NEC's Public Safety Initiative

As cities grow and flourish, they also face increasingly complex challenges, ranging from the immediate needs of their citizens to long term security. To deal with immediate safety concerns, city planners need to have robust emergency preparedness schemes and the capability to manage both physical and virtual crimes. But cities also need to take the long term view and plan for renewable energy, green buildings and waste reduction. Technology can play a significant role in helping cities respond to security challenges. This paper describes the overview of NEC's Public Safety solutions and our initiatives in delivering these solutions globally.

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1. Introduction

Cities concentrate both human and capital resources, thereby promoting social and economic progress. In East Asia, the urban population produces 92 percent of the region's wealth. Generally speaking, urban populations tend to be better off than their rural counterparts, with greater access to public services such as transport, education and healthcare, as well as higher literacy rates and life expectancy.

Driven by these benefits, the global population has tended towards ever increasing levels of urbanization. As recently as 1990, less than 40 percent of the global population lived in cities. Presently, more than half the world's population lives in urban areas, and by 2050, this number will grow to 70 percent. Most of the growth in urbanization will come from developing countries, which are expected to double their urban population from 2.5 billion in 2009 to almost 5.2 billion in 2050[1].

Statistics such as these are necessary to give a sense of the scale of the challenges confronting governments and city planners. However, it is important to look beyond the statistics to address the people-centric question of what life will be like in these cities. In other words, the focus should not just be on how these future cities can be made possible, but how they will support the people living in them. Safety is the foundation of any city, a basic criterion upon which the other characteristics of a successful city depend.

2. The Safer Cities Strategy

Recognizing the need to prepare for the future, mayors and city planners have often discussed the need for "smart" or "resilient" cities; cities that are highly livable, while remaining eco-friendly and sustainable, enabled by the embrace of the latest technologies. While these overlapping buzzwords contribute important concepts to our understanding of what cities of the future should be like, they all point to the underlying issue of ensuring safety for those who reside there.

Without a sense of personal and property security, institutions and businesses cannot function and society cannot flourish. Ensuring that citizens feel safe is a multidimensional task, requiring governments to take a long term and broad perspective. The main challenges that all governments face are providing effective border control and law enforcement for both physical and virtual crime, as well as preparing for disasters, whether they be natural or man-made.

In view of these needs from the society, NEC established its
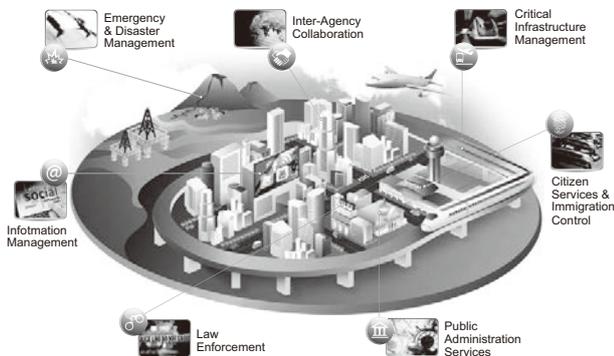
Fig. 1 Safer Cities 7 domains.

Safer Cities strategy. The following 7 domains (**Fig. 1**) have been identified, and NEC has been providing competitive technologies, products and services to support city planners pursue their goals to make the cities safer.

(1) Citizen Services and Immigration Control

Opportunities and threats alike thrive in today's globalized world. Millions of people move across borders each day, and border control agencies must deal with a high volume of human and goods traffic across border checkpoints every day. Countries need to secure their borders, ensuring that undesirable elements are kept out while creating a pleasant experience for business or leisure travelers.

Immigration and National ID management are two of the areas where advanced biometric systems can be used to enhance security and speed of service. NEC provides its world No.1 biometrics identification technologies in its Citizen Services and Immigration Control solutions, implemented not only in Japan but in many countries around the world.

(2) Law Enforcement

The safety of a city is a significant consideration for both individuals and businesses alike. However, crime tends to increase as cities grow. The challenge for governments is to ensure that citizens feel safe while continuing to enjoy the benefits of city life.

NEC provided the first Automated Fingerprint Identification for Law Enforcement system in1982, and the system has been widely used for criminal investigation ever since. With the advancement in face recognition technologies its application in the Law Enforcement market is also gaining great attention, enabling quick and accurate identification in the field, and an optimized, smooth operation for forensic investigators. NEC now provides a multi-modal verification using fingerprint and face recognition.

(3) Critical Infrastructure Management

Providing robust electricity, water and transportation services are the mandate of any city planner. These es-

sential services keep society running behind the scenes. But threats may come from anywhere, requiring constant monitoring and surveillance. It is here that automation can make a significant impact. Technologies including video analytics and monitoring systems can provide reliable and sensitive protection. These automated systems can improve the speed and accuracy of threat detection while lowering staff and equipment cost.

NEC's advanced analytics engines and sophisticated sensor systems are used in detecting signs of disorder or threats in office buildings, factories and power plants, and other critical infrastructures. The technologies have also been used in city operation centers in urban surveillance projects. (Please read more in "Securing the Future in Tigre.")

(4) Public Administration Services

Governments are increasingly moving many of their services online for a number of reasons, including increased convenience for its citizens, better transparency and cost efficiency. As the government holds sensitive personal information such as tax information and national identification numbers, the move to e-government needs to be accompanied by enhanced security measures.

In addition to virtual risks, governments also need to protect their populations from disease outbreaks resulting from an increased population density. As seen in recent outbreaks of bird flu and SARS, infectious diseases can cripple countries, exacting a high toll on human health and the economy. For instance, infrared thermography cameras have been used in airports to detect and contain the spreading of such pandemic as travelers arrive at the airport.

(5) Emergency and Disaster Management

No city is immune to disasters. Even regions fortuitously protected from earthquakes and volcanoes could face natural disasters such as hurricanes, floods and tsunamis or man-made disasters such as train collisions or terrorist attacks. In the event of an emergency, pre-existing preparedness measures and the rapid execution of post-emergency plans could make the difference between life and death for those affected.

Governments must quickly collect information, process it to reach an optimal response, and disseminate the decision. Sensors such as surveillance cameras, water level gauges, rain gauges and seismometers can be used to gather information on disasters and emergencies. All these data can be seamlessly integrated at a command center, and then rapidly distributed to the different agencies such as the police, army and hospitals.

(6) Information Management

As more and more people and devices join the Internet, the number of potential targets for cybercrime increases. Governments need to secure their networks against hack-

ing or virus attacks, which call for security measures such as firewalls, intrusion-detection sensors and intrusion prevention measures. They will also need to address privacy concerns, especially when social media analytics is concerned, which is why good data governance practices must be built into the system from the very beginning. Strong information management, through enhanced security measures and data protection schemes, will help institutions and corporations defend against cyber-attacks.

The Cyber Range Platform, a platform for training, testing and validating large-scale IT security solutions in a virtual environment, and the web server protection solution providing 360 degrees full protection for webservers against malicious intent and data leakage are two of the key solutions NEC provides.

(7) Inter-Agency Collaboration

Many of the challenges that city planners face, ranging from terrorism to natural disasters, require the cooperation of different branches of the government. To launch a coordinated response, different arms of the government, with different levels of access, must contribute their own sets of data input.

Here, technology can be used to facilitate cross-agency collaboration. In the aftermath of a disaster, governments must swing quickly into the recovery stage. Big data, including the latest machine to machine (M2M) communication technologies, promises to enable the rapid response required. Ultimately, the goal of the inter-agency collaboration framework is to achieve situational awareness, a multifaceted understanding with reasoning capabilities that not only displays information but presents actionable intelligence.

On 1st June, 2014, NEC launched its Inter-Agency Collaboration solution, the Multi-Agencies, 1 Concert (MAG1C) suite. The solutions are designed to strengthen the sharing of information between local government ministries, offices and related organizations, while ensuring strong information governance. Incorporating a "bring your own engine" concept, the solutions are compatible with a broad range of data analysis engines to cater to the various needs of the cities. (Please read more in "Information Governance" and "Safety Awareness Network.")

3. Global Business Execution

In April, 2013, NEC established the Global Safety Division (GSD) in Singapore to promote its safety business around the world. GSD's focus is on growing and developing the company's expertise in public safety, an area which has attracted a great deal of attention and investment by governments around the world. The expected investment into safer city projects by governments will be approximately 0.5 percent of GDP by

Fig. 2 Public Safety organization around the world.

2017, and the contribution of technologies towards the development of safer city projects is expected to amount to 80-85 billion dollars by 2020[2].

The division is in charge of devising global business strategy, developing and promoting new technologies and solutions, and providing training and technical support for subsidiaries and partners worldwide.

The division was established in Singapore in order to conveniently access the growing, important markets, and also to capitalize on the business experience and capabilities of the local public safety team. It is also an ideal location to enhance its capabilities, as Singapore is an open ground for attracting global talent.

Furthermore, in September, 2013, NEC established NEC Laboratories Singapore (NLS) as the center of its global solutions research in Asia. With the establishment of NLS, NEC has formed flexible research collaborations with local research institutions and customers. Through active participation in field trials and testbed opportunities, NEC hopes to bring together the R&D activities and core technologies from the other Research Laboratories around the world (**Fig. 2**) to develop future solutions for society.

4. Conclusion

The many disasters around us, natural or man-made, are vivid reminders of how complex and unpredictable the world has become. Yet, with improved technological capabilities, citizens today are better informed and more demanding. Governments are expected to not only pre-empt the potential occurrence of disaster or criminal activity, but also to respond efficiently and effectively.

The technology is already in place. Sprawling, city-wide sensor and communication networks already have the capacity to collect multiple types of data for public safety agencies to act upon.

The key is how governments can effectively harness such power without undermining the autonomy of various agencies under their banner. The best technologies give actionable intel-

ligence, but the capacity to follow up on that intelligence and make split-second decisions is in fact the most vital component of the public safety puzzle. The ability of multiple entities to work seamlessly towards a common goal will be pivotal in making a city as safe as it can be. NEC's latest breakthrough in smart pooling, a concept of a futuristic platform which is able to host numerous analytic engines and drive accurate, actionable intelligence is just the tip of the iceberg when it comes to creating seamless, scalable and sustainable solutions for a safer tomorrow.

The Global Safety Division will work closely with city planners and other important stake holders around the world to enhance its Safer Cities solutions to help make cities safer.

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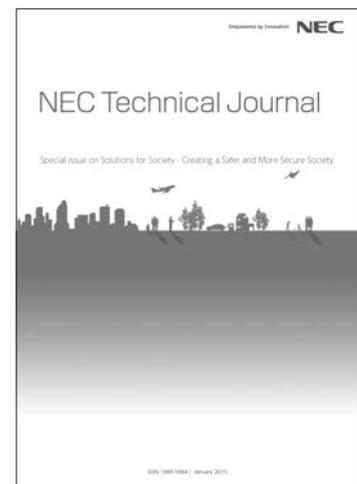
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