

LEVERAGING BIG DATA AND ANALYTICS FOR SMART CITY TRANSFORMATION AND DECISION MAKING



a world class African city

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Key arguments of the presentation

Johannesburg is South Africa's economic powerhouse yet it is a divided city

Its digital divide mirrors the socio-economic disparities of the City

Johannesburg recognises that a smart city is more than just technology – it is about people!

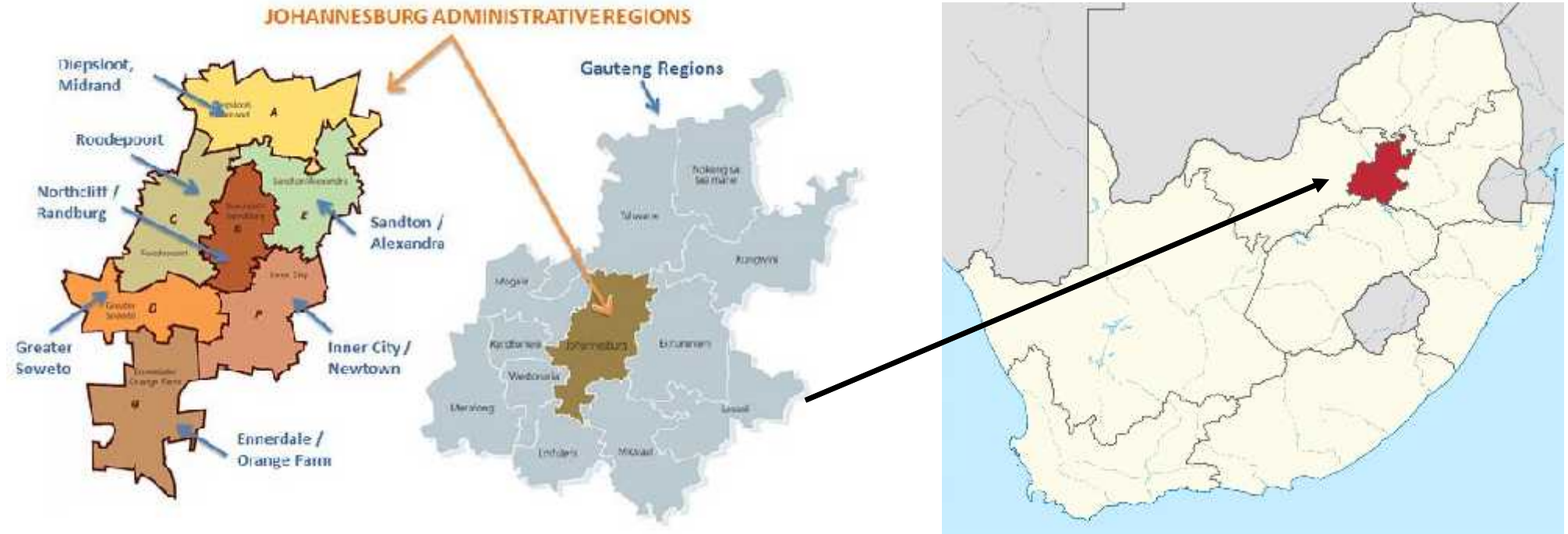
In Johannesburg a smart City is regarded as a platform for innovative applications in ways such as:

- *Control centers combining data from 20+ departments (IOC)*
- *Predicting crime like we predict weather*
- *Using broadband and wifi to allow free education*
- *Digital city services*

Data and information can enable a 'smarter' Johannesburg in order to become more liveable, more workable, more sustainable

Strategic location of Johannesburg

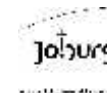
- Johannesburg is situated within the Gauteng City-region – a polycentric city-region with a population estimated at 13.9 million people in 2016
- Johannesburg's current population is approximately 4.9 million people
- It is the financial hub of South Africa



Johannesburg at a glance

September 2016

The City's population has increased by 11.6% from 2011



The Persons under the age of **20 years** who have completed **grade 12** increased by **7.9%** from **1.63 million** in 2011 to **1.77 million** in 2016

HOUSEHOLD'S ACCESS TO BASIC SERVICES

Service	2011	2016	% increase
Access to piped water	98.6%	96.1%	-2.5%
Connection to electricity	90.8%	90.4%	-0.4%
Flush Chemical toilet *	90.5%	91.2%	0.7%
Households living in informal dwellings	17.4%	18.0%	0.6%
Households living in formal dwelling	81.4%	81.3%	-0.1%
Refuse Collection	95.3%	95.3%**	none



8.8%

The proportion of the **youth** (15 to 34 years) **as a percentage of the City's total population** has declined by **8.8%** from **42.0%** in 2011 to **33.2%** in 2016

- South Africa's population has increased from **51.77 million** in 2011 to **55.65 million** in 2016.
- The population of the City of Johannesburg has increased by 11.6% from **4.43 million** in 2011 to **4.94 million** in 2016.
- The youth (15 to 34 years) accounts for a third (33%) of the total population of the City.
- Both the female and male population accounted for 50% each of the City's total population.
- The City of Johannesburg is the most populous City followed by Ekurhuleni (3.37million) and the City of Tshwane (3.27 million).
- The Gauteng province continues to have the largest population of 13.39 million.

4 949 347

According to Statistics South Africa's 2016 Community Survey results, there are **4 949 347** people living in the City of Johannesburg.

This City's population represents of **8.9%** of South Africa's total population.

The City receives approximately **3027** migrants each month.

Johannesburg is a divided city...

The City had a total of **1.43 million** households in 2011 and currently has a total of **1.85 million** households. The number of households in the City have increased by **29.2%**



The household size has declined from **3.1** in 2011 to **2.7** in 2016.

The **poverty headcount** has declined by **0.2 percentage points** from **3.7%** in 2011 to **3.5%** in 2016



- Life Expectancy is at **61.7 years** for men and **64.3 years** for women



The mortality rate is **599 per 100 000**

The HIV prevalence is **29.5%**



The unemployment rate is **29.8%**



The Gini coefficient is at **0.65**

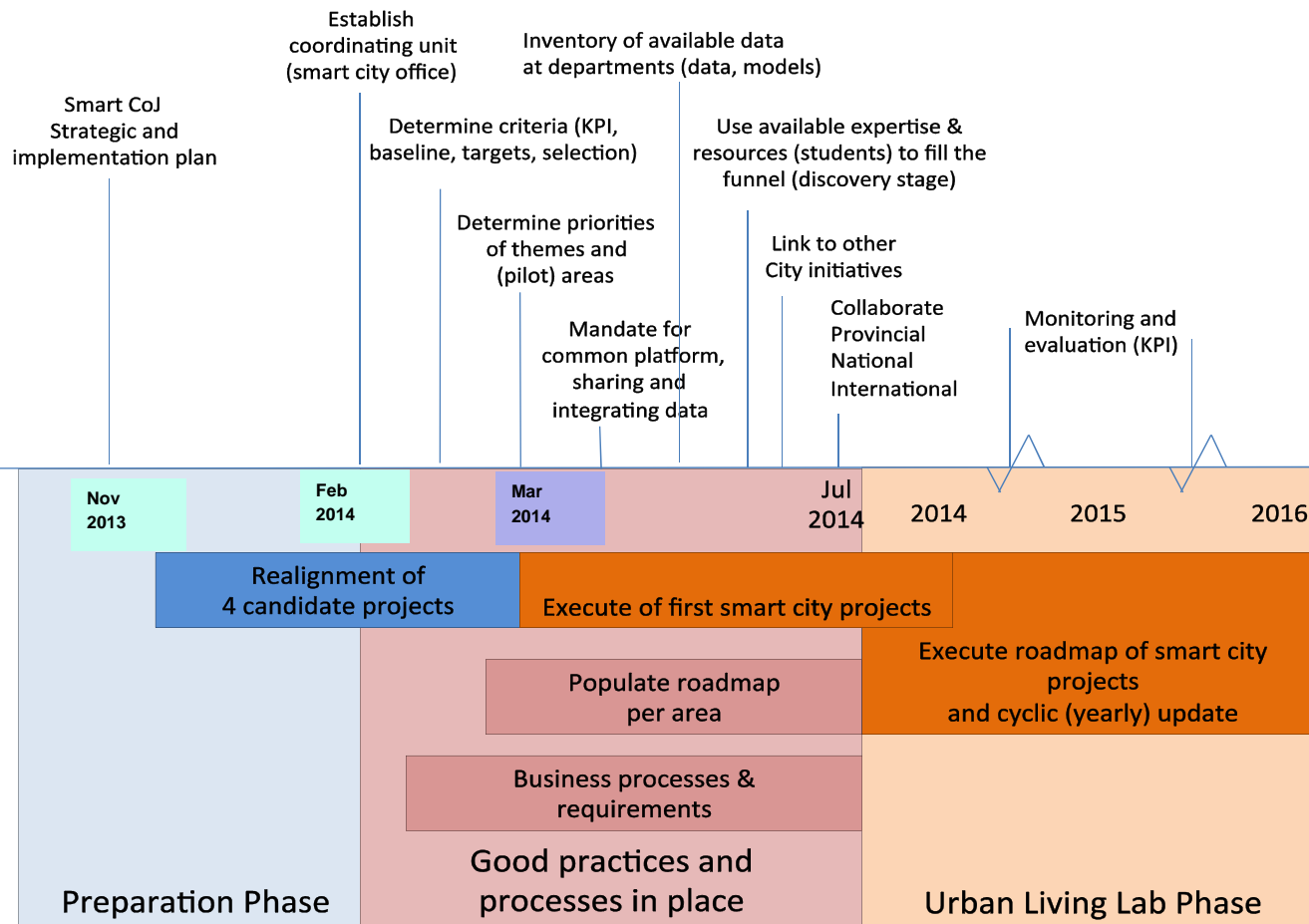
The Human Development Index is **0.71**



The value of a smart city to Johannesburg

- Johannesburg defines 'smart city' as a city that uses Information and Communication Technology (ICT) as an enabler, to merge dimensions of smart utilities, smart mobility, smart economy, smart environment, smart education, smart people, smart living, smart health, smart planning and smart governance
- The 'smart city' concept brings together all the characteristics associated with organizational change, technological advancement, economic, social development and other dynamics of a modern city
- In Johannesburg 58% have access to internet, 15% have a landline and 115 access internet via Wi-Fi
- This 'digital divide' mirrors the broader socio-economic disparities
- Thus, Johannesburg 'smart city' is not necessarily a technical matter
- If going smart is to be realistic – an integrated approach towards achieving growth & development strategy is imperative
 - ✓ **to address inequality,**
 - ✓ **for sustainable infrastructure provision**
 - ✓ **to ensure inclusive growth and**
 - ✓ **for good governance**
- However - strong evidence that the majority of individuals have access to cell phones (93%) – an important opportunity for bridging the digital divide
- Technology may offer solutions for current challenges, such as intelligent infrastructure, smart health and safety issues

Cascading of data from strategy to delivering services

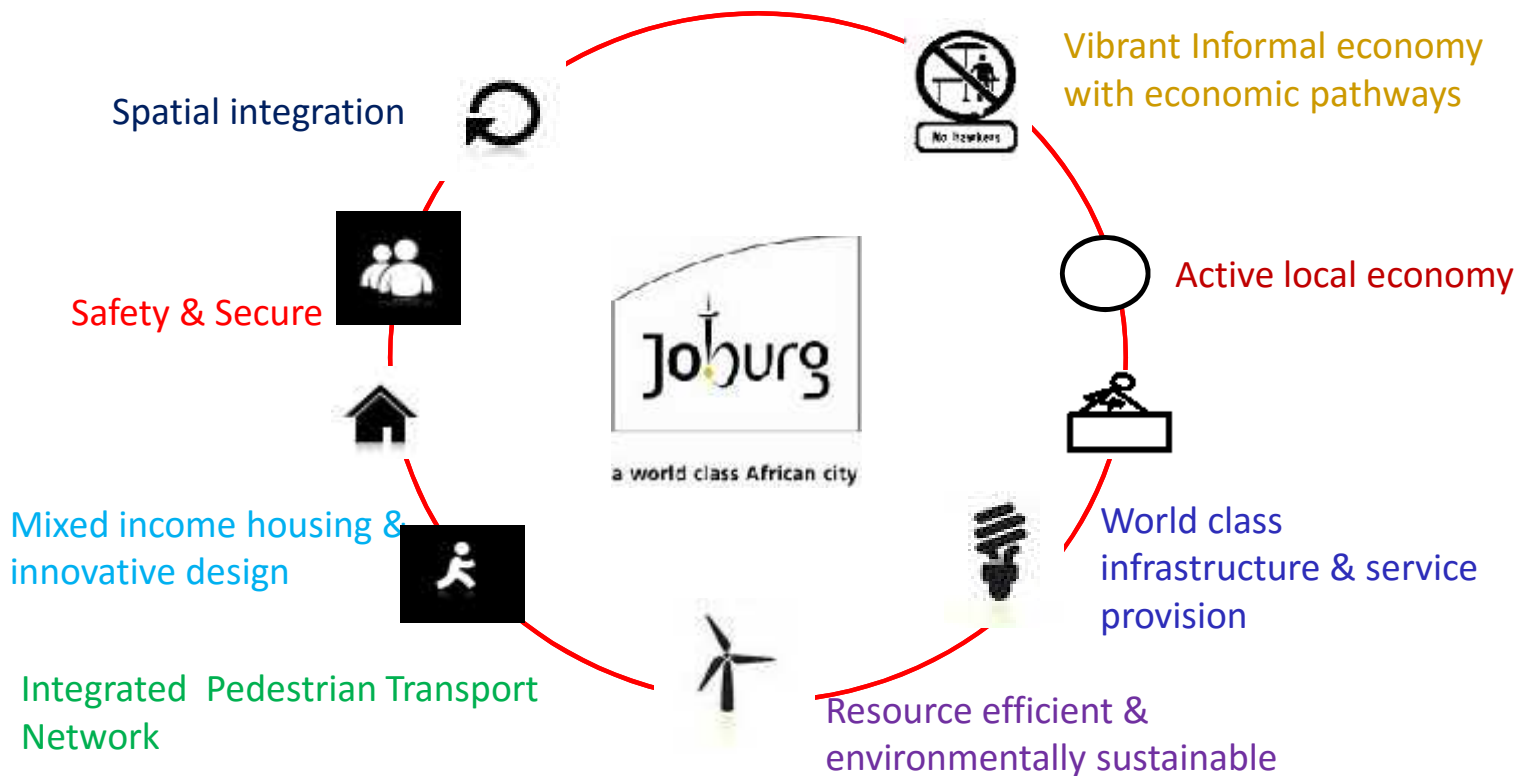


The Smart City of Johannesburg is intended to support the Joburg City Strategy and to ensure that it enables the use utilisation of all available information to make better decisions and, can be summarised as:

- 1. Do more with less**, being more efficient across the whole city saves enormous costs
- 2. Do it better**, being more effective increasing the quality of the services
- 3. Do new things**, being innovative utilising new opportunities and experimenting with new concepts

The Smart city of Johannesburg should achieve

Johannesburg is a world class city that makes decisions and governs through technologically enhanced engagement with its citizens who have universal access to services and information where socio economic development and efficient service delivery is at its core.



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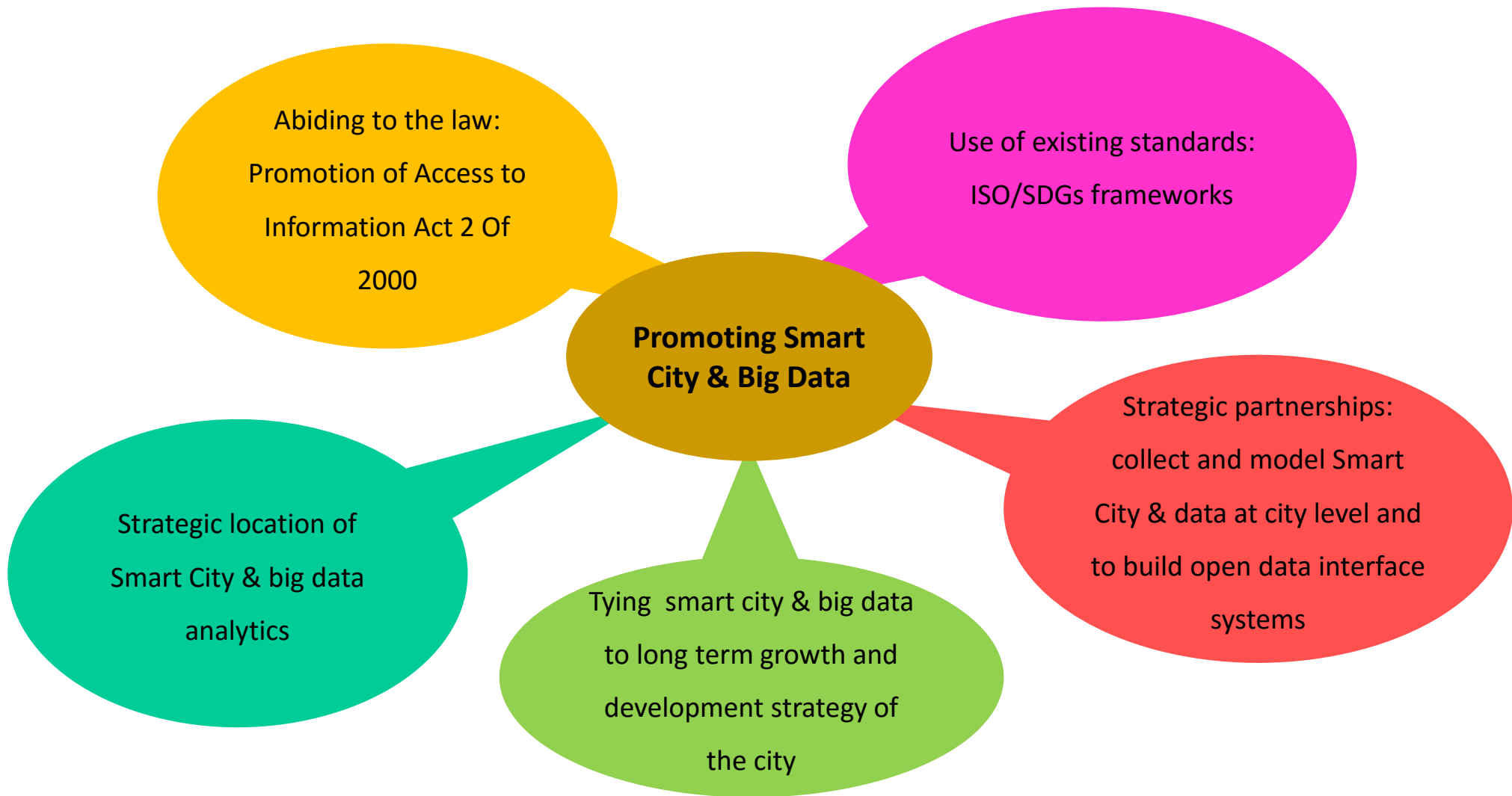
The Smart city of Johannesburg should achieve:

- **Social Development**, i.e. social cohesion, human development at scale.
- **Service Delivery Efficiency**, i.e. interoperable and across all services, leveraging service delivery in communities, lowering the cost of service delivery, tracing defaulters.
- **Better Decision making**, i.e. using citizens' input, taking into account all available relevant data through improved governance.
- **Stimulating Economic activity**, i.e. job creation, stimulating SMMEs and entrepreneurship, ease of doing business.
- **Universal Internet Access**, i.e. utilise technology bridging digital divide, leverage on high cell phone penetration.
- **Active Citizen participation**, citizens as co-creators, improved communication with the citizens, accessible information for communities.
- **Creating a Sustainable & Liveable Environment**, living safely and sustainable usage of resources.

Promotion of big data to achieve smarty city objectives in Johannesburg

At the apex of achieving smart city objectives is **Big Data**

- Antecedent for policy making and strategy development and sound Monitoring and Evaluation.
- Enhance the learnings from other cities to innovate the way Johannesburg delivers services to its citizens in a smart way.
- In a world where city data is exploding and big data is escalating, a reliable foundation of globally standardised big data will assist cities in building core knowledge for city decision making and enable comparable insight and global benchmarking.



Looking forward: Overcoming challenges

BIG DATA IS NOT READILY AVAILABLE AT CITY LEVEL

In SA this entails a 10 year gap. Where data is at City level, it is often based on modelling estimates and therefore is not always official

INTERNATIONAL FRAMEWORKS FOR DATA ANALYTICS

Reliance on international frameworks for data analytics - definitions are not always applicable to Johannesburg domestication is a must

BIG DATA IS SOMETIMES OVERWHELMING FOR CITIES

There is a need to balance the use of big data with some continuity or traditional approaches

LACK OF CAPACITY

Both technical and user capacity
Going forward, capacity building and resourcing will be key.

TRANSFORMING DATA

Traditionally incubated within the halls of National Statistics Dept. Need to include practitioners, civil society, the private sector, and even the beneficiaries themselves