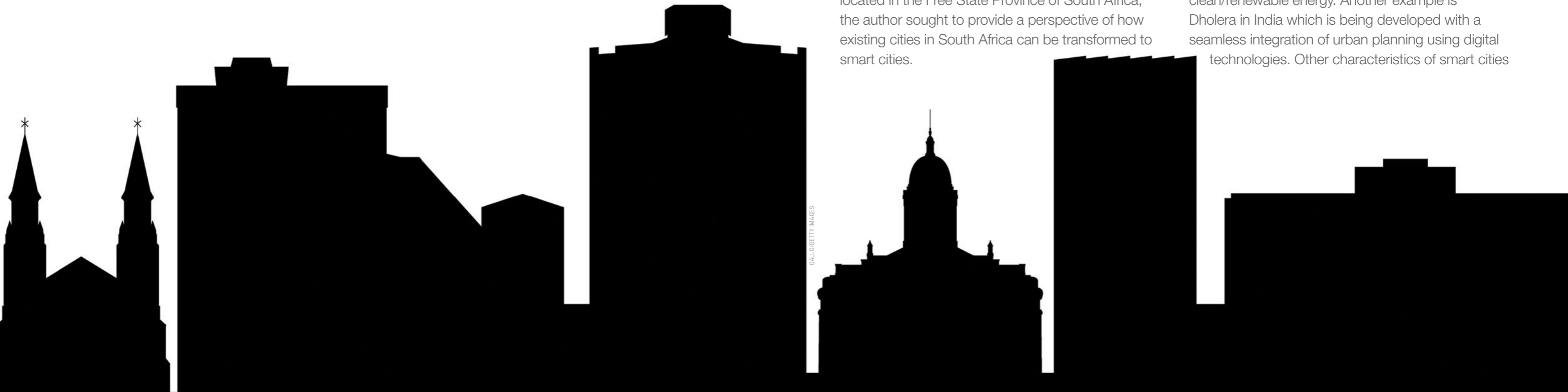


Bloemfontein as a Smart City:

An Applied Systems Analysis Approach

What must Bloemfontein do to serve as a blueprint for smart cities in South Africa?



There is a concerted effort internationally and across Africa to transform cities to smart cities. A smart city is one in which its various factors positively influence three important attributes – economy, mobility and governance.

A [research project](#) published in *Construction Economics and Building* looked at the concept of smart cities and used an applied systems analysis (ASA) approach to assess the possibility of Bloemfontein moving towards smart city status.

The researcher, from the University of KwaZulu-Natal's School of Engineering, maintains that many South African cities have the potential for smart city status through economic advancement, appropriate spatial development, and environmental sustainability. Using the context of Bloemfontein, located in the Free State Province of South Africa, the author sought to provide a perspective of how existing cities in South Africa can be transformed to smart cities.

While there are positive indications of all three aspects of economy, mobility and governance, challenges still exist for the transformation to smart city status

A smart city can be defined as "...an instrumented, interconnected and intelligent city that enhances efficiency in various urban activity facets through the use of advanced and digital technology." The primary goal is to create an urban environment that offers services for a high quality of life to its residents while also generating overall economic growth and reducing environmental degeneration. Moreover, ICT is used to increase the operational efficiency, share information with the public, and improve the quality of government services and citizen welfare.

International examples of such cities include Songdo in South Korea which was developed to foster sustainable design practices through the use of technology that reduces energy consumption and increases energy efficiency; utilises recycled and natural materials; and generates clean/renewable energy. Another example is Dholera in India which is being developed with a seamless integration of urban planning using digital technologies. Other characteristics of smart cities

include competitiveness and productivity; creative economy; urban place marketing and business-led urban development; self-branding; and image building to attract businesses and the creative class.

Bloemfontein as a Smart City

The analysis of Bloemfontein's status as a smart city was based on:

- Evaluation of the performance of three aspects - economy, mobility and governance;
- Data obtained from a survey and perceptions obtained from focus group discussions; and
- Dynamic hypotheses generated from conceptual models developed for each of the three aspects by using an ASA approach.

Economy

In terms of economy, the research looked at five attributes and their influencing factors – innovative spirit; entrepreneurship; economic image and branding; productivity; flexibility in the labour market; and international embeddedness. Entrepreneurship was considered a key factor that defines economic performance of the city – greater enterprising activities would enhance the economy which in turn would facilitate the location of corporate offices and/or business decision-making centres.

Th research also suggests that while factors such as self-employment and labour market flexibility would create an environment conducive to entrepreneurship, other factors such as the registration of new businesses, augmentation of ICT infrastructure, greater R&D expenditure and more applications for patents would improve the city's economic status.

Many South African cities have the potential for smart city status

Mobility

Local accessibility of public transport; national and international accessibility; sustainable, innovative and safe transport; and the availability of ICT infrastructure including computers and mobile devices in homes are the four attributes necessary

for Bloemfontein to achieve the goal of being a smart city. Enhancing the public transport network and improving the transportation system as well as increasing access to public transport would facilitate local accessibility in the city. This would be augmented by a safe, sustainable and innovative transport system. In addition, it was found that improving and increasing the ICT infrastructure would reduce the transportation needs of households, resulting in a reduction in carbon emissions and improved traffic safety.

Governance

The three attributes of governance are participation in decision-making; public and social services; and transparency. The participation of stakeholders (particularly women) and transparency of governance are essential precursors to smart city development. In addition, proper democratic setup and local governance systems can encourage participation, equitable expenditure and provide for a transparent bureaucracy.

The research indicates that while there are positive indications of all three aspects of economy, mobility and governance, challenges still exist for the transformation to smart city status. By addressing these challenges effectively, Bloemfontein could serve as a blueprint for the transformation of other South African cities. **SM**

The primary goal is to create an urban environment that offers services for a high quality of life to its residents

Science is a beautiful gift to humanity, we should not distort it.

– A.P.J Abdul Kalam



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