

# SMART CITY.za

B U L L E T I N

## JOURNEYING TO THE SMART CITY: PREPAREDNESS

INTERVIEW WITH  
JACOBINE ZWAAN

DBSA  WORLD BANK GROUP

DIAGNOSING  
SMART CITY  
PREPAREDNESS

  
LEARNING FROM  
ETHEKWINI

# FOREWORD

by **LUNGA MADLALA** (ETHEKWINI METROPOLITAN MUNICIPALITY)

It is an honour for eThekweni to take on this Bulletin's Editorial role as a municipality which has been on the smart city journey for a long time. Over the years, the City has demonstrated visionary leadership in championing and driving our smart city agenda having realized very early on the importance of building onto a solid foundation. To quote Machiavelli, "He who does not lay his foundations beforehand may, with great ability, do so afterwards – but not without great danger to the architect and the building." As early as 2000 when the concept of a smart city was in its infancy, eThekweni had the foresight to start building a framework for e-government, which included laying fiber across the city and creating a quad play, high-speed broadband network – the backbone for smart cities. The motto at the time was "Changing the way we work, live, play and learn," and the key drivers were cost efficiencies, e-learning opportunities, economic development, and serving the connected citizen – anyone, anywhere, anytime and on any device.

The DBSA's execution of the Smart City Maturity Model has already provided value to us in helping set the scene to determine key starting points of our Smart City journey. Its results were not surprising, mainly reaffirming the results of the Digital Maturity assessment that we conducted ourselves in 2019 which put us on the low preparedness/high urgency matrix. It was interesting to realize during our diagnostic workshop in Cape Town that whilst our different South African cities may have similar challenges and share common features, their economic characteristics are quite distinct. Cities are unique and have their own goals and strategic priorities. This means each city must be smart about its future in its own way, and cities cannot develop strategies, plans and processes that simply mimic those of other cities. Even then, learning from and keeping tabs on what other cities are doing is still valuable. For our part, I share in this Bulletin

the progress we have made as eThekweni. Our key next step is to develop our Smart City strategy and get it approved by Council.

We want to think big but start small. A Smart City is anchored in a strong connection with its people. Engagement and buy-in from municipal departments, regional stakeholders, residents, businesses and special interest groups is critical as it will encourage all stakeholders to be active participants in its implementation.

And so for this SmartCity.za Bulletin #3 on Journeying to the Smart City: Preparedness we are happy to share our "work in progress" at this diagnostic stage because it encourages the culture of peer sharing and learning which eThekweni has always been committed to. For instance, eThekweni's initial fiber deployment in the early 2000's focused on libraries in order to create e-learning opportunities and position eThekweni as a player in the global knowledge economy. The municipality developed its knowledge management strategy in 2006 not only to manage its own knowledge management processes (knowledge discovery, capture, sharing, and application), but to also promote knowledge sharing and develop the city as a centre of learning. This strategy culminated in the novel establishment of the Municipal Institute of Learning (MILE) back in 2009, one of whose pillars was 'Learning, sharing, and network building.' We therefore welcome and celebrate this platform for sharing, and we are indeed proud to host this issue.

In closing, it is worth reminding us that the critical challenges of accelerating growth of cities and the unsustainable increase in demand for all resources warrants cities becoming more innovative in their response. Rapid advancements in digital and smart urban technologies have given city leaders hope that these challenges can at least be eased through the application of ap-

propriate technologies. But cities are about people and not technology; as previous editions of this Bulletin have affirmed, a "smart city" is ultimately about improving the quality of life of its citizens. It is about creating more liveable and sustainable cities. Our unresponsive and costly traditional delivery mechanisms are no longer sustainable. This necessitates a mind-set change to deliberately challenge conventional practices and completely rethink how to use new capabilities. We need to learn to rethink and reshape our own patterns of thought, and be able to identify and challenge our own basic assumptions. Our silo-based organizations make it difficult to solve complex problems, and the need for the free flow of thought, dialogue, arguments, viewpoints, creativity, information and feelings has never been greater. Fragmentation robs the municipality of its collective intelligence. Bold and decisive leadership, collaborative partnerships, learning and knowledge sharing, finding new or innovative ways to fund smart city initiatives, and showing early wins to create momentum are critical for us to create a lasting Smart City culture.



Mr Lunga Madlala is the Chief Digital Officer and Smart City Champion at eThekweni Metropolitan Municipality.

# PREFACE FROM THE EDITORS

by **GECI KARURI-SEBINA** with **LETHU MASANGO**

The period since our previous bulletin has not been an easy one in South Africa. In particular, we have seen natural disasters devastating communities in eThekweni, Western Cape and Northern Cape, and we have gone into winter in conditions of as high as Stage 6 load shedding by our national power utility. The need to be smart is greater than ever, and this is increasingly linking more starkly to existential issues of resilience.

Indeed, the recently released State of South African Cities Report 2021 1 is themed around critical urban governance issues, and calls for smarter, “all-of-society” practices as being integral to overcoming challenges and enabling more effective service delivery:

“South African cities face a triple challenge: they have to respond to profound environmental challenges (specifically climate change, resource depletion and ecosystem vulnerability); address deepening socioeconomic inequalities exacerbated by the COVID-19 pandemic; and establish new modes of cooperative governance able to navigate effectively the complexities of urban development in the information age. For cities to drive just transitions will depend on partnerships and learning from experimentation, and require cooperative governance, which comes alive when a balance is achieved between the topdown authorising environment and the bottom-up mobilising environment. Such a balance creates conditions for innovation and resource mobilisation across both state and non-state actors.” (p.64, SACN 2022)

As we have moved into the next stage of the Smart Cities South Africa (SCSA) Pilot Programme where the cities have been focused on their diagnostic assessments and preparation for project selection and strategy formulation, these pressures have been front and centre: How do we ensure impact with urgency through our smart approaches?

This third edition of our SmartCity.za bulletin updates our audiences on the pilot cities’ journeyings and sense of preparedness to embark upon their expanded smart city missions. We report on the diagnostic methodology that the cities undertook, as well as on the Peer Learning Exchange held in March where the cities mutually reviewed their assessments and implications. The idea of peer-to-peer review and learning is a key component of the pilot programme which has been of rich benefit to the cities whose practitioners can coach and guide each other to great value and mutual benefit. As one of the participants mentioned, “Smart cities are enabled by smart and passionate people.” The peer learning interactions spotlight and validate such people who exist across our cities.

We continue to be grateful for the willingness and enthusiasm of the cities to share with each other. This includes the stewarding of this Bulletin series where city representatives lend their energy, expertise and insights into the publications. This time we thank Lunga Madlala and the City of eThekweni for the capable championship of this edition. In addition to giving us a glimpse into how the City has journeyed from early days (their smart city timeline dates back almost 20 years!), we are given important insights into how eThekweni has understood and gone about executing its smart city charge in spite of challenges along the way.

As with previous editions, we also gain international insights - this time both on the ISO smart cities diagnostic framework that was employed for the pilot, as well as from Jacobine Zwaan from the Netherlands who reminds us that both public and private engagements and transformations are necessary in order for us to create the sustainable, smart cities which our reality of climate crisis and complexity require. She concludes by reminding us that we in Africa hold a critical, prin-

ciple advantage towards creating the collaborative environments that smart cities require: the spirit of Ubuntu.

The SCSA project continues to encourage collaboration locally and internationally to support the pilot cities. In May, an international mission from the World Bank met with the cities to review progress and offer supportive expert inputs. Other national supporting actors including the Department of Cooperative Governance, SALGA (the Local Government Association), CSIR (the Council for Scientific and Industrial Research), and the Tshimologong Digital Innovation Precinct were also invited to spend an afternoon with the cities to present their perspectives and supporting offerings. These engagements have allowed the cities to share their progress and frustrations with stakeholders, while also gaining access to a broader range of expertise and knowledge resources. In future, these engagements will be expanded to include non-state actors who also have crucial roles to play.

So from this issue, we learn that the smart city journey does require a level of preparation and coordination - internally and externally - in order to be systematic, efficient and effective. There are reasonably established tools that can be used on an ongoing basis to assess and track institutional fitness, and there is capacity available in and beyond the state to support this.

As the Pilot programme continues, we look forward to continued sharing of these stories and lessons. And we thank those of you that have begun providing us with feedback on the bulletins. We are glad SmartCity.ZA is finding resonance in the work of practitioners, experts and media.

See you in the next issue!

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# DIAGNOSING SMART CITY PREPAREDNESS: THE STANDARDS-BASED MATURITY ASSESSMENT APPROACH

BY TREVOR GIBSON

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Photo: Ignus

# DIAGNOSING SMART CITY PREPAREDNESS

BY **TREVOR GIBSON**

The concept of the Smart City has been around for some time now. Technology develops at an alarming pace and the challenges facing cities around the world become ever more complex and critical. One or two constants do, however, remain. The suite of [Smart City standards](#) developed by BSI between 2015 and 2020 is as relevant now as it was at the time of publication. Many, such as PAS181:2014 Smart Cities Framework, have been elevated to international, ISO standards (now [ISO 37106](#)) because of the potential for them to help cities develop their unique approach to becoming smarter for the benefit of their citizens and accelerating the pace of positive change.

## Why are standards important?

Standards-led approaches to Smart City development provide common ground for cities to communicate and collaborate on city challenges and opportunities. They can support cities in developing a holistic and integrated approach to city transformation, and help them break down their inherent complexities. Finally, standard based approaches are generally repeatable and can facilitate performance monitoring and city to city comparisons as well as enabling the capture and sharing of best practice.

### Smart City Overview

#### – PDS100:2015

One powerful illustration of the power of Smart City Standards is [PD8100](#). Published in 2015, it is still the most accepted methodology for cities to assess their current smart city maturity and set their

ambitions for a smarter future. This, in turn, helps cities to map their Smart City Journey, identify and prioritise projects to help them achieve their goals and chart their progress along the way. The power of PD8100 is in its simplicity, flexibility and ease of use which is why it was chosen as a core component of the DBSA Smart City Programme and used extensively by the participating cities in the early stages of that programme: eThekweni, Ekurhuleni, Tshwane and Johannesburg.



## So how does it work?

The Maturity Assessment process uses the PD8100 methodology which breaks the Smart City Concept into 7 core components each of which is assessed against 5 maturity levels, from Level 1 (“Lagging”) through to Level 5 (“Excelling”) to build a

picture of the city’s “As-Is”, or current, status. The 7 components are:

1. Leadership and Governance
2. Customer/Stakeholder Focus
3. Service Enablement
4. Service Delivery
5. Digital Asset Management
6. Physical Asset Management
7. Performance Management

The approach is repeated for a chosen, future time horizon - for example 10 years. This can then be used to prioritise areas for development and the alignment of Smart City projects effectively establishing the Smart City Journey.

In the DBSA Smart Cities South Africa Pilot Programme the methodology was adapted to suit particular purposes. Firstly, a simplified version was used as part of a desk-based diagnostic process for each city undertaken by a World Bank team to obtain an early view of each of the 4 participating cities’ ‘smart status.’ Secondly, the simplified version was also used as the basis for an online survey that was conducted to obtain the views of as wide a group of managers and team leaders in each city as possible.

Finally, the full version of the PD8100 definitions were then used as the basis for a collaborative and productive 2-day facilitated workshop attended by all four cities held in Cape Town in March 2022 where each City finalised their respective smart city diagnostic processes.

## The Outputs

Templates within the Standard are used to capture the outputs from each of the approaches outlined above in an accessible and engaging way. The schematic below illustrates an example (not related to any of the participating cities).

Component	Characteristics	Maturity assessment				
		1 Lagging	2 Developing	3 Competent	4 Progressive	5 Excelling
Leadership environment	A B1 B3 B8 D Providing a strong city leadership network that advocates a common vision; operates as an effective leadership team; role-models open transparent style; sets priorities, creates and maintain a coherent roadmap; and ensures city success.					
Customer / stakeholder focus	B9 B10 A city that is built around its citizens, business community and visitors (as key stakeholders / customers); that truly understand them; engages them in an open and transparent relationship; and proactively ensures their active contribution to progress.					
Service enablement	B2 B3 B5 B7 Providing the enabling context for success; including policy, planning, common protocols; means of collaboration; capability / capacity management; financing; business models; procurement process; and an underpinning operating model.					
Service delivery	Offering and managing quality services to city stakeholders, through direct or indirect means. Selecting the most appropriate business models and delivery agents (including society) to deliver most efficiently and effectively.					
Digital asset management	B6 B13 B14 B11 B12 Exploiting the power of open data sharing and modern technologies (e.g. social media, analytics, mobile, cloud, sensors) through investment in and management of digital assets; including respect of privacy and digital abilities.					
Physical asset management	Investorising and exploiting physical assets; for multi-purpose; managing life-cycles and investments; and integrating physical and digital assets; complete capture and open sharing of asset information.					
Performance management	C Setting appropriate goals and targets; establishing measures and monitoring practices; ensuring a performance culture; predictive use of data; robust public value measurement; open reporting of value to stakeholders.					

## In Conclusion

The structured, repeatable Smart City Maturity Assessment contained in [PD8100 Smart City Overview](#) has significant value in focusing cities on achieving their smart city ambitions. It also provides a practical introduction to the Smart City standards topic which can support cities in developing their Smart City Journeys for the benefit of all.





# GEARING TOWARDS SMART CITIES

REFLECTION ON THE DBSA SMART CITIES  
PROGRAMME DIAGNOSTIC WORKSHOP

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BY LESEGO TSHUWA



The DBSA Smart City Programme is intended for four Metropolitan Municipalities in South Africa. These are, the City of Johannesburg, the City of Tshwane, and the City of Ekurhuleni in Gauteng, and eThekweni Municipality in Kwa-Zulu Natal. From the 27th to 29th March 2022 twenty-one Municipal representatives in senior management positions at the respective municipalities attended a Diagnostic Workshop in Cape Town. This diagnostic workshop was hosted by the DBSA and World Bank project team. This would be the first time that the City officials meet since the project team had initiated discussions in 2019 to kick-off the project. Two years since the inception of the project and the project team finally got to organise for these individuals to be together in one space.

Local Government is seen in the South African context as the sphere of government where a strong focus is on growing the local economy, providing infrastructure and service (South African Government, 2022). The institutionalization of the Smart City Strategies in these four Municipalities becomes very important.

### The Diagnostic Workshop

In meeting the Municipal Officials in one space a slight excitement took over the atmosphere in Cape Town. The objective of this workshop in Cape Town was to, firstly, take the officials to a space where they would not be able to “escape into their everyday reality” by leaving the workshop midway. Secondly, for the officials to critically engage with the scope of work to be done. Thirdly, to have fun.

of these key milestones over the years. It was an interesting exercise because ordinarily these are people who do not work together even though they are from the same City. The teams were asked to provide input on the “As-Is” diagnosis, and input on where they see their Municipalities in the next ten years, the “To-Be” analysis.

### Some of the lessons learnt

In paraphrasing one City Official, “If the people in this room are not the ones to make the change, then who is?” this was a powerful statement during the workshop. Evidently, and as acknowledged by the attendees, they are the ones responsible for effecting change. This is a journey for the Municipalities, with support from the DBSA and the World Bank. The project



*“IF THE PEOPLE  
IN THIS ROOM ARE  
NOT THE ONES  
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### Understanding the context within which the work lies

The nature of local government is complex and the process to get to this stage where representatives from the different Municipalities would be in one room is a huge milestone for the DBSA Smart City Programme. The sessions were intended for the City officials to understand the Smart City Programme better and how this integrates into the work that they do.

The City officials were taken through presentations and also expected to prepare material during break-away sessions to present to the broader audience. Prior to the Diagnostic Workshop officials had been asked to complete diagnostic surveys; these were also distributed to more officials within the respective Municipalities. During the break-away sessions the teams were asked to reflect on their Smart City journeys and narrow down on the details

team will guide the engagements and offer expertise as best as possible to ensure that the Smart City Programme is a success because “strong external controls need to be put in place to prevent financial loss and wastage” (Businesstech, 2021) in South African Municipalities. The Cape Town Diagnostic Workshop was a start.

During the working sessions and presentations, the Municipal officials noted that current challenges facing Municipalities include fragmentation, silo working, lack of project implementation, financial constraints, struggles with the management of political processes, capacity, and resources to name a few. The commitment to be in a working environment, a knowledge exchange geared towards aligned goals for these two days during the Diagnostic Workshop in Cape Town showed that these leaders are interested in change. The process is on-going until the Cities institutionalise their Smart City Strategies and

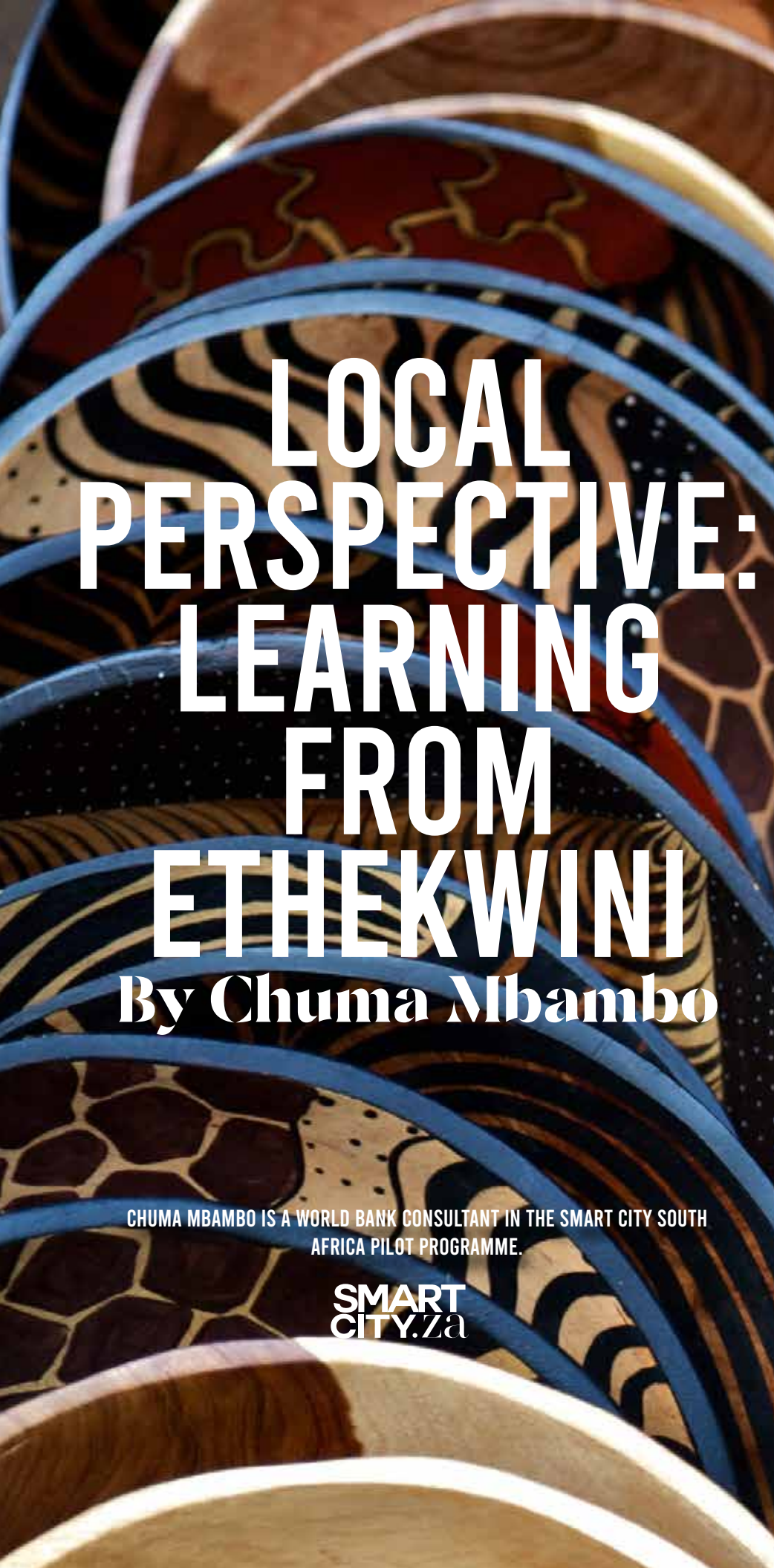
implement projects which will transform the landscape for citizens.

**A reflection by academic practitioners**

In entrenching the need for a shift in mindset and openness to learning the attendees were exposed to highly experienced urban scholars and experts such as Professors Edgar Pieterse and, Nancy Odendaal, and Nishendra Moodley. The recurrent theme from all of these presentations was unsurprisingly that of inclusivity. That people should be at the centre of development, and technology must be seen

as an enabler. The speakers highlighted the importance of relationships and strong engagements between different stakeholders in society. For the City Officials, and indeed in taking the Smart City agenda forward, more reflection needs to be done around how to plan better for people, but with the acknowledgement that those in sectors of society often forgotten need to be accounted for going forward. This work of building meaningful projects that change society requires awareness of the “other” and different ways of operating to make an impact that is sustainable, and with products and services which can be maintained.





# LOCAL PERSPECTIVE: LEARNING FROM ETHEKWINI

By Chuma Mbambo

CHUMA MBAMBO IS A WORLD BANK CONSULTANT IN THE SMART CITY SOUTH AFRICA PILOT PROGRAMME.

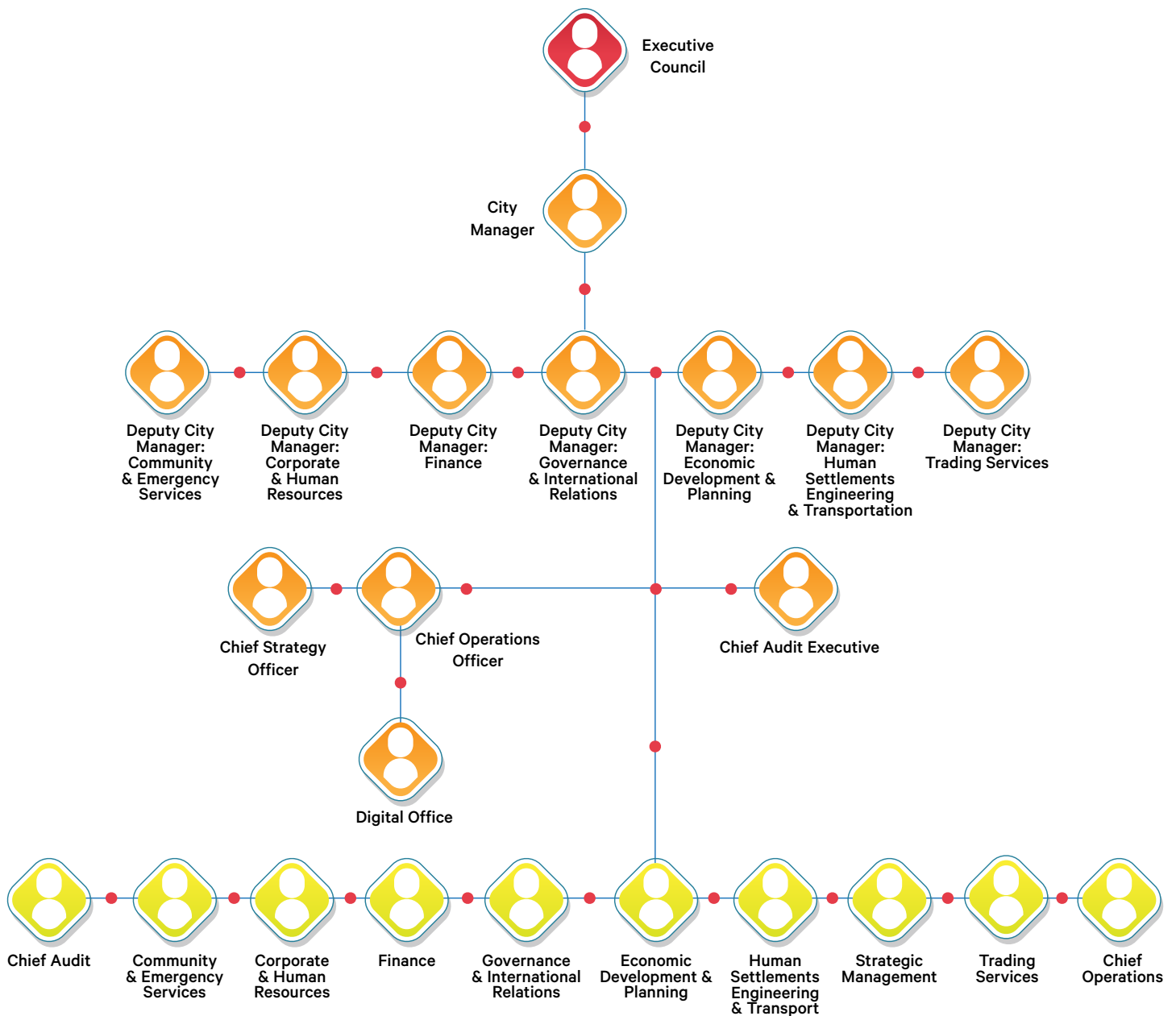
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The eThekweni Municipality is located on the east coast of the KwaZulu Natal-Province. It consists of the largest and busiest sea terminal in sub-Saharan Africa where it handles up to 31.4 million tonnes of cargo annually. EThekweni therefore acts as a gateway for connecting sub-Saharan Africa to the rest of the world. With a population of almost 4 million in 2020, the eThekweni Municipality is in urgent need to employ smarter approaches to city planning that ensure the most efficient and effective governance and utilization of the City's resources.

The eThekweni Municipality's smart city journey commenced around 2003 with the realization of the need for an eGovernment, broadband connectivity and an emphasis on fiber connection. This has remained the focus throughout the years as these elements are seen as foundational for achieving a smart city. Thus, between 2006 and 2014, the City had a great focus on developing ICT infrastructure to enable the smart city. Following this, the City also established a relationship with Innovate Durban which assisted in facilitating an inclusive innovation ecosystem for economic growth and job creation.

The Smart City Programme in eThekweni is driven through the Office of the Chief Operations Officer, in the Digital Office. This placement substantiates the City's view of 'digital' as the foundation for operationalizing smart city approaches in the City. The Smart City Office therefore has a critical role of creating smart city standards for the City, and integrating measurable smart approaches into the City's operational environment.

"If you want to be smart you have to be digital first" -this is the message echoed in the Smart City Digital Government Strategy as eThekweni has officially declared 'digital' as the foundational step for its smart city journey.



In 2021 the eThekweni Municipality developed the Digital Strategy and Road Map. The Strategy was developed in order to leverage the use of Information Technology (IT) to assist the city to realize its vision of being “...Africa’s most caring and livable City, where all citizens live in harmony,” whilst ensuring that the municipality remains relevant in the increasingly digital world. The aim is to use IT to sense, control and communicate the municipality’s services.

The City aspires to digitally transform itself in order to increase public value and optimize return on investment in public services and infrastructure.

## “IF YOU WANT TO BE SMART, YOU HAVE TO BE DIGITAL FIRST.”

This strategy provides a framework from which other municipal departments and entities can plan their digital initiatives. It identifies the foundational components of a smart city, such as connectivity and enterprise architecture. The Digital Strategy is anchored around the city’s governance and administration, with the following key focus areas:

- The Clients i.e. businesses, citizens and other consumers;
- Productivity across the municipality, e.g., service delivery; and
- Innovation

SMART CITY DIMENSIONS	VISION	RELATED PROJECT
<p><b>SMART GOVERNMENT</b></p>	<p>This dimension is about ensuring that the City's governance is efficient and participative. This involves enabling collaboration, transparency and inclusivity within all sectors of society.</p>	<ul style="list-style-type: none"> <li>• Mobile App</li> <li>• e-Services Platform</li> <li>• Advanced Electronic Signatures</li> <li>• Digital Public Engagement Platform</li> <li>• Committee Meeting Digitization</li> <li>• Real-time service delivery and performance dashboards</li> <li>• Smart Billing</li> </ul>
<p><b>SMART PEOPLE</b></p>	<p>To enable participation of the different users and citizens of the city. This dimension also speaks of being open to new innovations and creativity in the city space, especially to promote participation in order to ensure inclusivity.</p>	<ul style="list-style-type: none"> <li>• E-Learning Platform</li> <li>• Smart Workspaces</li> <li>• Knowledge Management Portal</li> <li>• Smart Assistive Technologies</li> <li>• 4IR-focused Webinars</li> <li>• Digital Assistants</li> <li>• Digital community courses</li> <li>• Digital networking platform</li> </ul>
<p><b>SMART ECONOMY</b></p>	<p>This dimension focuses on the transformation of the economy using the advantages brought about by digital approaches. These will increase the diversity of business and employment opportunities and promote more inclusive economic growth.</p>	<ul style="list-style-type: none"> <li>• Innovate Durban</li> <li>• Business Development Dashboard</li> <li>• Immersive technology apps for art, heritage, culture and theme parks</li> <li>• Virtual labor marketplace</li> <li>• GIS-based tourism portals and apps</li> <li>• Business Investment Hub</li> <li>• SmartXchange Collaboration</li> <li>• Entrepreneurship Accelerator Workshops</li> </ul>
<p><b>SMART ENVIRONMENT</b></p>	<p>The digital approaches provide an opportunity for greener and more efficient ways to develop the built environment with minimal threats to the natural environment. This dimension considers aspects such as water and waste management, pollution management and environmental sustainability and resilience.</p>	<ul style="list-style-type: none"> <li>• Green buildings</li> <li>• Smart public lighting</li> <li>• Greenhouse gas reduction technologies</li> <li>• Real-time pollution-monitoring apps</li> </ul>
<p><b>SMART LIVING</b></p>	<p>The smart living dimension aims to improve quality of life by ensuring efficiency in public services, thus ensuring accessibility and affordability. This dimension also covers safety, security and other aspects that are essential for a good quality of life.</p>	<ul style="list-style-type: none"> <li>• Smart policing</li> <li>• CCTV</li> <li>• Mobile safety app</li> <li>• Smart clinics</li> <li>• Safer City Fusion Center</li> </ul>
<p><b>SMART INFRASTRUCTURE</b></p>	<p>This dimension identifies various infrastructure opportunities such as IoT networks, public safety operations, smart power grids, open data portals, energy management, green development and waste management. The dimension's objective is that this infrastructure is resilient and sustainable.</p>	<ul style="list-style-type: none"> <li>• Smart Electricity Grid</li> <li>• IoT Platform</li> <li>• UAV Implementation</li> <li>• Smart Meters</li> </ul>
<p><b>SMART MOBILITY</b></p>	<p>This dimension ensures sustainable movement of people and goods through intelligent traffic management, communication networks and sustainable, innovative, safe and integrated multimodal transport systems.</p>	<ul style="list-style-type: none"> <li>• Go Durban BRT System</li> <li>• City Fleet Intelligent Management</li> <li>• Smart Parking</li> <li>• Public Transport Corridor WiFi</li> </ul>

The complementary rationale for supporting the operationalization of these dimensions include innovation, sustainability, resilience, high-speed digital infrastructure, data sharing and complementary policies addressing cyber security and a holistic smart city strategy.

In essence, the eThekweni Municipality seeks to develop a smart city that:

- Has a smart government where technology and digital platforms are used to improve systems, processes and procedures to create more efficient and effective government operations;
- Smart governance, where technology and digital platforms are used to improve the relationship between government and its citizens as well as improve the interaction of citizens with government and;

- A smart city, where the municipality contributes to creating an enabling environment for businesses, communities and others to thrive in the digital environment, promoting innovation and entrepreneurship.

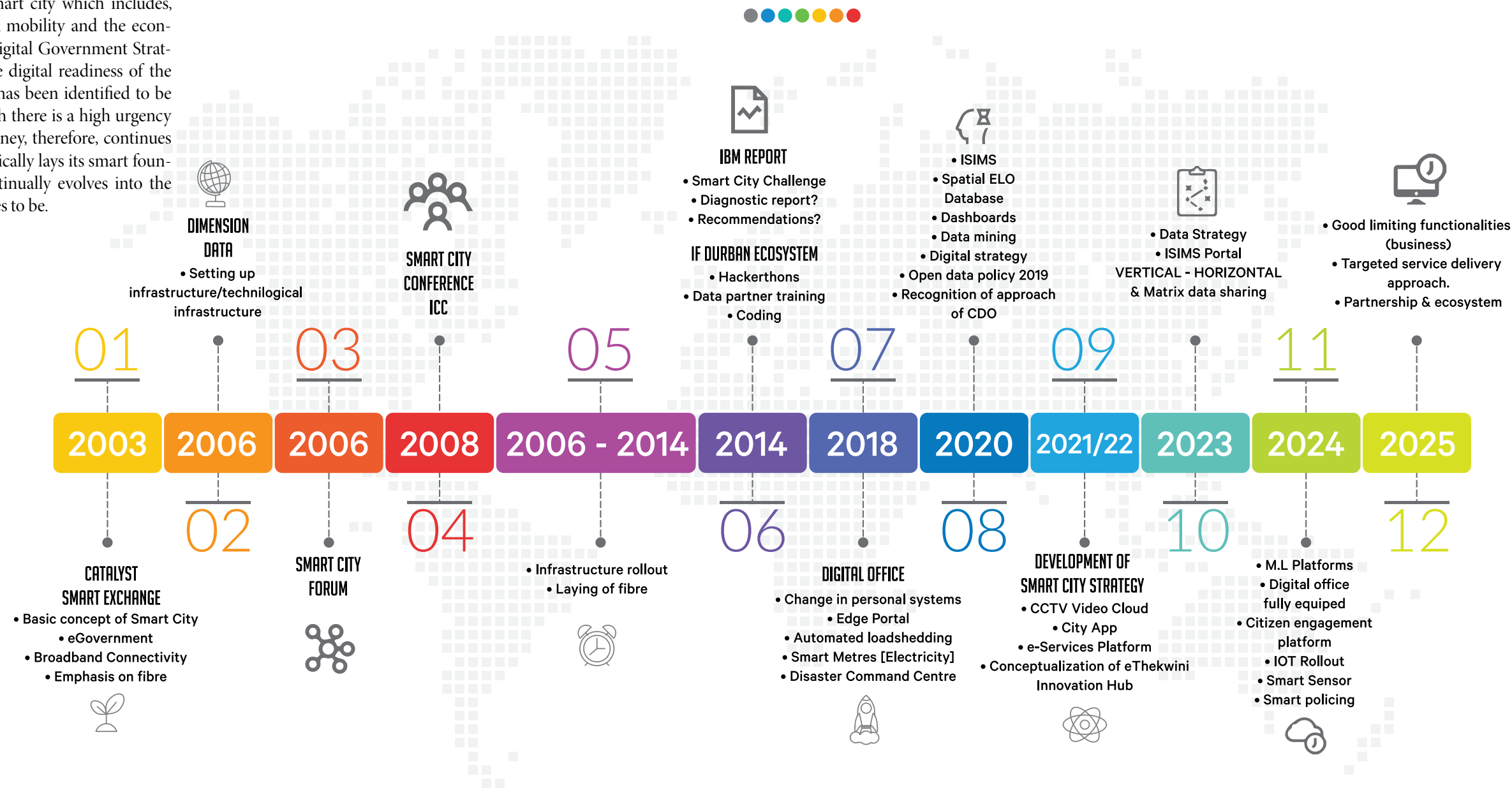
# eThekwini Smart City Timeline

With the development of the smart city strategy underway, the City intends on having the strategy focus on the holistic picture of the smart city which includes, the environment, mobility and the economy. As is, the Digital Government Strategy addresses the digital readiness of the city, which itself has been identified to be very low, although there is a high urgency for this. The journey, therefore, continues as the city strategically lays its smart foundations, and continually evolves into the smart city it strives to be.

At the May 2022 Cape Town Diagnostic Workshop, cities were required to reflect on their smart city journeys by visualizing where they come from and where they aspire to be. This was crucial for the process of establishing the “As-Is” and “To-Be” aspects of the City’s Smart City journey. This is a key element of the Diagnostic Phase of the DBSA Smart Cities Programme to conduct a maturity assessment of the cities’ smart city environment. The eThekwini Municipality produced the timeline below with the tagline, “people - process - technology - budget,” in describing their cross-cutting smart city focus.

This timeline demonstrates that the eThekwini Municipality started their smart city journey in the early 2000s, engaging in key discourses in understanding the basic concepts of a smart city. This seems to be slightly earlier than when other pilot cities commenced with their smart city journeys. The early implementation of smart city initiatives in 2006 – 2014 is evidently around ICT infrastructure rollout, as the fundamental elements of the smart city. Currently, the City is developing various policies and strategies as a further foundational layer for smart city approaches. This includes the cybersecurity policy, open data policy, telecommunications infrastructure mast policy, data strategy, business intelligence strategy and a smart city strategy.

The future of eThekwini as a smart city seems to be centered around various internal and external digital platforms that will assist in creating efficiencies in the whole service delivery value chain. This is envisioned to be achieved through citywide data production and sharing, and smart monitoring and sensors which will enable the operationalization of smart approaches in the City. The key to operationalizing the smart city approach is the establishment of a fully equipped smart city project management office (PMO) by 2024. The PMO will oversee the institutionalization of the smart city approach as per the Smart City Strategy.



**PEOPLE - PROCESS - TECHNOLOGY - BUDGET**

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ETHEKWINI INTERVIEW WITH LUNGA MADLALA

# INTERVIEW

WITH **LUNGA MADLALA**

**T**he journey of preparing for a smart city is very complex and unique for every city. The approach, priorities and even the smart city vision, will be different based on the local needs and context. Chuma Mbambo catches up with Lunga Madlala to walk through eThekweni Municipality's journey of preparedness towards being a smart city. Lunga is the Director of the City's Digital Office through which the smart city approach is being driven, he has been with the City since the conceptual stages of developing eThekweni into a smart city.

**Q: Take us through eThekweni's initial Smart City rationale/approach. How has this evolved over the years?**

**A:** Our smart city journey started in 2002. The initial rationale envisaged the smart city as an ICT-driven concept. ICT was seen as an integral part of a smart city. Hence, it was driven by the ICT & eGovernance Office. We had a sober understanding of the city's strengths, weaknesses, challenges, and trends. The aim was to reposition Durban as a leading player in the new global knowledge economy. It not only focused on transforming the way that local government works and delivers its services, but also on changing the way that it interacts with citizens, businesses, government departments and other stakeholders.

The approach at the time focused on what we believed were the key elements of a smart city, which were; broadband connectivity for all, specifically using fiber; eGovernment and customer-centricity; innovation and knowledge management and; socio-economic development. The key considerations at the time were, "how do we ensure that our policy and regulatory environment supports the development

of a smart city?" and ensuring that smart city leadership enabled eThekweni's competitive advantage in a digital economy and society.

These are still key considerations today, however, the smart city concept has evolved to no longer be an ICT initiative or a "property" of ICT but rather as something that cuts across all City departments and strategies. It now expands on other dimensions like mobility, environmental sustainability, climate change, smart infrastructure, liveability, and human and social capital.

**"WE BELIEVED THAT CONTROL OVER OUR OWN TELECOMMUNICATIONS INFRASTRUCTURE WAS MANDATORY..."**

**Q: What are some of the important early smart city initiatives implemented in the city and what was their impact on beginning the smart city journey?**

**A:** Broadband connectivity was seen as the key foundational element of creating a smart city, and most of the initial efforts focused on building this fiber network. The focus was also on reducing telecommunication costs as Telkom being a monopoly at the time was very expensive. We believed that control over our own telecommunications infrastructure was mandatory to control cost and deliver affordable services at highly scalable speeds. The latter enables us to adapt to future requirements

and challenges faster than any larger or nationwide operation can ever do. As a result, hundreds of kilometers of fiber were laid at the time to cover the whole eThekweni municipal area, and this included our innovation of laying fiber on the sewer pipes. In 2005 the municipality was able to obtain its private telecommunication network (PTN) license from ICASA which allowed us to create and operate our own private network.

This fiber network was complemented with a broadband wireless solution, wireless hotspots were created throughout the city, and Voice of IP (VoIP) was implemented. The municipality's internet bandwidth was increased substantially. Dimension Data was able to architect our Cisco broadband network which provided a framework for e-Government.

The impact of investing in the telecommunications infrastructure was immense! The City realized huge savings in the data line and voice costs and was able to generate extra income by making excess bandwidth available to businesses and independent service providers (ISPs). It also; attracted the call center market to Durban which created thousands of jobs; implemented and incubated new technology businesses, which transformed eThekweni into a major technology hub in KwaZulu-Natal; and our SmartXChange Incubator contributed increasingly to the city targets by nurturing small businesses, and helping them grow. All municipal councilors were given laptops and trained, and the municipality began rolling out its eGovernment application where business process management solutions such as e-billing and building applications could be done virtually. Furthermore, our International Convention Centre (ICC) being connected to the municipality's high-speed fiber backbone became a world attraction.



**Q: When was the digital office established and what was the premise of establishing the digital office and not a 'smart city office'?**

**A:** The digital office was established in 2018. The premise for establishing the office was that “in order to be smart, you have to be digital first”. Creating a smart city is a journey, and one aspect of that journey is digitalization. Digitalization for us is about creating a smart government/municipality that is capable, efficient, enabling, integrated, and customer-centric. It describes a new way of doing things.

The digital approach allows us to deliberately challenge and disrupt conventional practice through technology, to effect radical change. It allows for innovation, agility, creation of public value, ‘in real time’, removing unnecessary costs and activities, and placing a high value on the creation and use of data to make better and faster decisions. But more than anything—and more than ever before, it places the citizen at the centre of its vision. Being digital requires being open to re-examining our entire way of doing business and understanding where the new frontiers of public value are. It is a mindset change – completely rethinking how to use new capabilities to improve how citizens are served. It is about understanding how citizen behaviours and expectations are developing inside and outside the municipality, as well as outside the government sector, which is crucial to getting ahead of trends that can deliver or destroy public value.

**Q: Tell us about the journey to developing the Digital Strategy. What did it seek to address and what is the strategy's role in developing eThekweni into a smart city?**

**A:** The Digital Strategy seeks to craft a path to leverage innovation and emerging technologies in order to derive public value. It directs the municipality's long-term digital agenda and provides an initial digital perspective through which the municipality can engage stakeholders from all sectors of society.

The Digital Strategy conceptualizes our

smart city around six dimensions; smart government; smart people; smart living; smart environment; smart economy; smart infrastructure and; smart mobility. We have prioritized the Smart Government dimension as a digital government. This involves rethinking service structures and operations from a demand perspective to achieve a government that is innovative, ecosystem-centric, intelligence-driven, sustainable, evolving, and predictive.

## “THE DIGITAL APPROACH ALLOWS US TO DELIBERATELY CHALLENGE AND DISRUPT CONVENTIONAL PRACTICE THROUGH TECHNOLOGY...”

**Q: Are there other interventions that the City is implementing to complement or respond to the digital strategy and/or the smart city approach?**

**A:** The City has implemented various projects towards the smart city. These include;

- The continuous rollout of free public wifi and the establishment of an Integrated Service Center which consolidates all the municipality's service centers and provides personalized services via any channel;

- Building applications can now be completed online, and the service platform is being enhanced to include smart billing;

- Electricity smart meters with MDMS platform and load-limiting functionality are being rolled out;

- To monitor and improve service delivery, a service delivery dashboard is being developed with the ability to track the delivery of services in real-time through a service delivery monitoring map, this will allow for a single view of service delivery

across the municipality;

- A real-time, visual city performance dashboard has been developed to enable the municipality to conduct live data dissemination and analysis through live data visualization of performance indicators, reports and benchmarking through a dashboard and data story-driven approach; and

- In terms of policy development, the Open Data Policy has been developed. Whilst the Infrastructure mast policy and the Cybersecurity strategy are being developed.

**Q: What have been some of the challenges experienced in preparing for, and journeying towards the smart city?**

**A:** The smart city approach in eThekweni lacks decisive leadership at influential levels such as executive, management and councilor levels. It is difficult to transition into data-driven decision making when the leadership and operational environment value the status quo and resist risk-taking and the exploration of new business models and collaboration opportunities across the organization. This continues to let fragmentation and silo mentality thrive in the City. Furthermore, there are insufficient human and financial resources for adequately realizing a smart city in eThekweni.

**Q: What lies ahead for the City in the smart city journey?**

**A:** The next key step for us is to develop our Smart City Strategy that will cover the other smart city dimensions. Key to this is defining initiatives that the municipality will embark on in the next 10 years and quantifying the investments required for those initiatives through the Smart City 10-year Investment Roadmap. Then, we will prioritize these investments based on the municipality's strategy, priorities and Medium-Term Revenue and Expenditure Framework (MTREF). Finally, to develop operational plans to deal with the execution of specific projects and changes, and how the teams will contribute to the success of the strategy.



**Q: How does the DBSA/WB programme assist in your smart city journey?**

A: Our Digital Office is currently thinly resourced and it does not have the capacity to develop and fully implement the Smart City strategy. The creation of a Smart City requires dedicated focus on key activities which require specific skills, e.g. in collaboration and partnership management, identification of funding sources and alternative funding mechanisms, management of actual smart city projects identified, change management, conceptualization of the AI Institute, development of Smart City strategic and operational plans, Smart City governance, and so forth. We believe that the DBSA can help fill in this gap, and that is why we have partnered with them. In addition, the DBSA brings in international expertise on smart cities; proven methodologies, frameworks and guidelines; potential funding solutions; and a platform for learning, sharing, and knowledge exchange.

**Q: What are some of the key lessons you would say have been learnt by the City in journeying towards the smart city?**

A: There are quite a number of lessons we have learnt over the past two decades. Firstly, although the journey to a digital government is not necessarily a technology initiative, it is important to start with data – data is what matters the most – and extracting the full value of data is critical. Secondly, when implementing smart city initiatives, it is as important to create quick visible wins, as it is to start tackling the really challenging problems. Engagement and buy-in from stakeholders, municipal departments, businesses, and special interest groups are critical as they will encourage all stakeholders to be active participants

and collaborators in smart city implementation. This is why good leadership is critical in thinking beyond the boundaries of their own specializations or sectors in bringing people together. Furthermore, it is necessary to define performance indicators, linked to the smart city strategy, that will help establish a baseline for measuring progress. Lastly, it is crucial to design a smart city with the people, not for them. The journey to a digital government is not about technology, but rather, an initiative that uses technology to make its citizens' lives better.

**Q: What's next for eThekweni in the Smart City Journey?**

Creating a safe city is a critical component of our priorities and therefore a special focus is given to cybersecurity, smart policing technology, intelligence-led policing, collection and analysis of big data, expansion of the CCTV network, safe city app, and drones. We have worked with Open Cities Lab to develop our Open Data policy as we believe making government data available to be freely used by anyone, anytime, anywhere has the potential to create economic opportunities, spur innovation, fuel entrepreneurship, build social capital, and enhance access to and increase the efficiency of municipal services.

We have partnered with the University of KwaZulu-Natal to foster big data innovation and collaborate on a variety of topics including climate change, mobility, urbanization, and migration. We also plan to partner with the university on the Quantum Satellite and fiber communication (QuSAF) project whose aim is to enable robust security of various sectors (government, energy, etc.). This would be a first for South Africa! This project could act as a catalyst for technology and big data business opportunities, jobs and innovation,

and has the potential to put eThekweni on the global map as a world quantum technology hub and hence attract worldwide recognition, investment and interest.

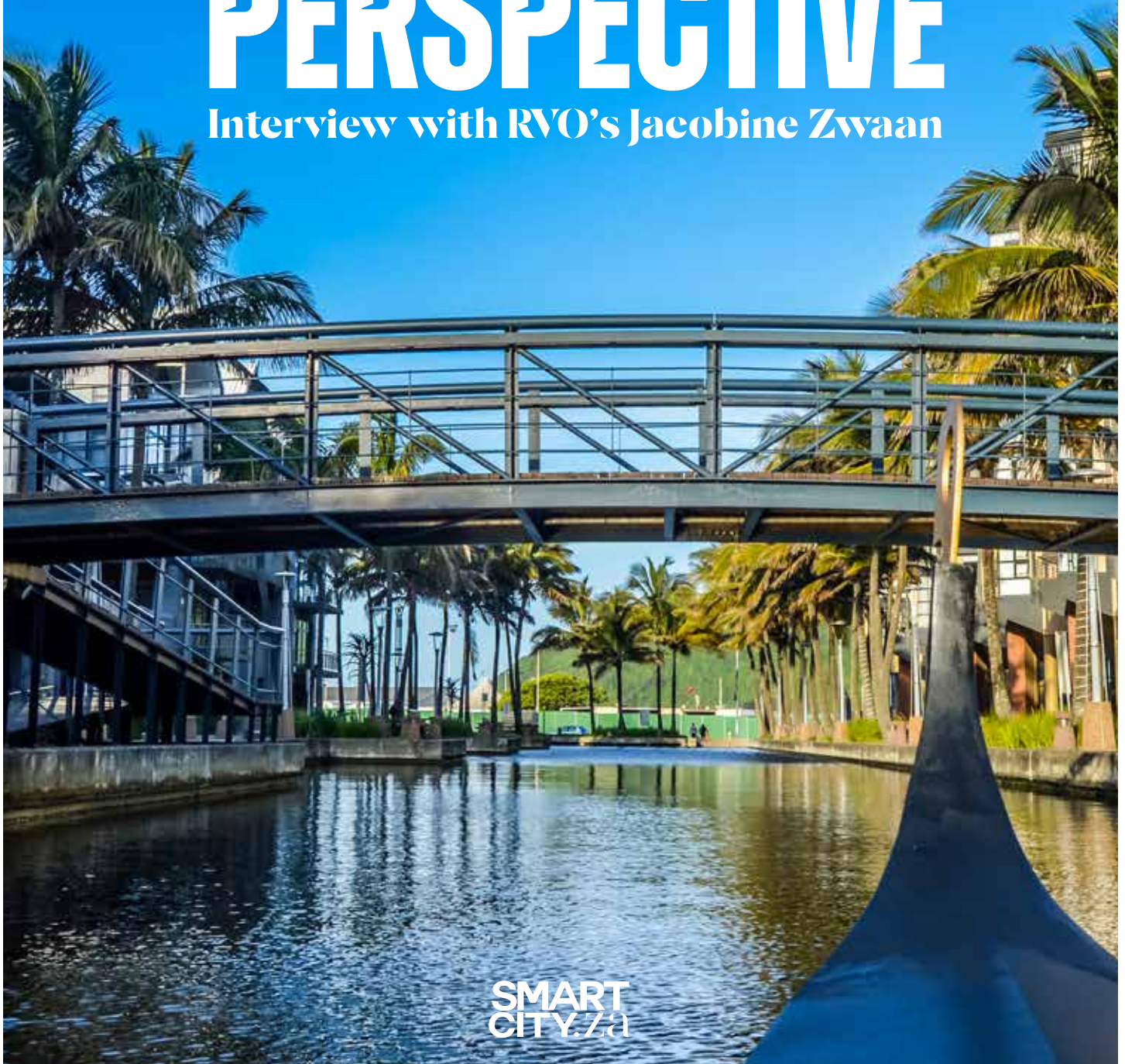
Finally, our political leadership has realized the importance of a Smart City as demonstrated by its inclusion in the Mayor's 10-point plan. Our ambition is to create a Coastal Smart City that will be linked to our port city economic development strategy, and characterized by our unique coastal city lifestyle and vibrant tourism.

**“THE JOURNEY  
TO A DIGITAL  
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# GLOBAL PERSPECTIVE

Interview with RVO's Jacobine Zwaan



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*In June, Prof Geci Karuri-Sebina got to interact with Ms Jacobine Zwaan who is the Netherlands Enterprise Agency (RVO)'s Advisor on Climate Neutral and Sustainable Smart Cities on the topic of smart cities preparedness.*

# INTERVIEW

WITH **JACOBINE ZWAAN**

**Q: What do you think is important for municipalities to understand or have in place when embarking upon a formalised smart city programme?**

Jacobine: The most important thing to understand is the synergy between ‘green’ and ‘digital’. For decades, cities have been vital engines for growth, innovation, and opportunity. Cities are hearts of nations, where policies come to life and citizens thrive. However, many transitions, such as sustainability, circularity and climate adaptation are extensive, complex and intertwined in cities. We must reflect the reality that cities need help and support to deal with the climate and energy crisis.

**Q: We have been guiding our cities through the ISO smart cities diagnostic assessment. What have you found to typically be the most crucial but challenging areas for smart city preparation?**

Jacobine: I would say leadership and governance for two reasons. First, at this moment it is too easy to do business as usual and wait, even though there is a huge cost of inaction. Secondly, developing “sustainable smart cities” comes with a lot of unknown-unknowns; but it is ok not to know the pathway. Just prepare yourself for the unexpected. Only leadership can facilitate a safe, inclusive environment and roadmap for action in these novel, uncertain circumstances.

**Q: Do you have practical tips for cities about how they can prepare themselves and garner the support that they will require to succeed?**

Jacobine: Current technological developments have a great potential to create climate neutrality and resiliency. The study ‘Framework Study League of International Testbeds’ describes this very well: “There isn’t a lack of incentives or innovation, but there is a clear need for further development and the

(exponential) deployment of these technologies to reach their full potential. In the field of smart sustainable cities, innovation processes take place in an entirely different way than between industry partners only. It is important to realize this, as it significantly influences the possibilities for eventual scaling of smart sustainable solutions and technologies beyond the testbeds and living labs.”

## “CITIES ARE HEARTS OF NATIONS, WHERE POLICIES COME TO LIFE AND CITIZENS THRIVE.”

**Q: Does the Netherlands offer any specific types of support to municipalities to help improve preparedness or develop capabilities?**

Jacobine: The European Commission has a strong focus on achieving European climate and energy goals and on urban sustainability. At this moment the Netherlands is using the EU Mission1, launched for realizing 100 climate-neutral and smart cities in 2030 in Europe, as a flywheel to create a solid national support structure for cities with climate neutral ambitions.

The national support structure will build on all EU policies and frameworks which will flow into cities – and will offer great opportunities for standardization and replication. This new market emergence (increasing but scattered demand) will urge both the public and private sectors to hopefully revise their (business) models and market strategies on climate neutral and smart cities.

**Q: Do you have any key lessons you can share from smart cities cases that you have seen?**

Jacobine: I am often involved in dialogues about the question ‘How can businesses active in climate tech contribute and accelerate the needed energy and climate transition in cities?’ The overall conclusion is that businesses need certainty of the rules of the game. This concerns both criteria and long term commitment; business needs to be able to count on a return on investment.

**Q: Any other thoughts you could offer for our Cities’ potential learning benefit?**

Jacobine: The Dutch often mention that we need mission-driven collaboration in which all perspectives are seen and heard. However, we don’t have an expression that actually captures the exact meaning of our intention, which can be viewed as your beautiful South African expression: Ubuntu

## SMART CITY.ZA



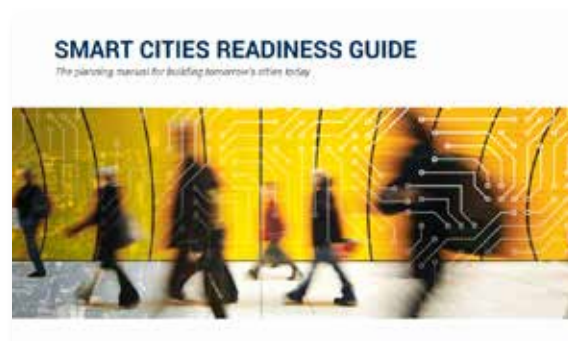
Jacobine Zwaan is the Advisor on Climate Neutral and Smart Cities at the Netherlands Enterprise Agency (RVO).

# SMART CITY.ZA SNIPPETS



#CSIR75: Towards inclusive smart cities in SA - How should the local government respond?

This video identifies the 6 measurable traits of Inclusive Smart Cities. There is further clarification in the assessment of readiness of local (African) cities.



Smart Cities Readiness Guide

Chapter 13: The chapter gives various steps inclusive of assessment criteria, subject to location and provides some good case examples.

## The African Perspective of a Smart City: Conceptualisation of Context and Relevance

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**Abstract:** The purpose of this paper is to conceptualize and define a Smart City from the African perspectives of context, relevance, and value. The paper is consequently important because efforts by African countries to develop Smart Cities are being measured by criteria of the Western world. Thus, many African countries are continually challenged in attempts to adopt the concept owing to different interpretations and understandings. Without an anchored basis, the

The African Perspective of a Smart City: Conceptualisation of Context and Relevance

The article takes an interpretivist approach to establish factors that define the concept in the African continent. This can help governments in the continent to gain insight on their pursuit to adopt a Smart City.



Exploring African cities and the journey of urban digital innovation

Conference session papers explored the opportunities, challenges, and implications of smart digital initiatives at community, local, regional and even national cross-border level.

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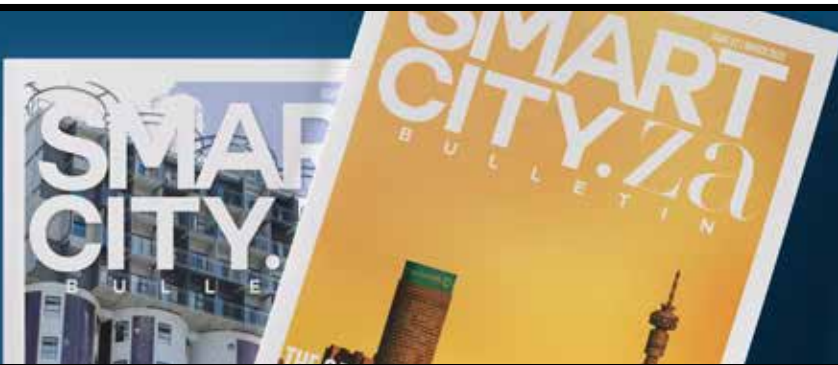
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**Read our previous issues.**

Bulletin #1: Defining the "Smart City"

Bulletin #2: The case for Smart City Partnering

Bulletin #3: Journeying to the Smart City: Preparedness



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