

NEC's Vision for Public Solutions

Today society is undergoing dramatic change on a global scale. Environmental changes on a planetary scale are causing natural disasters that wreak devastating damage. Environmental destruction and increased urbanization fueled by the exploding global population are creating new challenges for society. Globalization of business and economic activities has contributed to a rise in cyber attacks with increasingly serious worldwide consequences. We face the challenge of solving a multitude of diverse issues while building and maintaining a society that promises safety and security for all. This article will provide an explanation of how we at NEC are endeavoring to innovatively integrate ICT, information and communication technology, to create new value, and undertaking global initiatives to provide this value through its pursuit of business in the domain of public solutions.

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1. Introduction - Social Issues Confronting Humankind

From planetary environmental changes and a global population explosion to the globalization of economic and other human pursuits and the shifting balance of global power due to the economic growth of developing countries, everywhere we look there are mega trends reshaping our world. Their impact is manifested in a broad diversity of social issues ranging from the increasing severity of natural disasters and the spiraling demand for energy, water and other natural resources fueled by urbanization, to new issues such as the cyber attacks that have accompanied today's globalization of economic activities. Moreover, these are not issues that can be examined in isolation. Each is inextricably linked with the others, and their mutual influence multiplies the severity of their consequences.

The solution of these issues demands a new perspective. The very complexity of their inter-relationship will require the building of new social infrastructure that integrates a broad range of perspectives and combines them in highly innovative ways to address the safety and security of society at large while achieving new efficiencies in the utilization of energy resources.

2. The Role of ICT

Our pursuit of a fulfilling life is based on an ever-advancing social infrastructure. While supporting the foundation of this infrastructure, innovative combinations of ICT also provide an effective response to solving the increasingly complex and serious challenges that have arisen. Specifically, technologies such as sensors and cameras perform the role of "sensing" phenomena. These sensations are "collected" by telecommunications and network technologies in real time, and then are "understood" and used to "predict" outcomes using approaches such as biometrics, image analysis and Big Data analysis. Based on an assessment of the results reached by exploiting the Cloud computing infrastructure, the infrastructure and technologies "decide" on a response and "act" through, for example, autonomous-type robots. Then the cycle is repeated, completing the construction of an automated environment that fuses sensors and network IT and creates new value (**Fig. 1**).

Seeking new ways to enable the creation of innovative value, ICT continues to evolve. In the domain of technologies that "sense" the world around us, improved sensing of our natural environment is made possible by increasing deployment of more compact sensors that deliver higher functionality and

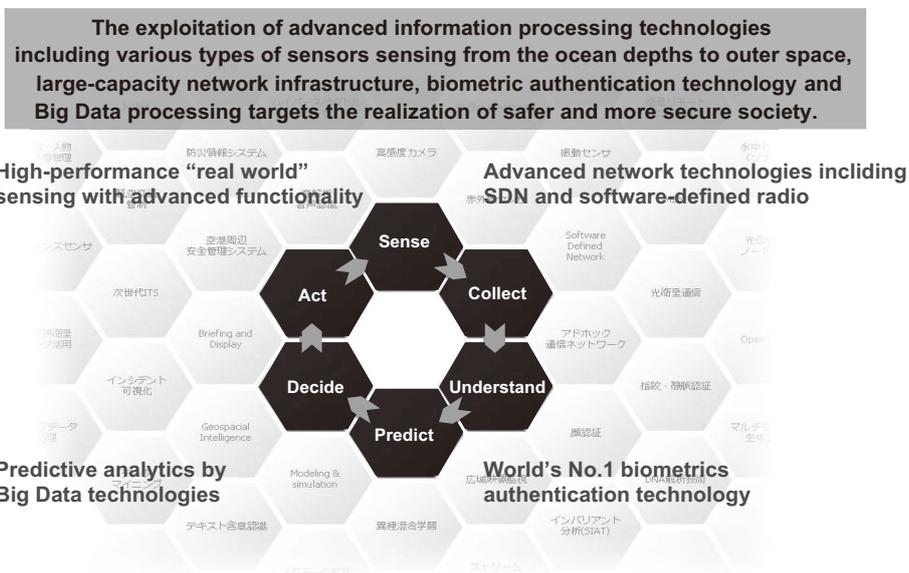


Fig. 1 Innovative value creation by combining ICT.

performance, SAR (synthetic aperture radar) and infrared cameras mounted in artificial satellites, drone aircraft, and other advanced technologies. The technologies that “understand” and “predict” possible outcomes will enable the early detection of aberrant or unusual behavior through the automatic modeling of sensor data correlations using invariant analyses, and then comparing the predicted values based on the model data against observation data collected in real time. For example, this type of technology can be employed in large-scale manufacturing plants where unusual conditions can be automatically detected, and action can be taken to pre-empt potential damage and injury. In the field of technologies that “collect” data, SDN (Software-Defined Networking) will enable the dynamic design and control of networks. One example is how to respond to network congestion and the inability to communicate by telephone or e-mail in the immediate aftermath of a disaster. SDN enables the construction of a highly disaster-resistant network that can evaluate and prioritize the urgency of communication such as telephone calls and email.

Through the innovative combination of cutting-edge ICT, we can detect the warning signs of a disaster at the earliest opportunity by sensing natural portents with sensors and cameras, collecting the data and applying Big Data analysis to predict the risk, and then take appropriate countermeasures and preparatory action in advance. Another example is the real-time collection and analysis of energy or water usage in a facility or even a household, and the society-wide optimization of the supply of these resources.

NEC not only has all the ICT and solutions necessary to make this infrastructure possible, but also possesses a wealth of know-how and experience in combining and providing them

in innovative ways. As one of only a handful of corporations in the world that boasts this scope of resources, technologies and expertise, NEC can propose signature solutions that promise uniquely innovative value.

3. Public Solutions Business

Through the pursuit of our business activities, NEC seeks to provide society with 4 types of value: “Safety,” “Security,” “Efficiency” and “Equality.” In order to safeguard individuals, cities and countries from everything from traffic accidents to natural disasters and cyber attacks, NEC provides disaster prevention systems, cyber security and other Safety Solutions. With the aim of enabling citizens to live their lives with a sense of security and peace of mind, our contributions range from protecting vital facilities such as power plants, airports and factories with surveillance and crime prevention technology to advanced systems that mitigate traffic congestion. With the aim of utilizing our limited planetary resources with maximum efficiency, we endeavor to build a sustainable society through the optimized usage of energy, water and other resources. And with the goal of contributing to a society of equality where all can enjoy smooth and fair access to its benefits, we strive to contribute to the improved efficiency of service providers ranging from the government to medical care providers.

In the domain of public service businesses, we provide these 4 values to a wide range of customers including the national government, local municipal offices and other administrative organizations; police and fire departments; educational institutions; medical institutions; and financial institutions. NEC boasts a long and diverse list of achievements in the develop-

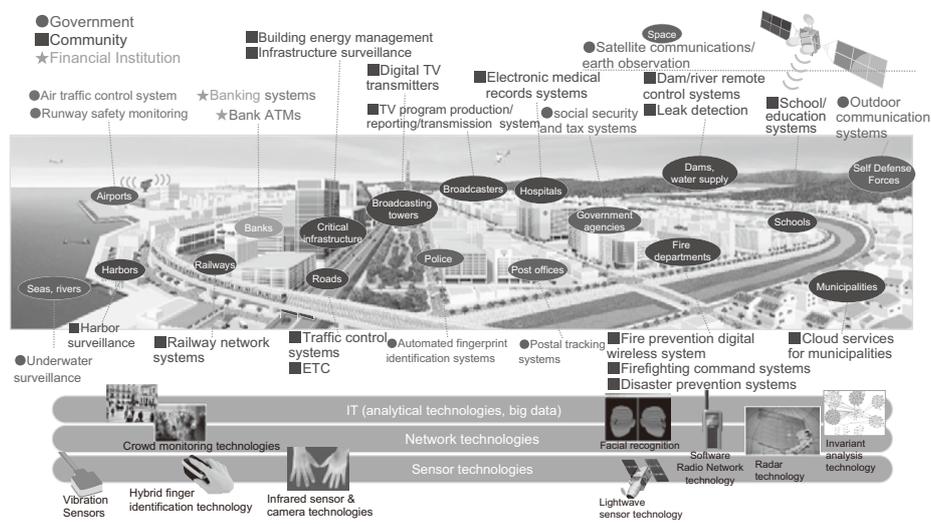


Fig. 2 Public Solutions Business Domain.

ment of solutions that combine the latest in sensor technologies, network technologies and IT for deployment in the ocean deeps, outer space and everywhere in between. This special issue will focus on introducing the reader to our public solutions for the public sector (Fig. 2).

Focusing the themes of each paper will focus on a different theme: “For a Life of Efficiency and Equality,” “For a Safer and More Secure Life” and “For the Security and Safety of Critical Infrastructure,” and explain the technologies provided by NEC and the innovative value created by our solutions.

4. Tackling the Global Market

Principally in the developing nations, the scale of annual investment in social infrastructure is estimated to reach hundreds of trillions of yen. Expressed in other terms, this is an amount proportional to the vast diversity of needs facing global society, and an indicator of the issues that must be solved. As explained below, NEC is advancing its business in phases to respond to the needs of this global market.

First of all, NEC will leverage its highly competitive solutions and advance proposals for solutions to issues affecting critical areas of social infrastructure. For example, we are using our biometric authentication solutions recognized as having the highest accuracy in the world to build national ID systems and accelerate criminal investigations. Our Failure Sign Monitoring System for Large-scale Plants based on NEC’s original invariant analysis technology are safeguarding power plants, factories, bridges and other large-scale facilities and infrastructure and preventing accidents. Our solution for monitoring water leakage uses high-precision sensors in concert with Big Data analytics to accurately detect leakage in city water mains at the earliest stage. Utilizing an extensive array

of state-of-the-art technologies, NEC is proposing solutions in high-priority areas.

In the next phase, we will put forward proposals to support social infrastructure from airports, railway systems and roads to the energy and water supply infrastructure. In order to achieve it we will take advantage of our strength in system integration based on our rich experience, and integrate various types of ICT solutions. Especially airports and stadiums have many needs that can benefit from the comprehensive technological prowess and project management expertise of NEC. Our aim is to provide not only technology and solutions, but also to include knowledge such as the operational know-how that has accumulated over the years in Japan and to create the added value of equality – the fair provision of services efficiently, safely and securely.

In April 2013, NEC established the Global Safety Division (GSD) in Singapore as an organization that will directly engage global markets in dialog and propose highly competitive solution in response to their needs. Solutions with a proven record of performance in Japan are being uniformly repackaged to conform with global standards, or redeveloped as a cloud platform to rapidly respond to the diversifying needs of customers.

Also in April 2014, with the aim of accelerating comprehensive proposals, the Transportation and City Infrastructure Division was newly created within the Public Business Unit and staffed by personnel with experience in public solution business in a broad range of business domains. By providing customers with enhanced value – the capability to obtain a comprehensive proposal with one-stop convenience, NEC will drive the advance of its global business initiative.

In the domain of public solutions business, the larger the scale of the project, the bigger the issue of financing the proj-

ect becomes for the customer. In response, our establishment of the Structured Finance, M&A Advisory Office in the Global Business Unit strengthens our capability to respond to the increasing number of large-scale and long-term projects by adding the dimension of financing to our proposed solutions. In other words, we are expanding the scope of the value of proposals to customers to include even funding aspects.

In parallel with our business development, NEC is also tackling a variety of new challenges with the aim of developing new and advanced technologies. For example, we are undertaking joint research with Imperial College London in the United Kingdom to develop innovative technologies that will pave the way for “smart” water management solutions. These technologies analyze the results of smart sensing of pipe leakage and water pressure, and optimize the control of water carried by the intricate water supply network infrastructure. Also the establishment of NEC Laboratory Singapore will enable to pursue research – not from a Japan perspective, but from an overseas market-oriented point of view – thus contributing to the creation of enhanced value and furthering our global business aspirations.

5. Conclusion

“To be a leading global company leveraging the power of innovation to realize an information society friendly to humans and the earth.” This is the NEC Group Vision 2017 – a declaration of what kind of company we are committed to becoming by the year 2017, and the goal to which our business activities are dedicated. Furthermore, our Mid-term Management Plan 2015 for the 3-year period through the fiscal year ending March, 2016, clearly states our commitment to “Solutions for Society,” and our reinvention as a “social value innovator”. NEC has been providing solutions for a variety of social issues that affect individual citizens as well as for problems with a global impact, all with the objective of contributing to the creation of a society where all can enjoy equitable access to services safely, securely and efficiently. In the future, NEC will continue to create innovative value through public solutions that are inspired by our Group vision and founded on an in-depth and repeated dialog with our customers and a profound understanding of their challenges.

Information about the NEC Technical Journal

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Japanese

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Vol.9 No.1 Special Issue on Solutions for Society - Creating a Safer and More Secure Society

Remarks for Special Issue on Solutions for Society - Creating a Safer and More Secure Society

NEC's Vision for Public Solutions

NEC's Public Safety Initiative

For a life of efficiency and equality

New Services Realized with the "My Number" System

"NEC Stadium Solutions" Played a Critical Role in Construction of the World Cup

Deployment of Eye-Catching, Visually Appealing Flight Information Systems

NEC SDN Solutions Accelerate New Service Implementations for Railway Stations

Cloud-Based Interpreting Service Using a Videoconference Telephone Compatible with Multiple Devices

Easy-to-Use, Smartphone-Oriented Internet Banking, featuring Color Universal Design

The World's Best Face Recognition System to Achieve Safety and Security in Our Society

Product Line-up for Face Recognition Solutions and its Social Applications

For a safer and more secure life

Healthcare challenge with ICT (Information and Communication Technologies)

Information Governance

Safety Awareness Network

Building a Safer City in Singapore

Securing the Future in Tigre

New Congestion Estimation System Based On the "Crowd Behavior Analysis Technology"

Speech/Acoustic Analysis Technology - Its Application in Support of Public Solutions

High-Sensitivity Camera for Round-the-Clock Surveillance

Imaging Solutions for Search & Rescue Operations

Emergency Mobile Radio Network based on Software-Defined Radio

For the security and safety of critical infrastructure

Centralized Information Control System Supporting Safe and Stable Shinkansen Transportation

Smart Water Management Technology with Intelligent Sensing and ICT for the Integrated Water Systems

A Water Leak Detection Service Based on Sensors and ICT Solutions

Harbor Monitoring Network System for Detecting Suspicious Objects Approaching Critical Facilities in Coastal Areas

Failure Sign Monitoring System for Large-scale Plants Applying System Invariant Analysis Technology (SIAT)

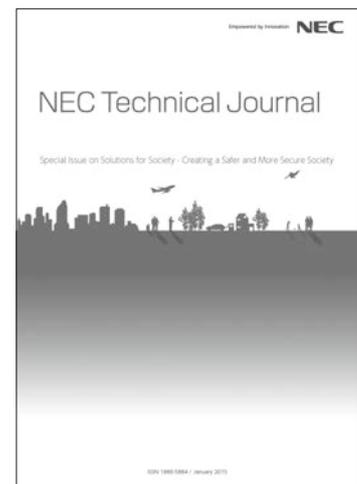
Infrared Camera Image Processing Technology and Examples of Applications

Cyber Security Factory - Our Commitment to Help Developing More Effective Methods of Coping with Today's Increasingly Sophisticated Cyber Threat

Advanced technologies for a Safer and More Secure Society

Technologies for Improving the Speed and Accuracy of Fingerprint Identification Systems in Support of Public Bodies

Compression Technologies Supporting Next Generation Broadcasting Services - Ultra-HD Digital Video Compression Technology and Real Time HEVC Compression Unit Corresponding to 4K HD Images



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NEC Information

NEWS

NEC Starts Operation of Satellite Integration Center

Development of Water Purification System Type2 Reverse Osmosis (WPS RO2) for Japan Ground Self-Defense Force
