\Orchestrating a brighter world NEC

5G. A Future Beyond Imagination

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In the 5G world, everything will be connected. Unfettered by physical networks, or the location of people and smartphones, 5G will offer ultra-fast, superior-quality services in near real time for the ultimate customer experience and optimum social benefit. Artificial intelligence (AI) technology will play a significant role in directing massive volumes of 5G data and devices and facilitating reliable low-latency applications, including robotic and automated operations.

But NEC's 5G Future Beyond Imagination encompasses much more than that: It is a three-pronged approach to rapid 5G innovation that spans network transformation, operational transformation, and business and social transformation. A collaborative approach designed to help mobile operators, corporations and broader organisations build diverse 5G networks, deliver agile, cost-effective 5G services, and develop new 5G business models that can both promote revenue growth and ensure social progress.

ENSURING 5G SUCCESS

Network Transformation: Migrating existing networks and building new real-time, remote and secure networks is necessary to serve the diverse requirements of 5G-era services, from the massive simultaneous connection of IoT devices to ultra-high speed or ultra-low delay applications. Massive MIMO beam-forming technology can dramatically increase cell capacity by assigning the same wireless resource to multiple devices simultaneously. Virtualising core networks using Centralized-RAN enables flexible deployment of processing resources, simpler coordination of operations and efficient catering of a diverse range of quality of experience (QoE) requirements. In addition, bringing key cloud-based functions closer to the edge using multi-access edge computing will enable network operators to improve performance and generate new revenue streams through the provision of new, secure, high-speed services.

Operational Transformation: End-to-end orchestration of hybrid virtual and legacy networks and automation of business management systems' operational processes offers a wealth of benefits, including improving the efficiency of increasingly complex operations, heightening service quality, providing greater network security, reducing capital and operational outlays, and promoting rapid innovation and new revenue generation. Orchestrating traditional BSS with various IoT service providers would create a digital market place for the smooth connection of smartphones, IoT devices, CSP networks and CSP data centres. Closed Loop Control would enable real-time analysis of device traffic and quality of service (QoS)/QoE information acquired from networks, and automated optimisation of resources according to network load and QoS requirements.

Social Transformation: 5G will fundamentally change business and society as we know it. NEC's social transformation is designed to help telecom carriers and companies embrace business model and work style innovations by connecting them to the assets they need. Thus, enhancing corporate earnings, and helping create a more satisfied, secure society through the collaborative creation of new services and applications that transcend traditional industrial and business categories to create new value for all.

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Social Transformation — Promoting the digitalization of society and industry, and transforming user lifestyles and working styles

Operation Transformation — Advancing the automation of business management, networks/IT and service operations

Network Transformation — Building secure networks optimized for diverse requirements (ultra high speed, ultra low delay, multiple simultaneous connections)

5G IDEAS IN ACTION

5G, the full integration of computers and communication, is the ICT infrastructure of the IoT age, but shaping a future beyond imagination requires vision and co-creation of services. NEC is already working with partners to develop new 5G technologies, ranging from smart houses to remote healthcare diagnosis, 4K video entertainment, automated farm management, advanced traffic assistance, as well as advanced security solutions.

E-stadium Advanced Security Services: To meet the growing need for crime and broader threat prevention, NEC is trialing advanced security services for future large sporting events in Tokyo and other public facilities that enable the detection of abnormalities using image analysis. Information from surveillance cameras, drones, security gates, security guards equipped with unique IT devices such as IoT earpieces are transferred via an ultra-high-speed, high-capacity, low-delay wireless communications base stations to monitoring centres for AI-driven information analysis and anomaly detection.

Remote-controlled Construction: Remote-controlled construction in dangerous locations or locations where expert operators are hard to secure has been hampered by poor definition of video streaming caused by slow communication speed or transmission interference. A cooperative project with mobile operators and construction companies entered the proof of concept stage in January 2018. Ultra-low latency, high-definition, video of construction machinery and information on field conditions are transmitted in real time by 4K cameras to remote operators, enabling them to delicately control the position, orientation and operation of construction machinery.

Shopping Mall Solutions: In addition to the provision of shopping mall security solutions such as lost-child location services and the detection of suspicious individuals in facilities, shopping mall hospitality solutions endeavour to pinpoint the precise needs of individual customer personalities and capture inbound demand from international visitors by offering indoor route guidance and automated translation services, using indoor positioning technologies and real-time, high-definition video image analysis and behaviour detection.

NEC seeks to promote the collaborative creation of new trans-industry business models for the 5G era by utilising advanced ICT technologies that combine 5G with proprietary AI, IoT and other digital technologies, and establishing a 1,000-strong team to promote joint development activities. NEC's 5G network, operational and social transformation focuses on the provision of virtualised core-to-edge networks, cost-effective end-to-end network operation and swift service innovation, and joint development of universal 5G business models as the surest way to create an exciting and profitable 5G environment for mobile operators, a convenient and secure 5G society, and a superior 5G experience for end users that is beyond imagination.

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