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**THE CASE FOR
SMART CITY
PARTNERING**
INTERVIEW WITH
GRAHAM COLCLOUGH

**SMART CITIES
NEED SMART
PARTNERSHIPS**



**LEARNING FROM
JOHANNESBURG**



FOREWORD

by **LAWRENCE BOYA** (CITY OF JOHANNESBURG)

It is our honour as the City of Joburg to be the first of the Smart Cities South Africa (SCSA) Pilot Programme cities to act as a Guest Editor in this SmartCity.za Bulletin series. We have a long-standing tradition, after all, of being a learning organisation and one that is committed to knowledge management and knowledge sharing. This platform gives us an opportunity to let our peers and the public know what we have been doing, while inviting others to share so that we can all move forward together.

Since the November 1 2021 local government elections, a new Multi Party Government (MPG) has been formed to propel the City in this new political term, which is the typical cycle of change in our democracy. Our new leadership is continuing on the trajectory chosen by previous administrations to transition Joburg into a smart city as part of the City's priorities. All City departments and entities are expected to align their budget plans to these smart city intentions.

For us as the Smart City Office, this means we are "all systems go", and we are prioritising on consolidating the Smart City Integrated Implementation Programme (SCIIP), and other key policy and strategic frameworks to support the work to build the foundations for a smart city. This includes the completion of our Innovation Policy, and making further refinements to our Smart City Strategy. Our SCIIP has ten (10) catalytic programmes spread throughout various City departments which are initiatives to implement the goals of the Smart City Strategy. These include exciting projects around connectivity, sustainability and greening programmes, mobility and transport, safety, and waste management. We are also ensuring that our Smart City Strategy includes clear performance indicators for the City's Service Delivery and Budget

Implementation Plan (SDBIP) to ensure that our reporting on these initiatives is aligned with our smart intentions.

We have developed a Smart City Governance Framework which includes a maturity level assessment (based on the ISO 37166 / BSI PAS 181). This framework will guide the manner in which the City deals with smart city governance within the broader framework of City governance.

Through all of this, we are actively engaged with the SCSA programme, having officially signed onto a Memorandum of Agreement in November 2021 with the Development Bank of Southern Africa (DBSA). We see clear opportunities to leverage this programme towards meeting our developmental goals - which include meeting both service delivery improvement and political priorities - in a smart way. For the City of Joburg, we will therefore focus our SCSA engagement in the areas of Strategic Project Preparation, Smart City Project Implementation, and associated Capacity Building.

So that is us. But regarding this specific Bulletin edition, the focus is on the roles of actors and partnerships in creating smart cities. It is a fitting theme for us to support as we have a long history of working with other actors. This is reflected for example in:

Our smart city partnerships with the likes of the Tshimologong Digital Hub, part of the University of Witwatersrand (Wits); University of Johannesburg; our sister metros in Gauteng and the City of Cape Town; the CSIR, and the DBSA;

Our Innovation Challenges which invites and awards innovators who are developing smart city technologies and/or innovative solutions to challenges faced by our city;

Intergovernmental partnerships e.g. with National Treasury as well as the

e-Government Department of the Gauteng Provincial Government.

And even international partnerships, such as a new cooperation we are developing with Singapore government through their agency for international cooperation known as Singapore Cooperation Enterprise (SCE).

It is our belief that as big as Joburg is, we cannot go it alone whether as a unit or even as a municipal administration; smartness demands wider engagement and participation if we are to find effective and sustainable solutions to our many challenges, and also if we are to leverage our many opportunities. So with all of the challenges that municipalities may face in building effective partnerships, it is indeed the smart thing to do!

We invite you enjoy, learn and engage with *SmartCity.za Bulletin #2: The case for Smart City Partnering*.



Lawrence Boya is the Smart City Leader and Director, City of Johannesburg.

PREFACE FROM THE EDITORS

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

It has been a couple of months since production of our first SmartCity.za which was released in December/January. Importantly, we have flipped the calendar into a new year, and South Africa's extended state of disaster and lockdown restrictions have come to an end.

The Smart Cities South Africa (SCSA) Pilot Programme is progressing, having slowed down a bit to accommodate municipal elections and the change of guard. In this first quarter we are moving into a diagnostic phase where the World Bank / DBSA team will be working with the four South African pilot cities (Johannesburg, Ekurhuleni, Tshwane and eThekweni) to gauge the Smart City maturity of each participating city based on British Standard PD8100:2015 - Smart Cities Overview which provides a useful and replicable guide to establishing a smart city baseline, prioritising areas of focus, and tracking progress at the city scale over time. This is of course a preparation measure, and is thus a constructive process intended to help support the cities in identifying priority projects and support needs which will accelerate progress towards their Smart City ambitions. Also on the menu is the cities' participation in a World Bank Smart Cities Virtual Knowledge Exchange with Dutch partners in February.

The urgent and important next stage will then focus on practical delivery of the smart projects and programmes within a smart city paradigm and enabling institutional capabilities and arrangements.

And Speaking of enabling ecosystems - this edition of our Bulletin builds from our first issue's focus on "the what" - which was defining smart cities, to now asking about "the who" it takes to do this; assuming that smart cities are not only delivered through the efforts of municipal governments.

Speeding the implementation of Smart City solutions largely depends on their capacity to connect and learn from each

other. For instance, the Global Smart Cities Partnership Unit within the WB promotes a network of knowledge and community of practice called City Sense - Innovation from within, based on three principles:

Open Processes: Cities are overwhelmed by the challenges they face; they will never have enough technology, money or time to solve all their problems concurrently. The solution to move forward is to open up the process, using a platform approach, to allow others to build value on what the public sector does.

Open Data Platforms: By creating a platform and inviting stakeholders across all of society to become co-creators of the solutions. The easiest way to do that is to enable public access to data (the so-called open data platforms - ODP), thus allowing them to create new services, relevant applications, visualisations, amongst others.

Citizen-centricity: In addition to the overriding objectives of service delivery, city officials should also focus on citizen centric solutions. There is need to change the paradigm and design smart city solutions from the citizens' perspective, by considering what makes most sense to them. Empowering stakeholders across the private sector, communities and development institutions can enable a sustainable innovation life cycle that is required to deal with rapid demographic growth, aging infrastructure or evolving social problems.

The research article in this edition emphasizes the important role of the Quadruple Helix of innovation actors that are necessary to enable smart cities, and also speaks to the inter-governmental coordination required. Our local and global perspectives evidence this, with the City of Johannesburg showing us how smart governance requires citizen participation, and international smart cities expert Graham Colclough arguing that we need better relationships between actors in order to manage within the complexity of smart

cities. The Snippets offer some additional resources for your inspiration.

We are truly delighted to have our partner Mr Lawrence Boya, Smart City Manager at the City of Johannesburg, guest editing this edition of the Smart City.za Bulletin, providing his wisdom into our process. Based on this very positive experience, we intend to continue this approach of direct City championship of the Bulletins because it adds so much richness and value to the process. It also makes sure that these are meaningful and useful products for the cities themselves. Please continue to give us your feedback and inputs in this regard.

Finally, we ask - as usual - what is "the So What" from this issue. We think the key messages are:

- Any way you look at it - relevance, affordability, efficiency, feasibility, sustainability - no city will get to being smart on its own; we have to work with other actors. Fortunately there is a lot of experience and expertise to help us figure out how to do this well if we have the mentality and commitment to partner.
- The knowledge resources are both local and international. E.g. locally, the Western Cape Economic Development Partnership (EDP) has vast experiencing and resources on partnering in the South African Context. Internationally, the World Bank Global Smart City Partnership Program similarly offers key international resources. So seek out the support; it is available.
- Finally, peer-based learning is critical. The SCSA programme will be prioritising the establishment of a Community of Practice with the pilot cities and key stakeholders as an important basis for this.

See you in the next issue!

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SMART CITIES

NEED SMART ACTORS
&
PARTNERSHIPS

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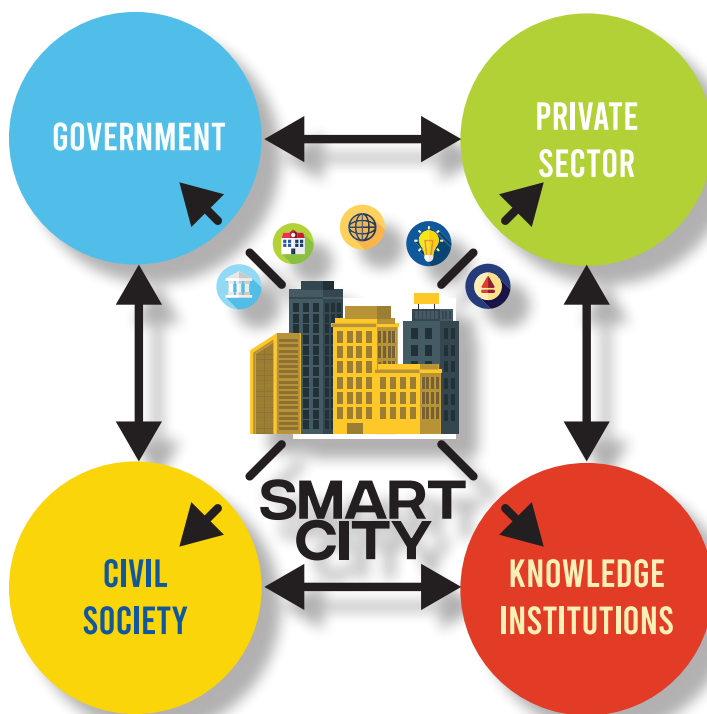
Photo: Ignus

SMART CITIES NEED SMART ACTORS AND PARTNERSHIPS

BY **GECI KARURI-SEBINA & FREDERICK BECKLEY**

African cities present various opportunities relating to the unprecedented population growth which is coupled with a high rate of urbanization¹. Africa's cities are beckoning towards effectively responding to massive overcrowding, poor infrastructure and limited connectivity. There are concerns on the quality of life and underperformance of city centers in Africa but this mandates cities to rise to their full potential as economic transformation agents.

One of the key aspects towards unlocking African smart city potentials is treating cities less like static administrative regions and more as dynamic innovation ecosystems.



Smart cities as innovation ecosystems are effective in an environment that supports collaboration, entrepreneurship and innovation. Such environments need facilitation from decision makers. The decision makers (actors) within the innovation ecosystems are considered part of what is known as the quadruple helix (see Figure 1). The quadruple helix is closely associated with a people-centered approach to development. The actors within the quadruple helix are Government (local and

national), Private Sector, Knowledge Institutions and Civil Society. The interactions amongst the actors are characterized as dynamic and multilayered as indicated by the red arrows in figure 1.

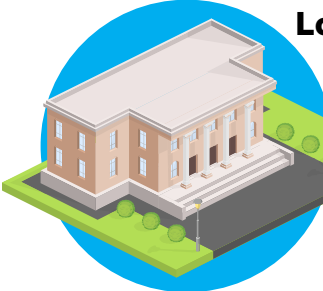
The interactions and partnerships between the actors within the Quadruple Helix are significant because they are directed towards the co-creation of the methods used to include civil society and enable the realization of the human dimension in smart cities. The mobilization of smart city initiatives and innovation need to be collaborative and perform in an experimental nature. Trying and refining strategies such as Participatory Prototyping (which allows participants to put your ideas in front of other participants, allowing rapid feedback and iteration to improve innovations) and Sandboxing (as a tool of social research, participants create a scene within a box filled with sand using miniature figures and objects as a means of participation) to ensure that smart city projects are centered around common values because these values affect the progression of smart city initiatives. Furthermore, these interactions and partnerships need to ensure that civil society preferences are clearly articulated to ensure the transcendence towards effective communication.



These actors enable the necessary systemic change for improving the productivity, sustainability and inclusivity of cities, see Figure 2 & 3, identifying the roles of actors inclusive of two spheres of government (local and national). The significance of the actors is elaborate in examples such as co-ideation which fosters creativity in solution development. Smart city actors are anticipated to co-produce, which means that all the actors are seen as being part of the design, planning, implementation and maintenance of the smart city. Innovation thrives in environments where the actors adopt a value-driven approach and integrate public integrity, particularly amongst civil society and knowledge institutions.

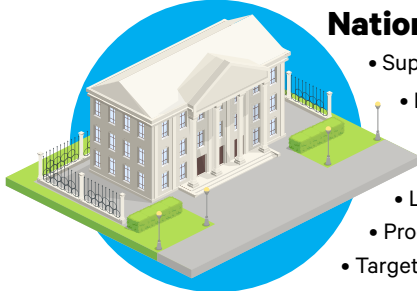
tors should follow towards effective co-creation: 1) Develop a clear vision and a shared value base on which Smart Cities are based, amongst actors and; 2) The need for facilitation in support of Smart City actors within smart cities.

In an era of constraints - financial, physical, natural, human resource, Smart City initiatives in South Africa have to be based on leveraging all actors. While city governments may be considered to be the primary leads on framing smart city agendas, the roles of other government actors, of built environment and technology practitioners, of community residents and businesses, and also of researchers have to be welcomed and centered.



Local Government Roles

- Political vision & visibility
- Safeguarding public interests
- Coordinating activities of other stakeholders



National Government Roles

- Supportive political environment
- High-level infrastructure
- National priorities & standards
- Legislation & regulation
- Procurement processes
- Targeted funding

Nonetheless, it is not only corporations that are important in Africa, but we have a strong emerging Small-Medium Enterprise (SME) or startup scene which cities can leverage to enable smart cities in locally relevant ways¹. Smart cities thrive to increase local competitiveness, improve infrastructure and collaboration amongst private and public sectors, whilst improving the quality of life of the citizens through better public services. In South Africa, the word on the street now is “All of Society”. Yet we cannot neglect the various challenges associated with: Collaboration between multiple parties; Complexity and emergence of phenomena; Involvement of citizens; Diversity of values and; The differing values of the designers in the development of Smart Cities.

In Africa, innovation actors need to develop contextualized innovation strategies which address the continent’s contextual diversity. The Knowledge Institution helice should emphasize three ways to ensure sustainability of African Smart Cities and these include: 1) Enabling integrative and trans-disciplinary scholarship; 2) Develop knowledge intermediaries and; 3) Valorise diverse knowledge forms³. These measures will enable South African Smart Cities and their actors to develop the necessary educational and research systems critical to knowledge transfer and translation amongst the other actors. Scholars suggest two key principles towards an in-depth understanding on the processes ac-

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INTEGRITY”**

LEARNING JOHANNESBURG

BY CHUMA MBAMBO



G FROM ESBURG

The City of Johannesburg is located in South Africa's leading economic centre. Joburg is therefore at South Africa's centre of growth, research and development, and innovation. One of the City of Joburg's priority areas is therefore to use 'smart' approaches in improving governance, service delivery and quality of life in the City.

We acknowledge and appreciate the contributions of Lawrence Boya (COJ's Smart City Director), of Nobuntu Mpendulo & Jeff Nyoka (COJ e-Learning Services) in providing information towards this feature.

The City of Joburg GDS 2040 provides an overarching vision for the development of the City towards rectifying the apartheid inherited spatial and economic limitations in order to enhance the quality of life for all citizens. The GDS describes the Smart City programme as crosscutting to address not only infrastructure needs but also to improve governance and to create efficiencies that will contribute to a productive and sustainable City, putting Citizens at the centre.

The Smart City approach emanates from the GDS Outcome 3 for, "An inclusive, job-intensive, resilient, competitive and smart economy that harnesses the potential of citizens". This outcome is linked to the 7 priorities

of the Multi Party Government (MPG) which are;

- A city that gets the basics right
- A safe and secure city
- A caring city
- A business-friendly city
- An inclusive city
- A well-run city
- A smart city

These priorities give a basis from which the Smart City Strategic Pillars are derived.

SMART CITY STRATEGIC PILLARS

The following table presents the City of Joburg’s smart city governance strategic pillars and institutional delivery mechanisms.

STRATEGIC PILLAR	SMART CITY PRIORITY	RELATED SMART CITY PROJECT	INSTITUTIONAL & DELIVERY MECHANISM
SMART GOVERNANCE	Promoting citizen participation by making city leadership more visible, open and democratic.	Smart Council and Citizen e-Participation	Smart City Technical Steering Committee Smart City/4IR Advisory Committee Mayoral Committee Council
SMART ECONOMY	Enhancing the City’s traditional economic position by advancing the knowledge based and 4IR industries and working with urban living labs as the platforms for advancing innovation in the CoJ.	Smart Nodes and Spaces: Smart City Innovation Challenge	Department of Development Planning Department of Economic Development (DED) The Smart City Office
SMART MOBILITY	Creating an intelligent public and private transport system that supports smart mobility.	BRT Expansion Intelligent Traffic System (ITS)	Transport Department Johannesburg Roads Agency (JRA) Metropolitan Bus Services (Metrobus)
SMART ENVIRONMENT	Enabling smart grid and sustainable buildings through electricity, sanitation, water and waste management.	Climate Action Plan	The Environmental and Infrastructure Services Development (EISD) Johannesburg Water (JW) Pikitup City Power
SMART PEOPLE	Making internet access affordable to city institutions, households and visitors.	Smart Services Citizen Engagement APPs	All departments have a role in contributing to this strategic pillar.
SMART LIVING	Creating smart, connected, and inclusive neighbourhoods; promoting healthy living within safe, livable, sustainable, and resilient environments.	Smart and Safe Neighbourhood Safer City Connected and Digital City Joburg City Safety Strategy	Development Planning Office of the Chief Operations Officer Public Safety (Joburg City Safety Strategy) Health Environment and Services Department

The table above illustrates that creating a Smart City requires a cross cutting approach involving all City departments in implementing a smart way of operating as well as smart initiatives to achieve an overall smart city. Further-

more, the City of Joburg Smart City Strategy emphasizes that the Smart City vision can be made a reality through collaborations with partners in government, the private sector, civic society and academia.

Smart City Vision and Mission

In 2020 the City of Joburg approved their Smart City Strategy document, titled: 'A Leap Into our Future,' with a vision to be; "a Smart City of Johannesburg, that is able to deliver quality services to citizens in an efficient and reliable manner"

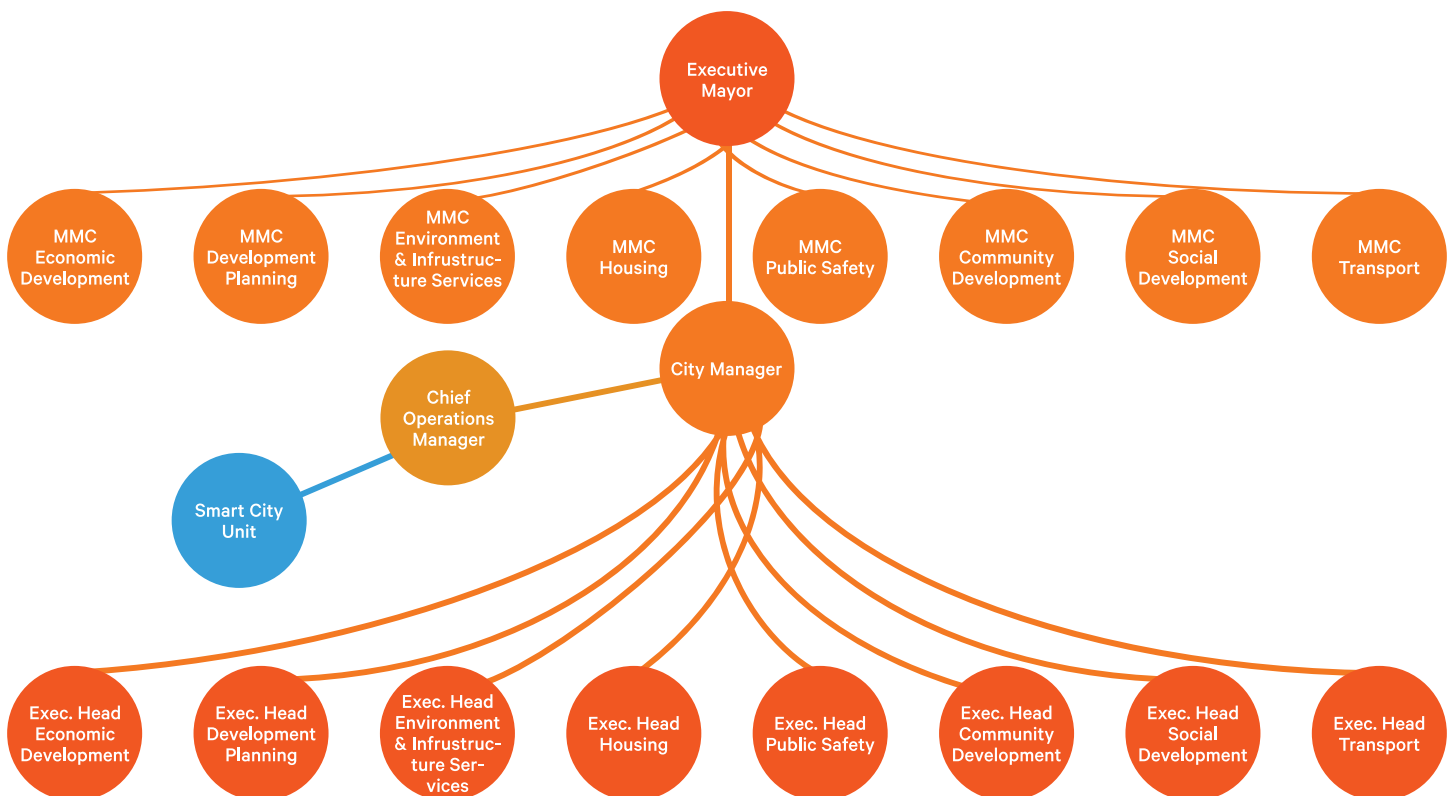
The COJ Smart City agenda has the following approach and mission

- To use technology and innovation to effectively engage residents (especially youth and poor communities) and enable them to participate in developing a prosperous future City.
- To modernize operations to provide better quality, efficient and accessible services more cost effectively.
- To create a Safe City for all residents, businesses and visitors and enforce bylaw compliance
- To improve critical infrastructure and services that make the city more liveable, greener, cleaner, sustainable, adaptive and resilient to foreseen & unforeseen future events.
- To prioritize broadband and other communication infrastructure that connects residents, business, civic organizations, Departments and MEs to enable data and information sharing.

- To develop governance policies and structures supported and enforced by City leadership.
- To normalize data-based decision-making across government and create digitally enabled platforms for employees to input ideas and solutions to improve the city; including New Ways of Working.
- To be an economically thriving, globally competitive city that leverages digital infrastructure to support sustainable business growth, investment, and job creation.

The abovementioned Smart City vision, mission and strategic pillars demonstrate the crosscutting nature of the smart city approach in the City of Johannesburg. As such, the City of Joburg has an established Smart City Office that resides in the Office of the Chief Operations Officer. This placement substantiates the City's view of smart city approaches being based on improving the City's operations, using data management and technology as an enabler of efficient city operations.

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.



CITY OF JOHANNESBURG E-LEARNING SERVICES



The rise of the digital age has forced longstanding institutions to ‘adapt or die’ as it has transformed the way people work, interact and share information. Consequently, public institutions like libraries have had to constantly transition over various regimes to reflect and respond to the present needs and structures of society. Likewise, the City of Johannesburg’s Library and Information Services (COJ LIS) provide more than just traditional library services but have become education hubs that empower communities with mobile literacy services and various digital skills. The LIS has partnered with various actors to establish the e-Learning platform which provides access to resources that are beyond what the City can offer its citizens independently.

E-Learning Services Background

A smart city requires an advanced social capital or ‘smart people’, hence the City’s commitment to bridging the digital divide and promoting lifelong learning amongst all of the City’s residents. The e-Learning Services were introduced back in 2011 when the City Libraries introduced eLearning classrooms to enable communities to access the internet using City public computers. E-Learning services were introduced to ensure the inclusion of the City of Johannesburg (COJ) communities in the digital society and are also the main driver of the digital transformation of Library and Information Services.

Promoting e-Learning services also includes the provision of open WIFI where users can bring their own devices or utilize computers and other electronic devices available at

the libraries to access the internet and e-learning tools.

- The eLearning services are part of the City’s Smart City vision and strategic focus on; youth employability; encouraging entrepreneurship; bridging the digital divide among citizens and; enabling citizens to gain access to knowledge and digital skills. Today, the e-Learning services focus on;
- **Mobile literacy** – introducing the public to educational apps, coding apps and reading for leisure apps;
- Access to online courses that teach digital skills at all levels – this is usually done through partnerships with companies like Google, Amazon, IBM, and Microsoft;
- **Digital content creation** - empowering staff and the public to write for digital platforms such as the ‘African Story Book’;
- **Computer skills lessons** – basic computer skills training in selected libraries;
- **E-resources** – LIS subscribes to various e-resources for students, researchers, entrepreneurs, and the general public, and also introduces library users to non-subscription (open source) e-resources. These include various online databases such as eBooks, audiobooks and online journals & newspapers; and
- Assistance in researching information online through the use of social media platforms such as WhatsApp and Facebook.




Through Harambee's Ntithimillon project, LIS offers free Microsoft Office courses for beginners that require basic to intermediate level digital skills. Users can complete the courses and obtain a digital certificate upon completion.

In 2019 the LIS established reading and writing development through technology programmes that are held in partnership with NGOs like FunDza African Storybook. Through this programme the COJ LIS is running a school reading competition called MobiReadathon where learners participate in mobile reading competitions that are accessible through data-free apps. Finals for the MobiReadathon to be held in April 2022.



IBM Digital Nation Africa offers a digital skills program that is focused on 4IR concepts such as Coding, Artificial intelligence, Data Science, and other related topics. IBM courses allow users to select their level of competency, from a beginner ('explorer') to expert ('innovator') level. The platform also links users to platforms with job opportunities.



Google SA offers online courses under their "Google Digital Skills for Africa" program, and these are focused on Digital marketing and other skills related to opportunities available for businesses using digital platforms.





The 'Fake News Program' which addresses misinformation of the public in internet platforms in partnership with the Goethe Institute.

The Goethe Institute also partners in providing literature through gamification where junior citizens are introduced to apps in competition formats where they play to win prizes.



An Honours Student from the Faculty of Computer Science in the Nelson Mandela University invented a puzzle-based coding game called Tanks.

Tanks is a zero-rated app that teaches school learners coding through photo recognition. This has turned into a competition that is hosted has been hosted at Africa Code Week and other coding campaigns that host thousands of learners around Africa.




Managing Partnerships

These partnerships have made possible the vision of bridging the digital and knowledge divide amongst different communities in the City of Joburg, but they do not come without any challenges. The COJ LIS recognizes that although partnerships are important in achieving all its goals, some programmes are crucial for the sustainability of the LIS, and therefore they reduce partner dependency in these programmes. Furthermore, the COJ LIS uses a variation of partnership contracts (occasional, short, medium and long term) and ensures that all partnerships are formalized through the legal department so that all partners keep to agreements and commitments. Typically, the COJ LIS signs 1-3 year agreements with partners to secure continuity.

The leadership in both the City and the partner organizations is critical for the success of a partnership. Therefore, relationship building and maintaining partnerships is a necessary leadership skill for senior managerial staff, to ascertain that partnerships continue or are revisited and improved. LIS units provide regular updates on stakeholder and partnership activities to support this.

Most partnerships are dependent on the benefits enjoyed during an agreement period. Thus, LIS highlights the importance of managing expectations as partner reliability cannot be guaranteed. Organizations may overpromise and underdeliver or not reveal enough information to all partners. One way the LIS manages this is to focus on leveraging the goals and Corporate Social Responsibility objectives of its partners and weigh them against the unit's vision, to ensure that the partnership is based on shared/common objectives.

An example of this is in 2018 when the e-Learning and Library Applications (ELA) unit collaborated with Google SA, where Google sponsored 12 libraries with e-Learning classrooms with WIFI routers over two years to support e-Learning programs. In return, libraries introduced communities to Google Digital Skills for Africa online courses. The ELA further introduced mobile classrooms, which allowed libraries without computers to host programs without having a permanent classroom.

External Factors Influencing Partnerships

The LIS still faces other significant challenges that demean the impact of the e-Learning initiative. These include unreliable and unstable network infrastructure, crime in selected libraries, limited funds for the programme, inadequate

skills amongst the library staff, and the general reluctance of adapting to using technology in libraries. The LIS constantly leverages partner programmes to address these challenges, especially those related to training library staff on digital skills and technology.

Conclusion

The impact of the COJ e-Learning Service is internationally recognized and it has been nominated for numerous international awards. The COJ Libraries won the Electronic Information for Libraries (EIFL) International Public Library Innovation Award in 2021 and continues to share its experience with e-Learning Services on national and global platforms. The COJ LIS will be presented at the 2022 Occupy Library Virtual Conference.

Key Takeaways

- Libraries should align to City priority needs and outcomes. The LIS has aligned itself to the City's priorities to ensure that it is responding to and addressing City challenges.
- Libraries need to constantly evolve to meet the present needs of people. The LIS addresses knowledge sharing and other demands related to skills development and empowering communities to being active participants in the digitally transforming world.
- Good partnerships require good leadership. Good leadership is essential to a working partnership. Therefore partners must ensure to have the support of key decision makers and keep the partnership visible and aligned to all partner institutional objectives.
- Limit partner dependency key programmes. Partners must manage risks by prioritizing projects and that could impact on meeting basic citizen needs.
- Leverage on common partner objectives. It is important to understand partner needs and what they seek to achieve from the partnership to ensure mutual benefit from projects.
- Create a legal base for all partnerships. All partnerships should be contract based, whether they are for the long or short-term.

GLOBAL PERSPECTIVE



In January, Geci Karuri-Sebina had the opportunity to chat with Graham Colclough who is part of the World Bank's Global Smart City Partnership Program's Core Team of Experts to gain his global insights from experience regarding the issues of effective Smart City actors and partnerships.

INTERVIEW

WITH **GRAHAM COLCLOUGH**

Q: The literature suggests that successful smart cities require effective participation of and/or partnership with the various stakeholder groups: government (both central and local), business, civil society, and R&D institutions. Is this supported by what you have observed of global smart city journeys or experiences?

Between 5 and 10 years ago, everybody was talking about citizen-centricity and arguing about the importance of the customer being involved. If you just look at how the issue of recycling has evolved in that period of time, from engineering solutions to where we are sorting out waste at source, in our homes - I think one specific stakeholder - civil society - is absolutely crucial in order to make things change. How can we cause people to take accountability for their actions? That is the primary challenge and the key to smart city solutions: we need society to be accountable, not just to be an actor who occasionally plays a role. "Smart City" is about putting in the data layer that runs across the delivery chain of all infrastructures and services. And because people in the past didn't worry about data and probity of data and now they do, it's really, really important that all these actors understand how they're actually going to connect these infrastructure and services - and not necessarily just the data. Many services are inefficient in their 'silos', and opportunities emerge as you cross over those silos, providing enormous opportunity for transformational improvement. Data sits at the core of that. I'll give you a couple of examples.

One is a current World Bank project in Bangladesh on Health - a service mainly provided and steered from central government, similar to most other places in the world. And it's a huge budget. The system typically kicks in when it's already very ex-

pensive and people need to go to doctors or hospital. So how can public institutions understand people and gain insight into how to change behaviour and move to prevention? We need people taking more accountability for their well-being, and that occurs locally where people live. So if cities could strengthen trust between society and the public sector, then wellbeing could be tackled further upstream where it's cheaper and better. That requires connection between across the tiers of government, national to local. Bangladesh also has a lot

“SMART CITY” IS ABOUT PUTTING IN THE DATA LAYER THAT RUNS ACROSS THE DELIVERY CHAIN OF ALL INFRASTRUCTURES AND SERVICES.



of local non-profits providing health as a vital resource. Health is a great example of where connecting across the tiers and sectors, and addressing all the steps in the value chain, offers enormous potential.

Another example is Milan's Sharing Cities programme. It is one of 18 programs in Europe tackling the nexus of mobility, energy, and built environment with a cross-cutting digital and customer-centric slant. There are 124 cities around Europe participating. Milan has a demonstration district where they put in place a "digital social market" (DSM). In essence, an incentive program like airlines or supermarkets use - however without sharing your data for commercial benefit; it's shared from a standpoint of making life better, making public service delivery better, and enabling local businesses to benefit also. So they've got gaming theory applied to achieve e.g. group savings on energy in that demonstration area. This is where you're starting to use modern technical approaches to deliver public value in a data informed manner.

Q: What do you see as key requirements or attributes for effective partnership-based approaches to smart city making?

Adoption - making sure that the investment in smart solutions actually results in people using a service. We see a lot of investments in cities where people aren't necessarily using them. If you build something physical, it's reasonably obvious if it's not being used. When we're busy building something virtual; which could transform outcomes, it can be less obvious. Adoption requires communicating effectively to users (often within service delivery organizations). Adoption is key, also from an investor's perspective (for returns). And if you don't understand how to communicate and change behaviors and actions that result in use - then investment can be wasted.

Appropriate data sharing – there's still a lot of inappropriate data sharing. It's a very, very dynamic space in terms of what tools are available, and what techniques are used to explore data (machine learning, AI and suchlike). Building the trust between stakeholders, which includes therefore the end user is crucial to ensure appropriate data sharing, without which you typically won't get adoption either. So that's absolutely key.

Blended finance and business models - another thing is how you manage money. New business models often blend capital investment and operation costs, which can mix public and private investment. For example in Europe, the Commission grant infrastructure funds to rebalance the east / west divide. They only grant capital funds – and that's limiting. Smart city operations require more subtle management of both capital and revenue, however these involve two different sets of books, and two different behaviors. Smart solutions can gray the boundaries between capital and revenue. Another example is an initiative on 'Mobility Islands' which is about placing physical facilities around a city to change the perception of what it means to move around a city. Rather than everybody assuming that the best thing to do is to take your private car and add to congestion and air quality issues, it involves coaching people towards renewable-powered small micro-mobility or non-motorized options, and considering the user experience rather than a traditional model of heavy infrastructure where the customer is the vehicle not the user. This requires shifting the different forms of capital investment, considering different business models, and flexing revenue streams - it becomes more complex, however much smarter and better.

Educate both cities and investors – cities are necessarily complex beings, and we should not apologise for that, we need to accept and understand that. Alas, from my experience, too many investors see cities as 'too small, too slow and too risky' - a nuisance to do business with. How can

we educate investors to understand the engineering of smart cities? How can we educate cities to understand the nature of money and financing mechanisms? Without that, the missing ingredient remains missing – money! Several years back I had an a-ha moment when I realized that demand and supply - cities and suppliers - had been having conversations for a long time, however assumptions and expectations were mismatched as regards who and how things would be funded.

and then suddenly money gets stuck in the middle and they all look at each other. If we can be more intelligent in terms of how we bring demand and supply together, along with the money / investors, then we can start to build solutions that actually work.

That's good from standpoint of building something. Of course it's not necessarily good yet from the standpoint of making sure it gets use and feeds back to the investor in a way that makes sense - which is where city building is complicated. But we should never apologize for the complexity of smart cities. It is time to actually understand it.

Q: Do you have any examples of “good” and “bad” partnership stories / experiences that South Africa could learn from?

The Smart Cities Lighthouse programme could be an interesting one for Africa to look at from a regional perspective and shows smart at multiple levels. It is an initiative from the European Commission to stimulate the market. Sharing Cities is one out of 18 programmes which are driving cooperation. Now the Commission has a “mission” on Carbon Neutral and Smart Cities” which is convening the market across 35 partners who are all beginning to say 'let's do more than just implement a solution' – they are packaging solution in a Lego-like concept to make adoption and implementing by others better, cheaper, faster, which is great if we want to respond to the SDG challenges the future.

Another example is eProcurement

Scotland which goes back 20 years. It is about collaboration at a national level across the whole of Scotland, taking every single public sector institution in Scotland and offering them a technology-enabled service for procurement. The award-winning solution called eProcurement Scotland had been developed as a service, so the IT wasn't behind the firewall, it was actually in the cloud. It was one of the very first as a Service Solution, and again that sought to develop a solution which could be adopted or adapted by multiple different types of organizations different scales in a city (effectively 30 different organizations). So this is about effectively understanding how to tailor solutions to multiple parties.

“NEW BUSINESS MODELS OFTEN BLEND CAPITAL INVESTMENT AND OPERATION COSTS, WHICH CAN MIX PUBLIC AND PRIVATE INVESTMENT.”

So Copenhagen is one of Europe's really progressive, sustainable smart cities. At the same time, if they do make take actions which don't necessarily deliver the outcomes that they'd intended, they also actually seek to learn from that. And that's exactly what they've done. So they built an urban data platform together with Hitachi which sought to pull data together and sort of commercialize it. In theory, that sounds good, but in practice trust got in the way. There was gap in terms of understanding the distinction between the public sector and public value, which is complicated. And then the commercial value in terms of technology companies. Again, it comes down to business models and data.

A report was actually produced to learn from this experience. Innovation is good, but sometimes it doesn't quite work out the way you intended. But it requires capturing that learning and sharing it, which is exactly what both parties did in this case, and they have probably benefited from it.

Q: What does it take for a city government to be a good partner to other sectors? What kind of city do I need to be to be a good Smart City partner?

This could be received as dinging local government, which I never want to do - but it's about paradigm change quite frankly, from both private sector and public sector. We've never faced the challenges that we face when we look forward. So if we're facing really transformational changes, we need to therefore transform [ourselves]. Such as what we want to do while carrying on in the world of politically-driven affairs. There's a statistic which shows that the average public sector project takes 4 1/2 years before the idea can actually get off the ground. That therefore means that you're gonna have an election in that period of time. So how can we do things across political cycles, as opposed to based on politicians? I've experienced this so many times, you know, where there's an election - a local election or a national one - and suddenly the policy changes, suddenly the project stops and you go "Geez, what a waste of time and money and water; a waste of potential outcomes."

The need to speed things up is also really important. It is a choice one takes in life, to be a bit more brave, a bit more bold, a bit more "good is good enough". So it's a mindset. And unfortunately, in some cities the leadership does not accept that type of mindset. So for example COVID has forced us to work from home, and a lot of people that are managers were very uncomfortable with that at the beginning. I hope that they're very comfortable with it now, which means you give accountability to people for their actions in life, and you assume that they will actually do the right thing, and you can still monitor that, but just in a different way from peering over their shoulder all the time. So I'm not suggesting that that's something that only happens in the public sector, but it does happen in the public sector. We need to change a lot of paradigms, one of which is how we work. We need to speed the process

up, which means that leaders need to be seen to be operating in a different way. And I mean sensible and brave, not gung ho!

We are leading towards a completely new future, which therefore means we need to take a different mindset in leadership and manage to inculcate that down into the organization, or up from the bottom - from youth - to the leaders. And there's a really good example when you look at sustainability - how youth are very comfortable with not eating as much meat, recycling everything, not owning every asset that they possibly want to - and they need to push that message up to a lot of somewhat older leaders these days! So there's needs to be a very much more open view in terms of many things.

We also need to build trusted relationships - as in sit on the same side of the table with others. And that doesn't mean taking the brain out, checking it away; that would be dumb. We need more accuracy and less obsession about precision. Precision is about measuring everything down to the nth - you know, "2.55 to 3.59", and it takes a long time to get there. Accuracy takes a bit more of a judgment call on that and says it is "somewhere between 3:00 and 5:00", and that's OK. But now in a public sector where you've got Press, politicians and professionals leaning over your shoulder - for a civil servant to do that can be a bit challenging. But that is again back to the change in mindset and also how we monitor performance, because that's a thing which slows us down right now, and particularly in the public sector.

One seeks precision because, unfortunately, the Press that's just constantly there with a finger, and quite naturally the human reaction is "I don't want to be in the press in the wrong way," so our politicians worry about it. There's a lot of change that's required there. Lots of change, and an awful lot of it is the soft issues.

Q: How do we ensure good balance in bringing together/securing relevant actors and partners for creating

smart cities? How can we locate, appropriately, the roles of the city vis-à-vis other actors?

There's two axes that I see: a dynamic between society and city, and also the important dynamic between the city and government.

We have been doing some work with in Europe on the Six Nations Smart Cities Forum which came from a conversation with European Commission, convened half a dozen of the large or leading smart city nations, inspired by the rugby series. We got a list of the 20 things cities look to government for, that they want - and then put in columns for the responsibility, accountability, consult or inform (RACI) for each, so as to map the relevant actors. And do you know what?: It never got filled in by any of the Six Nations! And do you know why? Because the civil servants involved in this said 'that's above my pay grade to complete', and that 'I couldn't possibly do that.' That's the issue with the machinery of government. The framework still sits on the shelf as a really simple pragmatic tool which every country should use, because in every country I have visited and dealt with - and that's several 10s of regions and states - the confusion about of who is accountable and responsible for the Smart cities agenda within government, within cities, and between the two is rife.

Now, having said that, you would immediately take that into South African, asking: Who in South Africa might think they own the Smart cities agenda in government?

The dynamic between cities and national governments is fundamentally dysfunctional at the moment, in my view. And it's a big job to change it, but it's absolutely vital, actually. And it's also one of those things which is where investors can change that, because the one missing ingredient in any action quite often is the paucity of funds. So if you can actually bring an intelligent investor to the table that says "Look, I understand the context

and nature of what you guys are up to; what can I do at a national level and at a local level to actually help in this process?" - then that could be an investor, that becomes part of that change.

Cities set the context for an awful lot of what happens in their environment. Sometimes they build and own things. Sometimes they commission services, and sometimes they recognize that things happen like telecommunications where there's a private sector provider that's providing services or products, and they try and regulate and control them through the "stick approach". So the city plays multiple different roles, but the point here to know what goes on in a place that the City Hall should worry about? Whether they should build-own-operate-provide, or whether they should just know it's going on? What aspect of what does the city want to do?

Cities need to understand how they operate. And I'm not suggesting that they don't understand that - they've been doing it for decades. But the pace is changing, the need is growing - and so cities need to manage that process both upwards towards central government and also outwards to the changing nature of who provides services in a city. And I think those two dimensions, these two axes, are really important going to the question of how we can make change happen faster.

It's bloody hard, but sitting around not doing anything about it isn't going to help at all. Everybody needs to take accountability and figure out how they can influence things and get on with it. To make fundamental change requires getting between the ears of individuals. To change the way they think, act and behave. And also influencing and convening and stimulating the local economy and big business. Mobility as a nexus of change is a wonderful one to tackle.

Q: So what practically, what do you think officials can actually do about all this? What would you do if you were the new City Manager out here?

I would say:

1. **Simple messaging** - Let's be clear in terms of a simple picture or set of pictures and storytelling so that you've got passion in the conversation, not just boring words on paper. Passion because passion causes trust, and trust causes change because transformation requires a mindset transformation.
2. **Leadership** - Understanding where you're going to take a city. Have one road map for directing vision, strategy, and impact. Discuss and agree with all the key stakeholders

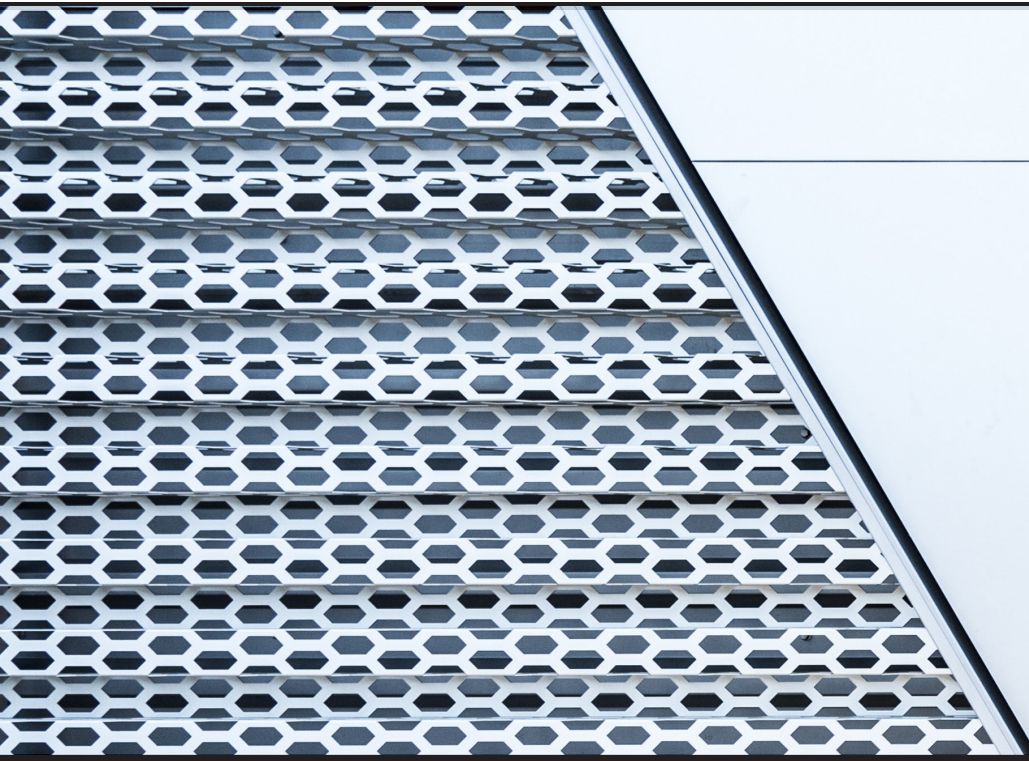
3. **Prioritise** - Identifying the vital services needed to make and demonstrate change, including visible physical changes. Have roadmaps to scale.
4. **Put in place the cross-cutting foundations** - Figure out what are the things that I need to be really good at that people may not necessarily see instantly, but that are necessary things that - e.g. services and infrastructures
5. **Identify Acupuncture points** - e.g. You locate the mobility islands like acupuncture pins into the body of the city, and that stimulates like an acupuncture pin to cause changes that stimulate transformation.
6. **Package solutions** - "Lego it" for functionally common issues, and collaborate with other cities on common priorities. It stimulates innovation or enables a structured approach.
7. **Collaborate with peers** - to share and learn, and also to aggregate demand and procure together if wished. This is especially important across medium-sized cities. Create a viable market, especially for local suppliers.

ABOUT GRAHAM COLCLOUGH

Graham Colclough is an international leader with a wealth of cities experience, who is driving the global smart cities agenda through positions within the EC Smart Cities & Communities Innovation Partnership (EIP); UK Ministerial Smart Cities Forum member; moderator for the '6-Nations' Smart Cities Forum; City Protocol Society; chair of the ISO Smart City Strategic Advisory Group; and an active member of the BSI Smart Cities Advisory

Group (steering board of Planning Guide; Smart Cities Overview). With previous executive roles with Capgemini and Shell, Graham is well-networked and a recognised thought leader on issues of public services futures, city governance, customer-centric service transformation, urban mobility, technology enablement and the like. He brings considerable international city-specific experience, is an active shaper of new smart city and eGovernment thinking, and a regular speaker and chair of conferences and workshops.





SMART CITY SNIP



Exploring African cities and the journey of urban digital innovation

The video discusses the role of tech and the opportunities brought by tech in our cities. The Civic Tech Innovation Network partnered with the ASToN Network for this session.



Imagine Smart City

The Government of India's Imagine Panaji Smart City held a Stakeholder Consultation Meeting with business owners and residents on Tuesday to take their inputs and suggestions on the proposed Redevelopment of Cafe Bhonsle Square.



Urban Innovation in Africa Webinar

Utopia & Skoll World Forum explore how public-private partnerships are key to harnessing urban development and innovation.



AI FOR GOOD 2018 INTERVIEWS

Partnership and work in an ecosystem with the right stakeholders and citizens at large is important to achieve a human-centered vision for AI.



MAKING-CITY: SCC1 Projects Stakeholder Map

The Making City video presents the stakeholders' maps representing all the actors involved in the Smart Cities and Communities Network! The overall objective is to improve collaboration.



Smart City Enablers Collaborative Mapping

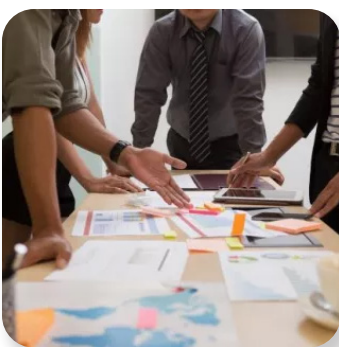
Created out of the #DIYAfrica Urban Innovation workshop held on 13-Sep-2021 mapping roles for the various smart city actors.

ART Y.za PETS



How do innovators get involved in city building?

Monique Griffith (CoJ) shares her thoughts on why and how SA cities can work with young innovators.



Partnership models for smart cities

Ten of our favourite knowledge resources for providing greater insights into advancing successful partnership models for smart cities



Data-based trust building for people-centered smart cities

TEDx Talk by Gesa Ziemer of CityScienceLab about new forms of collaboration and creating people-centered digital cities.



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