UAE's Nedaa Adopts Nokia's Private LTE for Safe and Smart City Applications

Leveraging mobile broadband to coordinate public safety and security

An IDC Buyer Case Study
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IDC ANALYZE THE FUTURE

Executive Summary

Governments in the Middle East are continually looking for innovative ways to make cities safe and smart. The development of Smart Cities is regarded as critical to the goals of realizing greater public sector efficiencies, reducing costs, and enhancing service deliveries to large and technologically savvy populations.

Smart City initiatives seek to address challenges including safety and security, waste management, water and electricity supply, traffic congestion, housing, environmental protection, and disaster relief. Most initiatives involve the Internet of Things (IoT). They rely on connectivity that enables the deployment, monitoring, and management of numerous and varied smart devices and equipment. Emerging technologies like robotics, blockchain, Big Data analytics, artificial intelligence, machine learning, and augmented or virtual reality often feature prominently in Smart City initiatives.

In the Middle East, the Nedaa Professional Communication Corporation is aggressively driving a Smart City agenda. Nedaa is a UAE government-owned entity that provides communication services to specialized government, semi-government, and private institutions. To enable Smart City services, Nedaa has implemented a Nokia private LTE network that provides robust, high-speed broadband. The network enables Nedaa to support crucial aspects of public safety and security in the UAE capital, Dubai.

Table of Contents

In This Buyer Case Study

This case study explores the role that private LTE networks are playing in supporting public sector Smart City initiatives. It focuses on the UAE's Nedaa Professional Communication Corporation, a government entity that caters to the communication needs of government, semi-official, and private institutions in Dubai. Nedaa is leveraging private LTE to support various Smart City and public safety and security applications. Nedaa has a long-term plan to roll out more services in the UAE using this network.

Situation Overview

Smart Cities in the Middle East

According to the United Nations' "The World's Cities in 2016" report, an estimated 54.5% of the world's population live in urban settlements. According to the report, urban areas are projected to house 60% of the global population by 2030. One-third of people will live in cities with at least 500,000 inhabitants.

Economic difficulties triggered by the slump of oil prices revived interest among the nations of the Gulf Cooperation Council (GCC) in diversifying their economies and creating sustainable economic models. National initiatives like Saudi Arabia's Vision 2030, the UAE's Vision 2021, Bahrain's Vision 2030, Kuwait's Vision 2035, Oman's Vision 2020, and Qatar's National Vision 2030 aim to digitally transform the economies of these countries to make them more attractive to global investors, highly skilled workers, and local businesses. Through these projects, governments hope to enable sustainable long-term growth and to reinvent the way that citizen services are developed and delivered.

GCC governments are also investing in greenfield projects, such as Masdar City in the UAE and NEOM in Saudi Arabia. Initiatives have been launched to transform major cities, such as Dubai, Abu Dhabi, Riyadh, and Jeddah, into Smart Cities. By developing Smart Cities, authorities are seeking to address the growing challenges around traffic and transportation, waste management, water and electricity supplies, public safety, and environmental protection. They want to establish efficient and futuristic destinations for living and working to enable business growth and to improve the quality of life of residents.

The evolving nature of city administration is promoting change. As cities become smart, there is a need for tight integration and seamless connectivity between municipalities, police, road and transportation authorities, utility service providers, health and safety authorities, and interior affairs. These organizations need be connected to a central command and control center that can provide the visibility and transparency necessary for officials to make real-time or near real-time

decisions. In the business area, companies in Smart Cities are at various stages of digital transformation. They are leveraging technologies to improve their supply chain, logistics, fleet, and product process management.

To be successful, Smart Cities require robust connectivity. Government and private organizations must also factor in budgetary constraints and regulatory compliance as they acquire and deploy the technology required for transformation projects.

Robust Connectivity for Public Protection and Disaster Relief

At the International Telecommunication Union's World Radiocommunication Conference in 2003, member states and industry stakeholders passed a resolution on the use of communications technology by security agencies and first responders. Under the resolution, a series of harmonized frequency bands were identified for emergency public protection and disaster relief (PPDR) communications.

A range of communication networks emerged to enable these communications, including Terrestrial Trunked Radio, APCO P-25, digital mobile radio, and LTE Advanced Pro. LTE, however, is the only one of these technologies that can support high-bandwidth, low-latency applications like live high-definition surveillance video streaming, which is becoming a key application on critical communication networks. PPDR applications also require other integral components of LTE networks, such as security and reliability, redundancy and coverage, situation awareness and dynamic prioritization, quality of service, and push to talk (P2T). The upcoming rollout of 5G technology is expected to expand the capabilities of critical communications by enabling ultra-high bandwidth, massive input and output, and ultra-low latency.

Nedaa's Private LTE Network

About Nedaa

Established in June 2008, Nedaa Professional Communication Corporation is a UAE government-owned entity that manages communications services. It provides services for specialized government, semi-government, and private institutions in the retail, healthcare, hospitality, tourism, transportation, ports and logistics, oil and gas, and power and utilities sectors.

Nedaa's clients include government departments like the Dubai Roads and Transport Authority (RTA), Dubai Municipality, Emirates Global Aluminium, Dubai Investments Park, and the Emirates Motor Sports Federation.

Nedaa is one of the few organizations in the Middle East to have implemented a Terrestrial Trunked Radio network. Nedaa's network serves more than 27,000 users, including organizations involved with PPDR, transportation, logistics, utilities, and security.

Project Overview

Nedaa began studying the use of LTE technology as early as 2009, with the aim of finding a reliable high-bandwidth communication network capable of supporting applications like video. Nedaa was looking for a next-generation technology robust enough to enable the deployment of new, emerging applications in a resilient, available, and secure environment.

Nedaa awarded a private LTE network project to Nokia Networks in 2016. The selection criteria included the vendor's capability to provide resilience, availability, redundancy, low latency, group calls, and P2T. The move came after Nedaa received 2x10 MHz of spectrum from the UAE's Telecommunications Regulatory Authority in 2014. Nedaa carried out a comprehensive request-for-proposal process to ensure that the requirements of its major customers would be fulfilled.

Nedaa hopes to have its private LTE network providing full coverage to Dubai by the time the city hosts the World Expo in October 2020. In the first phase of the rollout, Nedaa has showcased a range of successful use cases that have been implemented in partnership with clients. Nedaa helped demonstrate drone capabilities at GITEX 2017. It has also demonstrated a "connected boat" use case for Dubai Civil Defense (DCD). Nedaa has signed a memorandum of understanding with the RTA to work on a proof of concept for the deployment of automated drones by 2030 (the RTA is contemplating the use of drones for traffic and road monitoring purposes, with the help of DCD). Nedaa's private LTE network is also being evaluated for the role it may be able to play in flying taxis.

Nedaa plans to leverage the 5G compatibility of its private LTE network to deliver higher speeds and capacities for Smart City IoT use cases and to support advanced analytics, artificial intelligence, and Big Data applications.

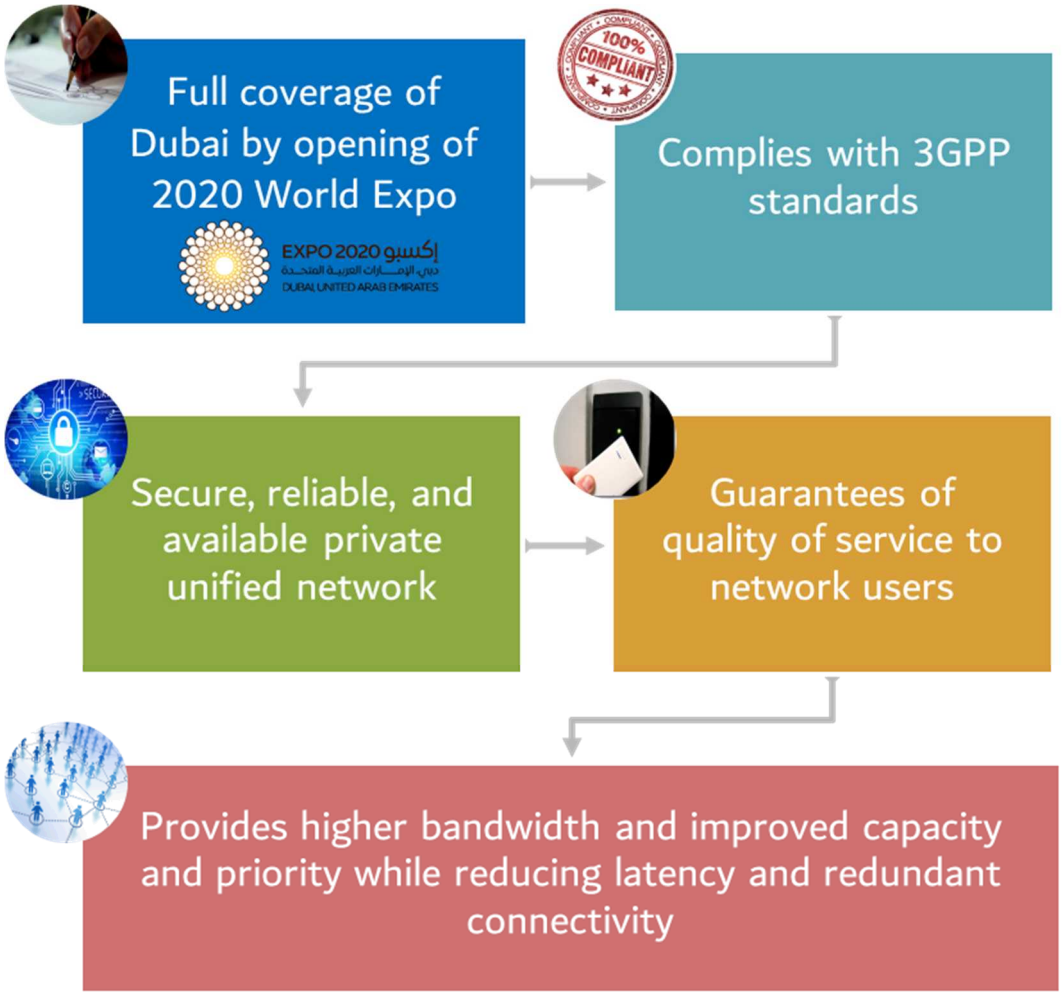
Nedaa says its selection of Nokia was based on the vendor's strengths, including its longstanding leadership in wireless communications, strong research and development focus, and solid after-sales support. These are integral factors in ensuring proper implementation and consolidation of Nedaa's diverse communications assets. Nedaa has also cited Nokia's constant effort to expand its portfolio through the acquisition of other technology vendors.

Nedaa's Smart City Applications

- HD Voice and Video Over LTE — Allowing seamless communication of voice and video
- Narrowband IoT — Deployment of smart meters, health equipment, and sensors that require high availability and a 3GPP standardized ecosystem
- Video Surveillance — Ability to capture live HD images and videos of urgent incidents that can be shared over the network
- Mission Critical P2T— Subject to Third Generation Partnership Project (3GPP) standardization and availability of market devices
- Command and Control Room — Broadcasting and communicating with a command and control room
- Video Analytics and Other Applications — Mobile edge computing to analyze videos

Source: Nedaa Professional Communication Corporation

Scope of Nedaa's Mission-Critical Broadband Network

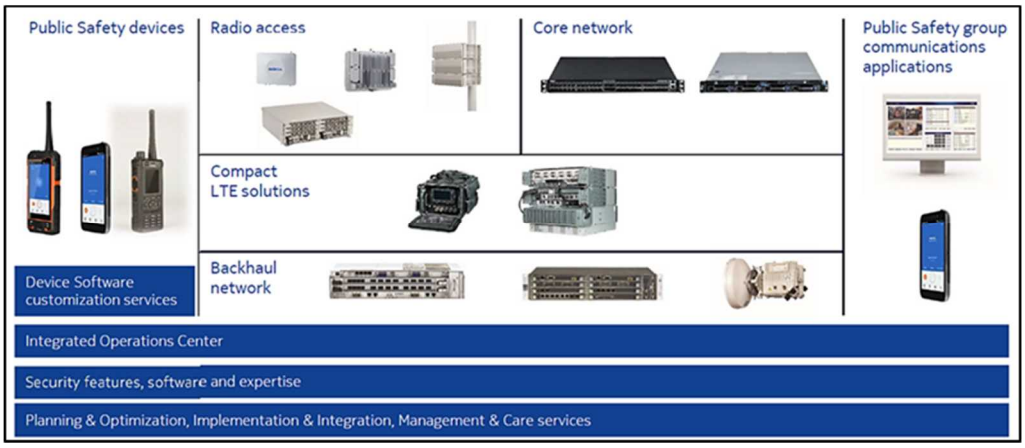


Source: Nedaa Professional Communication Corporation

About Nokia and Its Private LTE Solutions

Nokia is a veteran partner of government agencies, including security agencies. More than 110 organizations currently work with Nokia on mission-critical communication networks.

Nokia's ViTrust portfolio of private LTE solutions includes handset configuration and device software customization services, core and backhaul equipment, compact network equipment, radio access equipment, and group communication applications. The company also provides a portfolio of integrated operations center solutions for unified view, pre-integrated application modules, integration layer, and customized design. Nokia can deliver end-to-end connectivity, public safety expertise, and analytics services. It possesses global delivery capabilities.



Nokia provides flexible deployment options for mission-critical mobile broadband solutions. It offers an evolutionary path for governments to meet their future network needs.

Present and Future Outlook

Nedaa's private LTE deployment shows that these networks are becoming pivotal for handling mission-critical use cases across the public and private sectors. Their effectiveness depends on reliable communications, enhanced coverage, support for diverse devices, and increasingly, the need to have better control of a network to ensure security.

As private LTE networks become viable, providers are exploring how to offer them at lower costs and surpass the benefits offered by last-mile coverage options such as Wi-Fi. Equipment manufacturers and service providers are examining the possible development of private LTE that uses the same architecture as carrier LTE, but offers advanced security, versatility and the ability to scale and support multiple devices.

Essential Guidance for Organizations

Private LTE Benefits

The benefits of private LTE networks include: management of quality of service for large enterprises and mission-critical services; better indoor and outdoor coverage; lower deployment costs; lower power requirements; built-in security and spectrum flexibility to support devices that require either narrowband or broadband connectivity speeds; and mobility to allow devices on a private network to use a public network when needed.

Evolutionary Path Towards 5G

Private LTE is firmly set on an evolutionary path toward 5G — and thus has the potential to enable enhanced and/or advanced applications. Enterprises that choose the private LTE route can be assured it will serve as a stepping stone to seamless 5G adoption.

Regulatory Considerations

The benefits of private LTE outweigh the existing alternatives — but organizations considering adopting the technology must be aware of regulatory factors. These include availability and regulations governing unlicensed spectrum. Organizations should also be aware of whether licensed spectrum has been set aside for critical communications applications.

Vendor and Technology Selection

Enterprises' vendor selection criteria should depend on their technology needs. For example, for reliable mobility services, organizations typically value high-bandwidth and low-latency technology in the form of LTE, the most preferred mission-critical communication technology now available. The next question to be addressed is around the deployment model and whether to use a public or a private network. For private networks, enterprises may have to decide between in-house and managed service models. In case of third-party models, enterprises may demand that the provider or partner have significant expertise and/or a strong managed services proposition.

Connectivity Underpins Smart Cities

How quickly and smoothly cities evolve to become Smart Cities, and how rapidly enterprises undertake their digital transformation journeys, rely on the choice of technology used to connect devices and the applications deployed on networks. Private LTE is undoubtedly emerging as the connectivity technology of choice for critical communications in the public and private sectors.

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