MARKET NOTE

Creating Socioeconomic Value with Smart Solutions: NEC iExpo 2018

Kar Leong Tew   Gerald Wang   Jan Alexa   Chris Barnard

Mark Zannoni

EXECUTIVE SNAPSHOT

FIGURE 1

Creating Socioeconomics Value with Smart Solutions: NEC iExpo 2018

This IDC Market Note covers the NEC iExpo2018 held in Tokyo from 8-9 November 2018. The focus of the event was on NEC's vision of a safer, more secure, more efficient, and equitable global societies that incorporate digital solutions to create socioeconomic value.

Key Takeaways

- NEC shared an update on its suite of analytical, security, and artificial intelligence (AI) solutions such as NEC the WISE, Bio-IDiom, as well as innovation accelerator initiatives such as NEC X and dotData.

- NEC's focused industry vertical solutions are its "NEC Safer Cities" solution suite (that includes digital government, public safety, smart transportation, city management, and digital healthcare) and NEC VCI that includes high-end manufacturing, next-generation retail, and the future of the entire food industry value chain — from agriculture to manufacturing, retail, and waste management.

- The Olympics and Paralympics Games Tokyo 2020 showcase was a special customer highlight that will be leveraging NEC's solution suites.

Source: IDC, 2019

IN THIS MARKET NOTE

This IDC Market Note covers the NEC iExpo 2018 held in Tokyo from 8–9 November 2018. The theme of the event was Digital Inclusion, which is NEC's vision of a safer, more secure, more efficient, and equal society that incorporates digital solutions that addresses challenges in a modern society.

IDC'S POINT OF VIEW

Through industry use cases, such as the impending Olympics and Paralympics Games Tokyo 2020, NEC executes its long-term strategic focus of "Orchestrating a Brighter World" driven by an outcomes-based Social Value Creation approach.

Executive Insights

IDC analysts were provided access to connect with senior-level executives during the NEC iExpo 2018. The executives included Mr. Takashi Niino, President and CEO (Representative Director), NEC Corporation; Mr. Noritaka Taguma, Senior Vice President, NEC Corporation; Mr. Yasunori Mochizuki, Senior Vice President, NEC Corporation; Mr. Motoo Nishihara, Senior Vice President, NEC Corporation; and Mr. Makoto Enomoto, Senior Vice President, CMO, NEC Corporation. Key insights included:

- Mr. Niino's keynote demonstrated NEC's deep involvement with their customers in addressing strategic needs across diverse specialized industries. Key insights included NEC's commitments to address an increased cross-industries focus in improving operations' productivity globally, meet outcomes-based expectations for open innovation and investments into emerging technologies, and engage customers more beyond solution provisioning, for example, helping public sector customers navigate funding challenges through private-public partnerships, and ensuring NEC has the best talents in place to address its customer's ventures into emerging technologies (e.g., data scientists for artificial intelligence [AI] and quantum computing, cloud specialists, public safety specialists, etc.)

- Mr. Taguma shared about NEC Safer Cities that includes digital government, public safety, smart transportation, digital healthcare, and city management tools. With over 700 systems deployed across 70 nations globally, especially in criminal investigations and immigrations control, NEC demonstrated deep expertise to create a new and enhanced value for its customers. Case studies included stadium solutions for the 2018 Asian Games and the unique digital ID biometrics solution for the Aadhaar Program in India, with well over 1 billion people registered in the system.

- Mr. Nishihara expanded on NEC's research and development of biometrics, AI, and security technologies to support its Safer Cities solution suite. These include biometrics (e.g., multi-modal biometrics authentication through fingerprint, iris, voice, finger veins, facial, DNA, etc.); AI for behavior understanding (e.g., behavior pattern classification, behavior understanding, and integrated surveillance in real time); AI for wide-area situation understanding (e.g., congestion or crowd-flow prediction, acoustic situational awareness, and wide area city surveillance such as optical fiber sensing); AI for analyses (e.g., automation and acceleration of data analyses – all for vertical solutions in public safety and smart transportation. The company dotData Inc. was created to address this need); security (e.g., secure facial recognition through multiparty computation, and next-gen data protection through blockchain

technologies); and ICT Platform (e.g., dedicated high-speed computing and automated communications for analyzing real-time large or unstructured datasets).

Smart Solutions and Spurring Innovation

NEC's digital inclusion strategy is to build on its smart solutions Bio-IDiom and NEC the WISE, which provide a holistic set of intelligent solutions for public safety. Authentication via biometrics is the first point of entry for any individual entering a secured environment and a constant challenge faced by administrators is the balance between ease of use while ensuring reliability and minimizing risks/threats.

Bio-IDiom is NEC's multi-modal biometrics system that provides authentication based on either the face, iris, ear, voice, palm, fingers, and more (e.g., DNA, vein analysis, etc.), allowing for a seamless, smarter, customizable, and secured customer experience. It is also powered by NEC algorithms that has consistently topped the rankings at the NIST annual benchmarking. NEC's vision for Bio-IDiom is for it to provide multi-modal authentication in which the end users can select the most appropriate combination or sequence of authentication based on their operating environment, thereby achieving flexibility while maintaining the security requirements of both physical and digital space.

NEC the WISE provides end users with visualization, analytics, and prescriptive suggestions to augment human intelligence during the decision-making processes. NEC has been investing extensive research in AI, which includes "white box" AI to ensure that AI accountability is covered. The accountability of AI decision-making is the key topic for many stakeholders that are considering the employment of AI. The ability to trace the origins of decisions is inherently limited in cases of some AI technologies, as the algorithms are acting as a black box and by the virtue of employed technology it is not possible to fully audit the decision-making process. NEC the WISE white-box solution is targeting the group of customers that demand full auditability and accountability of the entire AI decision-making process especially in sensitive situations such as loans approval in which organizations would be hard pressed by customers on why their loan was rejected.

Two major acceleration for technology development and market enablement were created by NEC in 2018. They are **NEC X** and **dotData**. Both companies are headquartered in the Silicon Valley to capitalize on the region's startup ecosystem, and help further accelerate the development of new businesses of cutting-edge solutions that were created in NEC's Central Research Laboratories. To elaborate, NEC X focuses on spurring innovation while dotData provides Automated Machine Learning (AutoML) to address the shortage of data scientists and difficulty at developing AI models that address business challenges. A key focus of dotData's offering is on feature engineering, which currently is typically led by data scientists while consulting with the domain experts to generate features and data points to be used in the training of the AI models. A well-executed feature engineering process would not only help to increase the accuracy and performance of the AI model but also reduce the time required to train and develop the models.

Customer Case Studies

Delta Air Lines

Given the profound increase in air travel and physical constraints of airports, new approaches are needed to increase the efficiency and throughput of passengers through terminals. Airlines can upgauge aircrafts, but fixed terminals are binding. At Hartsfield-Jackson Atlanta International Airport, the world's busiest airport by passengers, Delta Air Lines partnered with NEC to develop a facial-recognition system for departing international passengers to address three "clearance" points where

passengers interface with airport personnel — at bag drop, at security, and at the boarding gate. Delta views this as the future of flying, and with many benefits: better identification verification, better customer service, greater efficiency of limited airport space, and a more enjoyable passenger experience from a more seamless movement from curb to gate. This includes multilayered checks; swifter identification process, with a frictionless customer experience; voluntary participation; and scalability of the solution.

Olympic and Paralympic Games Tokyo 2020

NEC is partnering with the Olympics and Paralympic Games Tokyo 2020 to provide specialist public safety equipment and software (e.g., facial recognition-based access solutions) and networking solutions for operations of the upcoming games. The games' organizers plan to leverage this technology to ensure seamless coordination of actionable information access and sharing across multiple government agencies to regulate the movement of the visitors across over 40 venues, which includes various access controls for an estimated 300,000 individuals, consisting of athletes, management and operations staff, volunteers, and media personnel. The Chief Security Officer of the Olympics and Paralympics Games Tokyo 2020, Mr. Toshiro Yonemura, shared that a key part of this partnership is crisis management and improved awareness for public safety. These include solutions in predictive scenario simulations (e.g., congestion detection and pedestrian navigation) and effective enablement of law enforcement (e.g., software-defined networking, drone surveillance), biometric identification services for access control (e.g., customs and border protection solutions, intrusion detection, abandoned object detection), as well as all-rounded surveillance of critical infrastructures and crowds of people. In addition, solutions to secure massive open spaces and multiple venues will be pursued. With regard to data security and privacy protection, Mr. Yonemura shared that it will be compliant to global and domestic standards, such as GDPR, and the Act on Protection of Personal Information (APPI) in Japan.

Transportation and Healthcare Pilots

The number of edge devices and solutions that have been deployed are growing and as edge solutions are increasingly built with more computational capabilities, it enables more intelligence to be available to staff on the ground to allow them to focus on the more human-centric tasks. Two standout showcases for IDC at iEXPO are in the transportation and healthcare domains, where the frontline staff (e.g., drivers, nurses) are continuously exposed to the ever-increasing expectations from the customers on service quality and efficiency.

- A transport operator in Japan has recently partnered with NEC to introduce a wearable that was issued to their drivers. The health conditions of the drivers while they are on duty are captured and monitored, providing early warning on a potential health hazard that would result in the driver failing to effectively operate the vehicle. Codesigning the wearable allows NEC and the operator to have assurance over the quality of data collected and a consistent quality of data to enable them to focus on capturing the right signals on impending health hazards instead of the engineering tasks of incorporating the wide range of wearables available in the market.

- NEC began a trial with a local hospital based on voice recognition to empower nurses to carry out both administrative and personalized nursing care services while performing ward rounds and patrol. The accuracy of the readings and symptoms recorded by the medical staff cannot be inaccurate, and this solution allows them to simultaneously update the hospital records system while catering to their patients' needs and care experiences. The solution begins with

>   speech detection (of the nurses), analyses, and automated updating of patient records, thereby allowing the nurse to interact with the patient, enabling customized care experiences

Both use cases described in this report demonstrated how technology can be leveraged and made available to staff within their working environment to ensure they are able to concentrate on their core role and purpose, rather than time-consuming processes and additional administrative compliance.

IDC Opinion

The NEC iExpo 2018 was a great opportunity for NEC to showcase its strengths to the global stage, with its leading role in providing safe city solutions for the upcoming Olympics and Paralympics Games Tokyo 2020. The introduction of new ventures such as NEC X and dotData is a clear indicator of NEC executing plans to prepare itself for the digital revolutions within specialized industries it traditionally operates in. Implementation of "white box" NEC the WISE solution is a sign that NEC is making investments to address of ethical aspects of AI assisted decision-making.

LEARN MORE

Related Research

- *NEC Makes Bold Strides to Transform; Sees Significant Opportunity Outside Japan* (IDC #EMEA44520418, December 2018)
- *IDC FutureScape: Worldwide National Governments 2019 Predictions* (IDC #US44390018, October 2018)
- *IDC FutureScape: Worldwide Smart Cities and Communities 2019 Predictions* (IDC #US42449818, October 2018)
- *IDC FutureScape: Worldwide Health Industry 2019 Predictions* (IDC #US43122618, October 2018)
- *IDC FutureScape: Worldwide Education 2019 Top 10 Predictions* (IDC #AP44343418, October 2018)
- *NEC Global Analyst Summit 2017* (IDC #AP43434817, December 2017)

Synopsis

This IDC Market Note covers the proceedings and discussions during the NEC iExpo 2018 held in Tokyo from 8-9 November 2018. Digital inclusion is the key theme of the event, in which NEC focused on how digital technology can add new significance to people, things, and contexts. This event occurred alongside the NEC Future Creation Forum as well as the C&C User Forum and iExpo 2018, where analysts had the opportunity to walk the grounds and explore the innovative technologies and solutions as well as NEC's customers deployment best practices.

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

IDC Asia/Pacific Headquarters (Singapore)

80 Anson Road, #38-00
Singapore 079907
65.6226.0330
Twitter: @IDC
idc-community.com
www.idc.com