

# ICT Enabling Technologies for Smart Cities

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**Abstract**— A smart city adjusts its social, business, and natural needs, improving the assets it has accessible. Information and Communications Technology (ICT) for shrewd urban areas is to give city answers for encourage an improvement and manageability of a city for the advantage of its population, its economy, and the greater ecosystem in the city. It is to gauge a keen city as far as the enhancements in personal satisfaction and monetary prosperity that are accomplished through applying ICT innovations to design, outline, fabricate, and work the city foundation. In smart city applications, the initial phase in the information's voyage through the application is its gathering by the diverse advancements conveyed all through the city. This paper surveys data acquisition technologies such as Sensor Networks, MANETs, Unmanned Aerial Vehicles (UAVs), Vehicular Ad hoc Networks (VANETs), Internet of Things (IoT), Software-Defined Networking (SDN), Network Functions Virtualization (NFV), 5G. Next, it demonstrates information processing technologies, for example, Cloud Platform, IoT Platform, Big Data Platform, Machine Learning, Deep Learning, and IoT Analytics. Encouraging data spread between various nodes is vital to savvy city acknowledgment. Last, because of the presence of various types of end users (e.g., residents, organizations, government offices, and so forth.) requiring distinctive levels of nature of management, the paper exhibits a proposed testbed solution and recent associated experiments.

**Keywords**— IoT, SDN, NFV, 5G, Cloud Platform, IoT Platform, Big Data Platform, IoT Analytics



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Dr. Dzung led many national research projects, acted as a principle member of international projects at RisTI (Indonesia), NTT, NICT (Japan), LG, ETRI (Korea), and NYU (USA). He was the ICT project leader, trainer, and consultant for VNPT, Saigon Postel, EVNTelecoms, VNU HCM City, Thailand Telecoms, and AIT. He actively contributes to International Telecoms Union (ITU) and APT activities in the roles of Vice-Rapporteur, Vice-chairman of ITU-D Study Group 2. Dr. Dzung published more than 30 papers in national and international journals and conferences. He has been the Deputy Director of Research Institute of Post and Telecoms and the Assistant Director of Vietnam Branch - Korea Information and Communications Society (KICS). Dr. Dzung is the Deputy Director of Information

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**Quoc Uy NGUYEN** – Dr Uy has 5 years of experience in ICT R&D, consulting, and training. He is lecturer and researcher of Post and Telecommunication Institute of Technology (PTIT). His main interest remains in rapid measuring and controlling parameters of electric power system remotely. IOT in this area can be helpful to collect data and transmit to the host. He currently works in building smart home, smart agriculture system, including Wireless sensor network (WSN), IoT system, Big Data. He has obtained his Ph.D. from the South-Russian State Polytechnic University (NPI). Dr Uy is an Associate Professor from the Posts and Telecommunications Institute of Technology (PTIT).



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