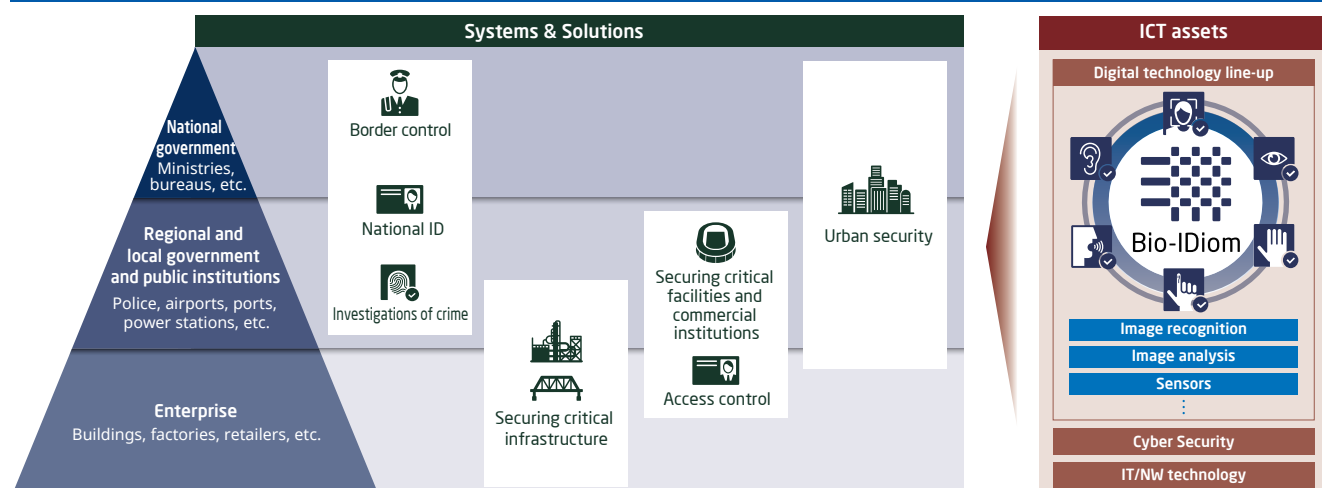
NEC initiatives for secure and safe urban spaces

Cutting-edge technology to support the security and safety of cities

IoT and AI solutions, including biometrics and video analytics, as well as other digital technologies, are being used to tackle public safety concerns such as crime and terrorism in cities worldwide. NEC has been committed to developing biometric authentication technology for more than fifty years. We are a global leader in this field, with a track record of supplying upwards of 1,000 systems to over 70 countries and regions, the fastest and most accurate fingerprint and face recognition technologies, and the most accurate iris recognition technologies in the world.[3] We have also developed other biometrics, including finger vein, palmprint, voice and ear acoustic authentication. NEC also accounts for roughly 30%[4] of automated fingerprint identification systems used by U.S. law enforcement agencies. These systems contribute to safer communities and urban development by enabling law enforcement to rapidly investigate crimes and solve cases.

In addition, besides image recognition, NEC is also developing a variety of other video analytics technologies. One example is crowd behavior analysis, involving analysis of groups collectively rather than individually, visualization of congestion, prediction of people flow, and detection of unusual crowd behavior. Another is behavior detection, which is the detection of objects moving irregularly or abandoned articles based on real-time analysis of videos.

As our technologies evolve, it becomes possible to apply them in a wider range of scenarios, such as for ensuring the security of airports and other critical facilities, as well as maintaining safety at large events and in entire cities.

Protecting cities at all times

Our technologies are also being utilized throughout cities to ensure their safety. Many cities around the world, such as Tigre in Argentina, have deployed NEC urban security systems based on fast and highly accurate video analytics technology for enhanced security and safety.

Tigre, a popular tourist destination, used such a system to analyze images in real time and detect various hidden dangers. The system featured advanced technologies for detecting potential criminal behaviors such as double riding on a motorcycle, a common method of purse-snatching, or for license plate recognition, which helped identify stolen cars and reduce vehicle thefts by about 80%.

NEC's video analytics technologies are also helping in enforcing traffic discipline, such as detecting vehicles running red lights and other traffic violations in Gurugram, India.

In this way, NEC's cutting-edge technologies and know-how are being used to prevent crimes from happening, thereby making cities and communities worldwide safer and more secure.

3 According to benchmark tests conducted by the U.S. National Institute of Standards and Technology
4 NEC survey (as of September 2017)

High-level detection of abnormalities in urban environments

Crowd behavior analysis

Crowd density and flow
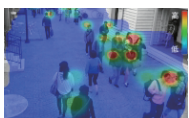
Crowd density

Detection of flow

Urban development

Used in urban planning or for ticket barriers and pedestrian areas

Optimized guidance

Guided by security personnel or information displayed on smartphones or signage

Analyzes crowds of people to visualize congestion, predict people flow, and detect unusual behavior.

Behavior detection

Prevention of accidents around the platform

Prevention of incidents at important facilities

These video analytics engines can be combined and used as part of NEC Enhanced Video Analytics (see P11).

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Realizing peace-of-mind for participants at large-scale events

NEC is developing new security systems based on digital technology to protect large-scale events, such as summits, exhibitions, and sporting festivals, which are attended by many people from around the world, including high-profile persons, from the growing danger of terror attacks and other potential threats.

At the 18th Asian Games in Indonesia, NEC provided a facial recognition system and a behavior detection system in the event's main stadium. Using security camera video, these systems detect intrusions to restricted areas and suspicious objects, thus thwarting potential threats.

NEC is also implementing measures to improve safety in times of congestion. One such example is the annual fireworks festival held by Okazaki City in Japan, which attracts hundreds of thousands of people in one night. In 2019, Okazaki City and NEC analyzed video feeds from cameras in the local station to understand the flow of people, based on factors such as the number of people passing through the station and the direction of the flow by age and gender. No videos or images in which individual people were discernible were collected. Okazaki City intends to continue to analyze such people-flow data to understand footfall in and around the venue, and then use this information to set up security arrangements that relieve congestion during the event and ensure safe event management. It is also considering using this information in discussions about town planning.

NEC's systems are thus being used to secure facilities that attract large numbers of people, including amusement parks, casinos, and hotels.

Realizing next-generation secure and safe urban spaces through digitalization

Huge numbers of people from around the globe will gather in Tokyo for the world's largest sporting event of 2020. This is an excellent opportunity for Japan to present itself to the world as a leading model of a mature society. At the same time, the event could become the target of terrorist or criminal activities, so adequate crisis management is essential. In addition, confusion and other types of dangers due to crowding can also be expected due to the many spectators and participants. NEC's state-of-the-art technologies can be used to support crisis management preparation and measures. For example, congestion prediction can be used to foresee and prevent dangerous congestion that could cause accidents or invite crime, and facilitate the provision of safe and smooth security and guidance, while the fastest and most accurate facial recognition can be used to ensure smooth entry and exit by authorized persons.

NEC believes in fostering urban spaces where people can feel safe and protected without being burdened or intimidated, using our secure and privacy-friendly digital technologies. Building on the experience of 2020 and leveraging the leading safety operations that we have designed in Tokyo, we will continue to do everything we can to realize safer, more secure and brighter societies, in cooperation with governments and partners around the world.

Overview of NEC aiming for society after 2020

NEC public safety will casually yet clearly support a brighter society sight unseen with the 2020 international sporting event as a launching point

Crime/accident prevention

Monitoring cities to predict crime/accidents
Notification to relevant agencies about threats

Response and eradication of terrorism and infectious disease

Prediction of terror and infectious disease pandemics to respond in advance of threats

Response to natural disasters

Prediction of disasters from sensor information
On-site confirmation and evacuation guidance via drones

Smart operation of social infrastructure

Realization of identification and positional information and operational control of drones flying over the city

Assurance of security of digital spaces

24-hour monitoring and handling of cyber attacks

\Orchestrating a brighter world NEC

Smart Transportation for the Digital Age

Rapid transformation and other challenges in the transportation sector

In the digital era, the field of mobility is becoming ever more diverse, thanks to the spread of new services such as ride-sharing services, autonomous vehicles, and drone-based services. At the same time, measures are urgently needed to address mobility-related challenges such as labor shortages, inadequate public transport availability due to the rapid concentration of people in urban areas and increased movement globally, and economic and environmental degradation arising from severe traffic congestion and the corresponding impact on the environment.

NEC aims to realize transportation systems that are not only secure and safe, but also convenient and comfortable, by seamlessly linking all modes of transport, from airplanes, trains, buses and cars, to new forms of mobility in a simple and user-friendly way.

Making the gateways to cities safer and more comfortable

Airports are becoming increasingly busy due to growth in the speed, ease and volume of the global movement of both people and things. According to the International Air Transport Association (IATA), the number of air travelers was 4.3 billion in 2018 and this is forecast to increase to 7.8 billion by 2036.

Airports act as the gateways to cities. Ideally, cities want all people traveling through their airports to enjoy a safe and comfortable experience, with as little stress or anxiety as possible. That is why a number of international organizations are starting initiatives that promote both safety and efficiency for travelers. One example is the concept of One ID, a document-free process based on identity management and biometric recognition proposed by the IATA, whose members include over 80 percent of the world's airlines.

The use of biometric authentication is becoming more prevalent at airports. NEC technologies have been adopted for this purpose. For instance, as U.S. Customs and Border Protection strengthens immigration control at international airports to enhance border security and facilitate smooth travel, NEC facial recognition technologies are being implemented at various U.S. airports to improve safety and convenience at these important entry points into the country. At John F. Kennedy International Airport, they are being used to confirm the identity of passengers entering the United States, while a pilot test of their use for biometrics-based exit verification has been completed at Dulles International Airport in Washington D.C.

NEC is also conducting research to further enhance its AI-driven facial recognition technologies. Especially promising is the Video Facial Recognition Technology, which is able to confirm the identity of passengers in real-time as they walk naturally without stopping in front of a camera, thereby enabling more efficient verification.

Japan's Narita Airport will begin operation of a new "One ID" check-in to boarding process using NEC facial recognition technologies from spring 2020. This new process will enable passengers at Narita Airport to register facial images during initial procedures, such as check-in, and advance through procedures that include baggage drop, passenger security check and boarding gate, at a walking pace, without presenting boarding passes and passports as conventionally required. As a result, passengers are expected to be able to board more smoothly, with fewer cumbersome processes and with less time waiting in line. Narita Airport has also installed an electronic customs procedure system consisting of electronic gates utilizing face recognition for smooth walk-through authentication, customs declaration smartphone apps, and electronic declaration terminals. This is contributing to reducing the congestion of customs inspection areas and shortening travelers' waiting time. The same system is also being implemented at five other major Japanese airports since spring 2020.

Seamless, safe and comfortable passenger experience with biometrics

Seamless travel experience

To provide visitors with more convenient and comfortable experiences, one useful measure is smoother boarding and customs procedures. In addition, the installation of cashless payment systems, powered by facial recognition, in the airport's restaurants and shopping facilities would further enhance the convenience of travelers, while also offering them novel and seamless experiences. If these systems are then linked to facilities and services outside the airport as well, travelers could experience fewer barriers as they travel through the city. For example, they could get wherever they need to go on a train, bus, taxi or other mode of transport, just by showing their faces. Similarly, they would not need to show their passports again when renting a car or checking into their hotel. Purchases, duty-free tax refunds, or facility entry procedures could all be handled by facial recognition as well.

NEC has developed just such an integrated ecosystem for Nanki Shirahama using NEC I:Delight, a platform which delivers a unified customer experience across multiple environments around the city. Under this system, visitors can register their face and credit card details via smartphone to create a common ID that is connected to the surrounding hotels and other leisure facilities. They can then use the facial recognition-based ID to receive high-level hospitality like regulars at the hotel reception, to get in and out of their room, to pay for souvenirs or meals around town, and to check out easily and seamlessly. In this way, NEC has been assisting Nanki Shirahama to provide tourists with a comfortable stay and excellent hospitality, thereby contributing to the revitalization of the local economy.

At NEC, we want to create a world where every traveler can enjoy the best possible service, at every stage of their journey, starting from the airport, through to off-airport facilities throughout the city.

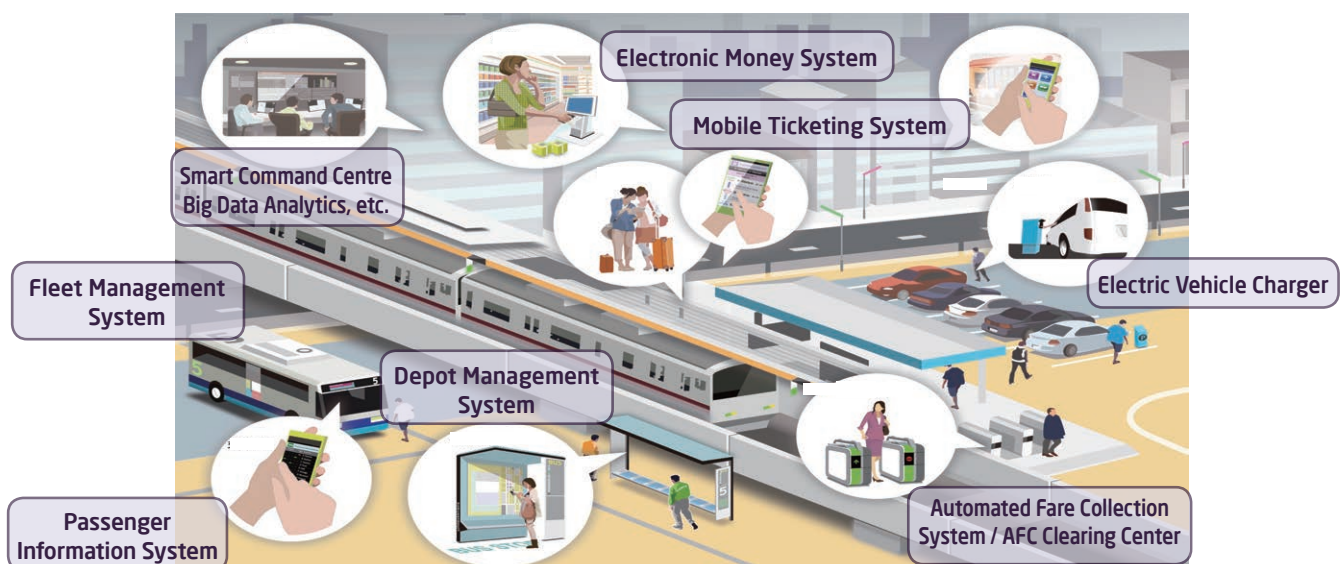## Pleasant and efficient public transport systems

As for transportation within and between cities, NEC has long supported railway operators in a wide range of areas, including railway networks, train radio systems, monitoring and control systems, and administrative systems. We are also contributing to road-based transport. Furthermore, through AI and IoT solutions, we are working to improve the quality and efficiency of existing services, as well as to enable the provision of new services.

As an example, Ahmedabad, a fast-growing Indian city, is promoting smart-city planning and, recognizing the importance of efficient public transport, partnered with NEC to upgrade the city's manually-operated and erratic bus infrastructure with a seamless, safe, and reliable intelligent transport management system. Intelligently-applied IoT and big data analysis technologies are enabling the city to build a smart bus system that is easy to plan, merge, and grow along with the expanding number of users.

Besides the automated fare collection systems, the project's one-stop, IoT-driven system manages bus resources, bus maintenance, transport information, and personnel. It also collects and analyzes data to help optimize resources and boost ticket sales. Deploying such a comprehensive set of systems helped provide information to citizens that eased overcrowding and reduced the hassle of using public transport.

Through various initiatives, such as implementing smart IT networks to prepare roads for autonomous vehicles, NEC will continue to work with cities and other partners to realize smart transportation for the digital age.

NEC's solutions contribute to safer operation, increased revenue, and business streamlining of public transportation systems

- Smart Command Centre Big Data Analytics, etc.
- Electronic Money System
- Mobile Ticketing System
- Electric Vehicle Charger
- Fleet Management System
- Depot Management System
- Automated Fare Collection System / AFC Clearing Center
- Passenger Information System

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NEC initiatives in support of government digitalization

Digitalization driving national initiatives

With the rapid spread of Internet connectivity and mobile devices, people around the world are able to access the information and services they desire, at all times. Even objects are now online as part of the IoT, which has accelerated the visualization of people, things, and society. In this context, many national governments are promoting administrative reform initiatives through digitalization.

According to the 2018 United Nations (UN) E-Government Survey,[5] for the first time, development of online services could be seen in all income groups, indicating that even the administrations in emerging countries are becoming more digitalized. All 193 member states of the UN have national portals and back-end systems automating core administrative tasks, and 140 countries now provide at least one online transactional service.

The digitalization of governments improves overall social efficiency and reduces costs, while also enabling fair provision of optimized services to each and every citizen. Furthermore, it promotes data coordination across barriers within and between the public and private sectors, and creates new social infrastructure and industries. This should in turn promote economic vitalization. In Denmark, which ranked first in the development of digital government in the aforementioned UN survey, the digitalization of tax invoicing has reduced annual expenses by 1.5 million EUR, and enabled the provision of fair and high-quality services, for example by assigning every citizen with a digital PO box.

Supporting worldwide government digitalization with advanced technology

NEC has actively supported the digitalization of various countries. In Taiwan, we established a national pension system that enables insured individuals to apply and search for their pension via the Internet. NEC also provides biometrics authentication systems that enable identity verification, a necessity for the digitalization of emerging countries. This includes the Aadhaar program, which issues unique IDs to each and every citizen in India, and the national ID system of South Africa. In addition, in Japan, NEC has been working closely with the national government in the development of the My Number system, which assigns all citizens a personal social security and tax number. We have provided policy advice and shared our in-depth insight and knowhow, as well as contributed to expanding the range of uses for My Number cards.

NEC has incorporated advanced IT corporations from the UK and Denmark, world leaders in government digitalization, into the NEC Group, in 2018 and 2019. We are combining the solutions and technologies of Northgate Public Services Limited (a company assisting the digitalization of the police and central and local governments, primarily in the UK), KMD A/S (a company supporting many central and local governments, primarily in Denmark), Bio-IDiom (NEC's biometric technology brand), and NEC the WISE to further strengthen and expand the digitalization of governments around the world.

5 UN E-Government Survey 2018 (https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2018)

NEC supports worldwide government digitalization

northgate PUBLIC SERVICES An NEC Company

KMD An NEC Company

| Robust customer base | Wide-ranging platforms | UX* / data analysis solutions |

Incorporating the platforms and business models of the UK and Denmark, the world's most digitally advanced governments, to support the digitalization of each country's government and administrations

Advanced solutions / global deployment capability

Biometrics
Bio-IDiom

Analytics
NEC the WISE

Global deployment capabilities

NEC

*UX: User experience

Achieving total digitalization of society from a user perspective

NEC is not focused solely on the digitalization of governments; rather, we believe that advancing digitalization based on a reexamination of all social structures from the perspective of the user will help realize a more people-friendly society for consumers, governments, corporations, and all citizens. For example, biometrics can support the expanded utilization of national IDs, which would simplify various procedures required by governments, corporations, and individuals, and help improve productivity and accessibility. Furthermore, shifting administrative procedures online makes them more convenient, by allowing them to be completed at any time and any place.

Furthermore, open data and publicly accessible APIs play important roles in the digitalization of governments and societies. The public and private sectors must work together to improve the accessibility of data and APIs, while at the same time strengthening security. NEC has developed a high-speed, secure, multi-party method of computation that can process encrypted data without the need for decryption and firmly prevent the leakage of classified information. The higher level of performance achieved through this method enables its utilization in large authentication systems. Thus, this technology facilitates the use and protection of biometric, customer, and other classified information, and supports the secure use and application of data across barriers within and between industry, government, academia, and civil society.

NEC will continue to develop cutting-edge technology to advance government digitalization

reform, support the realization of a society where innovations are co-created through the collaboration of data and services exceeding the boundaries of the public and private sectors, and contribute to making life better for everyone.

Realizing public services with fair accessibility for all

Governments are working actively to create a society that leaves no one behind, based on the underlying principle of the 2030 Agenda for Sustainable Development adopted at the September 2015 UN Summit. NEC believes that the use of digital technologies is an essential part of realizing a society in which the benefits of public services are fairly available to all.

For example, India is promoting the Aadhaar Program, which utilizes NEC's biometric authentication technologies, in an effort to create a society in which the entire nation can enjoy fair access to public and financial services. By registering to Aadhaar, people who had no way of identifying themselves previously are now able to open bank accounts. They can then receive subsidies from the government directly to their accounts, which solves the problem of people being exploited by intermediaries or falling victim to other forms of fraud.

NEC is helping promote the development of national ID systems in many countries, such as by providing secure and safe identity verification via biometric authentication technology. In this way, we are accelerating initiatives for realizing societies in which every citizen has fair access to various public services, whenever and wherever they need them.

NEC vision of the future digital government

A digital government that is friendly to people,
enabling a society that is friendly to consumers, corporations, governments, and all people

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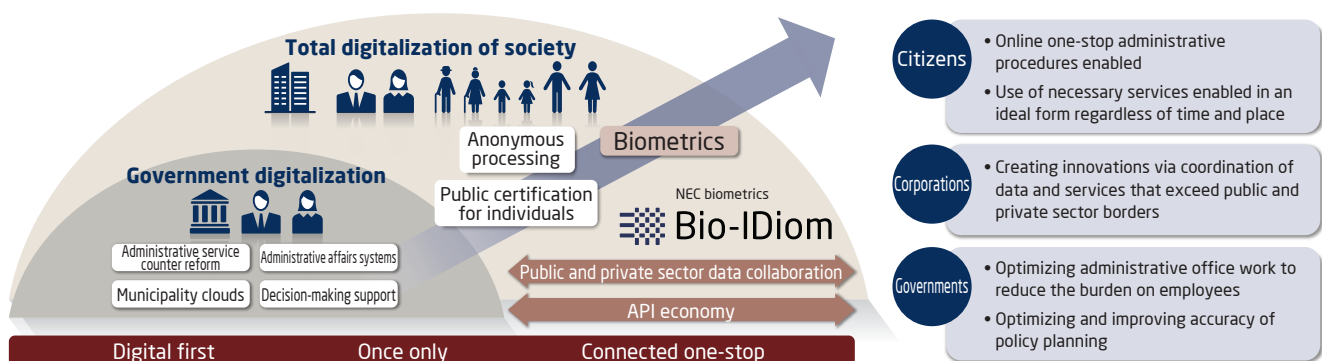
NEC initiatives for the digitalization of cities

Supporting sustainable city management

Urban development has traditionally focused on the improvement of infrastructure, such as efficient lifelines, but today, cities around the world are focusing more on sustainable urban development, with an emphasis on the digitalization of cities, collaboration among different administrative services and utilization of data across the boundaries of local governments and companies, and the creation of new services and business models.

The city of Santander in Spain is implementing a project to improve various aspects of urban living, including reducing traffic volume and energy consumption, improving environmental quality, and promoting participation by citizens. As a part of the project, in February 2014, the city adopted NEC's Cloud City Operation Centre (CCOC[6]) platform, which enables the visualization of temperatures, vehicle speeds, noise, and other urban data. The city also uses sensors to monitor the volume of rubbish in bins and optimize collection intervals and routes. NEC is leveraging the know-how and knowledge gained in Santander to contribute to the realization of urban digitalization worldwide.

NEC's CCOC platform has also been adopted by the data center of the Portuguese city of Lisbon.[7] Lisbon is using CCOC to collect and analyze various types of urban data, such as weather, geography, tourism-related information, air pollution, and traffic congestion, in real time, and share them among multiple municipal services. The city is also strengthening crime prevention measures, such as the detection of illegally-parked vehicles and suspicious objects.

6 CCOC: Cloud City Operation Centre, an NEC-developed system that provides a common platform for visualization of the status of industry-specific smart services, data analysis, simulation, and more
7 Included in the "100 Resilient Cities" selected by the Rockefeller Foundation

# NEC initiatives for innovative healthcare

Using data to extend health life expectancy

In developed countries and throughout Asia, aging populations are resulting in increased social security costs. NEC believes that the best way to tackle this challenge is to shift the focus from care to prevention, and to emphasize the extension of people's healthy life expectancy.

NEC continues to work with a wide range of stakeholders to promote unique initiatives that make maximum use of data and AI to extend healthy life expectancy. One such initiative is a joint project with Suginami City in Tokyo to use data from specific health checkups to help improve the lifestyle habits of its residents. In fiscal years 2018 and 2019, Suginami City has conducted an "NEC health check result simulation" to predict health check results, using AI to create a model.

Two potential scenarios are provided on advice sheets to residents based on simulations of possible future conditions for people with similar existing conditions: one in which the resident maintains their current lifestyle, and one in which the resident improves their lifestyle. The goal of the simulation is to deal with potentially problematic lifestyle habits early on.

Additionally, amid continued progress in the medical sector, NEC is developing AI-driven image analysis technologies so as to be able to support the high-level diagnoses of medical experts. NEC will work together with partners in the medical sector and a wide range of other fields, while leveraging our strengths in IoT and AI, to create new healthcare solutions. In doing so, we hope to support physical and mental wellbeing, active lifestyles, and the building of communities with high healthy life expectancies.

## NEC vision for flexible social platforms built on data
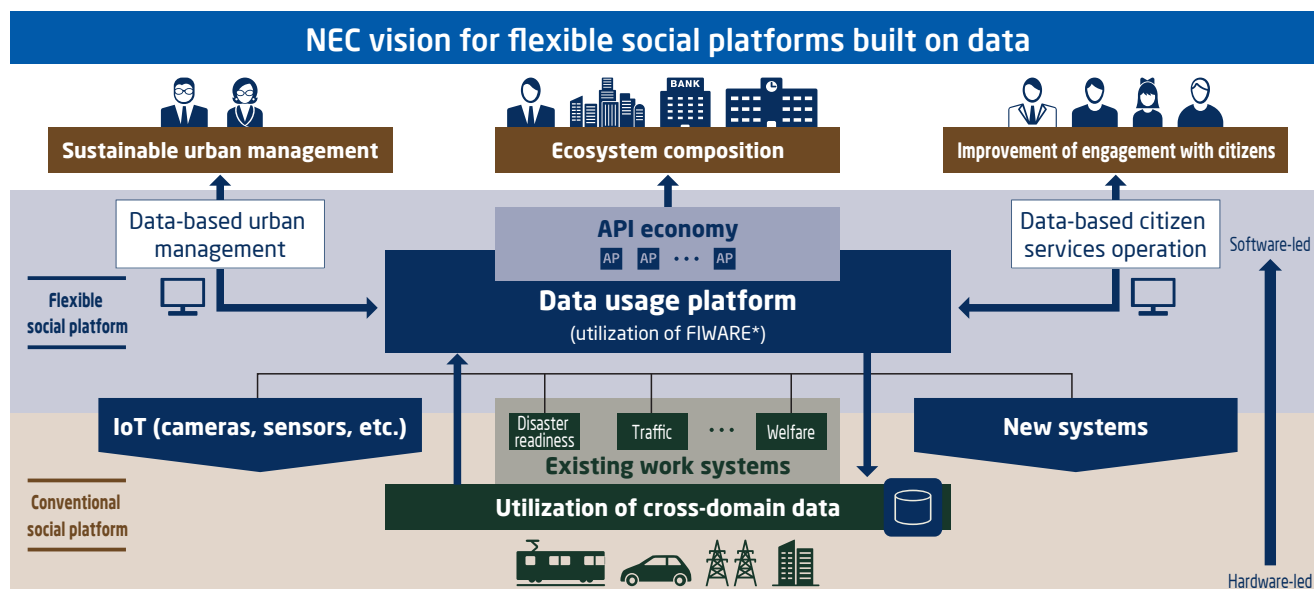
*FIWARE is an open source platform which enables real-time smart services through data sharing across vertical domains and agencies via open standard-based APIs. For additional information, please visit the FIWARE home page at: https://www.fiware.org/

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NEC Solutions for Realizing NEC Safer Cities

NEC Enhanced Video Analytics: Enabling flexible combination of high-level video analytics engines

NEC provides a wide range of solutions from centralized command centers for monitoring city streets and large-scale events, to hospitality for travelers. This is supported by NEC Enhanced Video Analytics, which enables the quick and efficient building and deployment of advanced solutions that combine multiple video analytics engines, including face recognition and other capabilities described on page 4 of this report, as well as congestion and behavior detection. Depending on our customers' needs, we can combine various video analytics engines to build the right solution in no time, such as swiftly conducting a proof-of-concept trial using an existing camera; flexibly adding components to adapt to changes to the problem; and managing, analyzing and utilizing data collected from multiple sources in an integrated manner.
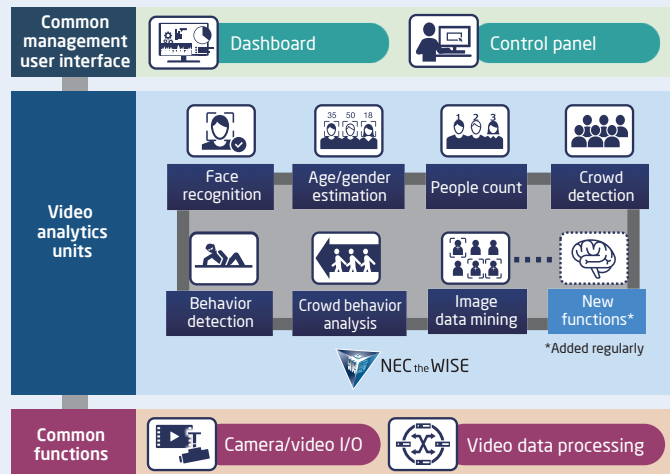
CONNECT: Policing platform helping police officers to make quick and correct decisions, and enhance their accountability

CONNECT is a policing platform provided by Northgate Public Services Limited.[8] It provides the capability of a modern, open integrated application not only to create and manage investigations, intelligence, arrests, custody, and prosecutions but also partnership and multi-agency working plus direct access and entry by the public as a data analytics hub.

CONNECT is all based on an open POLE object data store that supports automation, and AI. Through the data analytics hub the police are able to enhance the transparency and accountability of the police to all stakeholders, organizations and the public. Officers can access a consistent User Interface from mobile devices and laptops. CONNECT lets them make quick and correct decisions in the field and stay visible and accessible to the public, realizing the ambition for safer and more secure cities.

8 For more about Northgate Public Services Limited, see page 8
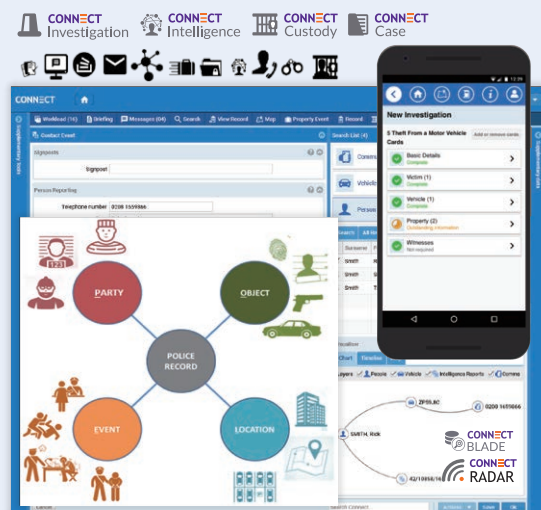
Disaster prevention solutions: For mitigating and adapting to climate change from sensing to simulation
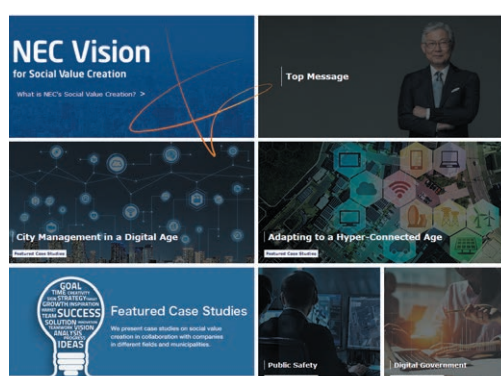
NEC has a long track record of providing sensing solutions in a wide range of fields, from satellites to seabed infrastructure, including global-scale solutions such as for disaster or environmental monitoring. We are also developing and operating simulation systems for flooding, landslides, and other natural disasters, whose highly-accurate disaster forecast/prediction contributes to minimizing human harm and economic losses by facilitating early warnings and other measures. In addition, NEC's radio network systems for times of disaster are in wide use not only across Japan but also around the world.
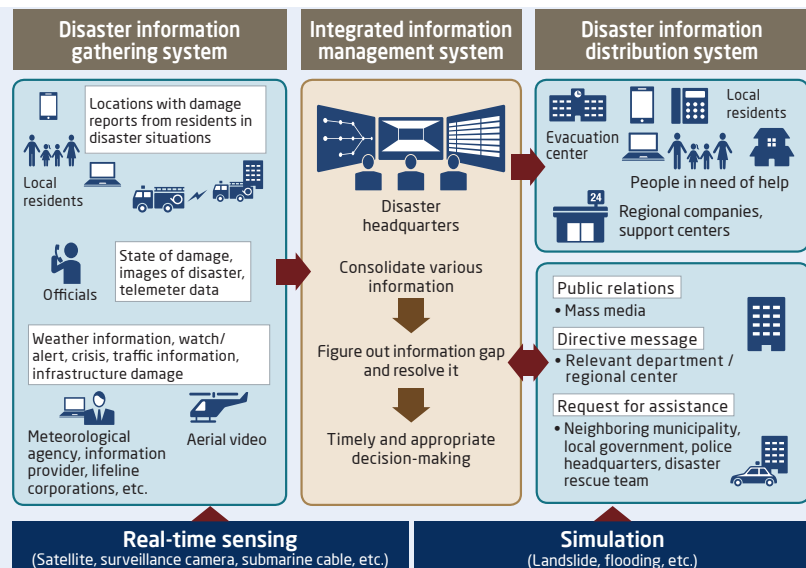
The NEC Group is focusing its efforts on providing "Solutions for Society" by upgrading social infrastructure through the power of ICT. NEC has defined six megatrends based on a structural observation of the global economy and social trends. From these six megatrends, NEC has formulated seven themes for social value creation and will fulfil them as our mission.

Our vision is available on our website, with descriptions of the social value creation that NEC is aiming for, businesses that we are involved in, and case studies. NEC also publishes the Social Value Creation Report for each of the seven themes listed above, summarizing NEC's concepts, efforts, and proposals, in addition to social issues and global trends. NEC hopes that these reports can serve as the first step towards establishing cooperative and creative partnerships with our customers.

NEC Vision Website
https://www.nec.com/en/global/about/vision/

Social Value Creation Reports
https://www.nec.com/en/global/about/vision/report/

Please direct any inquiries to the following contact or an NEC marketing representative.

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NEC Vision Website

Social Value Creation Reports