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Adaptation of smart cities in the South African Internet of Things context

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Abstract

Towards the end of 2030, the global population is estimated to be around 8.5 billion. Half of the human population live today in cities and these cities continues to grow exponential growth as people migrate to urban areas in search of a better life. As a result, urban resources are being stretched to their limits to accommodate the population growth. Smart city is a paradigm to manage the difficulty of urban living, upsurge competence, decrease expenditures and advance the worth of its inhabitant's daily life. Countries across the world are adapting to smart cities as it becomes highly critical to explore innovative solutions available to make cities more efficient and smarter. South Africa (SA) needs to leapfrog in terms of the competition through smart cities. SA cities have unique challenges stemming from years of apartheid and neglect of infrastructure. When compared to established cities such as Amsterdam, Barcelona, Copenhagen, London and New York, SA cities are lagging far behind the competitive curve. However, can be mitigated as SA cities through innovative adoption of smart cities can become globally competitive. Furthermore, through the implementation of advanced technologies and lessons learned from established cities that the anticipated growth need not be incremental, but rather will be exponential in many aspects. In light of the above facts, this paper looks into the adaptation of smart cities from a SA perspective by leveraging on the Internet of Things (IoT) technologies for different feasible use cases. The smart city initiatives in SA are laid out and the priority use cases are stream lined in lieu of the national priorities as stipulated in the National Development Plan (NDP). A smart city framework for SA is further proposed and the vitally important use cases in the SA context are identified and elaborated. The use cases are then evaluated based on the national Key Performance Indicators (KPIs). The scope for future directions and conclusions are sketched towards the end, with an optimism that the current work will be an eyeopener and adaptable to other developing countries.