# SMART CITY NELSON MANDELA BAY

# *"STARTING SMALL IN A BIG WAY"*



*THE SECOND CONVERSATION*

**25 MAY 2017**

**PROPELLA BUSINESS INCUBATOR**

## 1. INTRODUCTION

50 representatives of civil society, Non-Governmental Organisations, local government, government agencies, the University and other academic institutions and organised business actively gathered for *The First Conversation*; the first public gathering of stakeholders interested in working together to create a Smart City in Nelson Mandela Bay. Propella Business Incubator hosted this conversation in partnership with the Kamva Leadership Institute and the Regional Innovation Forum, at Propella Business Incubator in Humerail, Port Elizabeth, on 27 March 2017.

This gathering identified key opportunities for Nelson Mandela Bay as a smart city. These key opportunities are articulated as working groups that engaged at *The Second Conversation*, hosted on 25 May 2017 at City Hall, Port Elizabeth. This report outlines the outcomes of the working groups' engagements.

## 2. WHAT IS A SMART CITY?

"The World Economic Forum have warned that leaders have five-years to make a meaningful shift to prepare business and employees for the digital economy… The starting point is to build collaborative relationships with customers, the community and the supply chain to encourage small innovations in the digital economy that make a big difference."[1]

It is within this context that the Nelson Mandela Bay Smart City initiative has been proposed. The Nelson Mandela Bay Smart City initiative seeks to develop a smart city in Nelson Mandela Bay based on a partnership approach, to address social and economic challenges prevalent in Nelson Mandela Bay.

While there are varied definitions of what a smart city is, essentially the smart city concept is about addressing the current challenges of citizens of a city, using ICT (information and communication technology) enabled infrastructure, particularly as it is applied to the economy, mobility and the environment (including safety and security). The backbone of a smart city is access to and utilisation of data.

The objective of a smart city is sustainable development that results in improved quality of life and well being of all citizens.

Therefore, the role of the citizen both in identifying / conceptualising and configuring solutions is at the heart of the smart city concept. The smart city concept provides an opportunity for both established and emerging entrepreneurs to develop solutions to identified challenges.

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[1] Hancock, C. Time ripe to adopt smart city concept. The Herald, 10 February 2017

The smart city approach requires the public and private sectors to come together with communities, including Non-Governmental Organisations, to define the developmental challenges of the region and to develop smart (i.e. digitally-based) effective solutions to these challenges.

## 3.   THE SECOND CONVERSATION

More than 50 representatives of civil society, Non-Governmental Organisations, local government, government agencies, the University and other academic institutions and organised business actively participated in *The Second Conversation*. The Regional Innovation Forum, in partnership with Nelson Mandela Bay Municipality (as the provider of the venue), Propella Business Incubator and Kamva Leadership Institute hosted this conversation at City Hall in Port Elizabeth on 25 May 2017.

Stakeholders selected to join the conversation in one of nine (9) working groups, as follows:

- **Connectivity** (includes all software and hardware that support the sharing of data e.g. LAN, WAN, MAN networking, security, satellite, radio, internet etc.).
- **Human Smart City** (communication, stakeholder engagement and leadership).
- **E-health** (improving the citizens experience related to medical care, easier access, integrated health record keeping and the reduction / elimination of illnesses and disease sources etc.).
- **Smart government** (includes initiatives that seek to identify ways of improving the citizen experience related to Government services e.g. vehicle licensing, payment of utility bills, lowering of rates etc.).
- **Smart mobility** (includes all applications related to improving transport and logistics, traffic flow, road safety etc.).
- **Smart infrastructure**, building and utilities (related to improving the City's roads, infrastructure, public buildings, domestic homes, water and electricity supply.
- **Smart agriculture** (a particular focus on urban and peri-urban agriculture that includes sensory monitoring and feedback control).
- **Tourism and Smart destinations**  (building on the work already done by Project Nelson Mandela Bay, e.g. interactive mobile apps that allows visitors to access information of interest, schedules of shuttles etc.).
- **Internet of Things and Industry 4.0** (research focus on packaging solutions related to big-data, sensors, devices, mobile phone apps and smart / digitised manufacturing etc.).
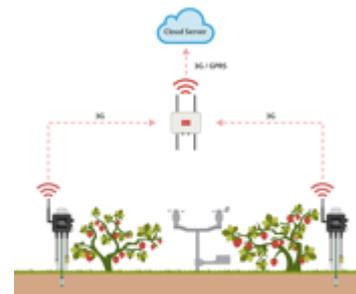
Working groups were tasked with discussing the current and envisaged future of these focus areas, guided by four keys questions:

- "Where are we now and where do we want to be in our working group? The objective is to have clear understanding of the current state and desired results, including what we don't know and

what clarity we may need to establish these two states clearly and who is best qualified to lead the working group."

- "Who is not here that should be here? As we strive for a fully inclusive process – let us identify who else should be part of your group conversation."
- "What does the city have, need and feel about your working group focus? Under this question the objective is not to record answers, but rather to explore what are the questions we need to ask in order to gain this information and of whom should we be asking these questions."
- "How can we resource our smart city and our specific working group? Focus on possible funding, resourcing, expertise, people and knowledge."

## 4. THE QUESTIONS

A summary of the working groups' conversations, in response to the four questions posed, is presented below for each of the working groups.

### 4.1 Connectivity

| Where are we now and where do we want to be in our working group? | What does the city have, need and feel about your working group focus? |
|---|---|
| <ul><li>Current state is insufficient, inconsistent, expensive WiFi where businesses don't share additional capacity</li><li>The to be state is affordable city-wide sustainable, good quality "free" WiFi where the load is balanced, with secure connectivity, but costs covered by back end businesses who publish on this, i.e. e-services.</li><li>Long range (wireless) radios: cheaper, more efficient way of connecting sensors, low energy, where multiple sensors connects and the first provider can monetise this model by designing a solution that scales and multi-tenants</li><li>Student WiFi: Free WiFi in exchange for students assisting with internship / practical experience to come with new Apps / technical services - practical work / skills development and give students stipend for travel</li><li>Blockchain is an opportunity to leverage a shared ledger – water/electricity/fines and also creates business efficiencies long term</li><li>We are trying to connect people to people and</li></ul> | <ul><li>Strategy required – how do we get Businesses to collaborate and contribute "free WiFi" connectivity?</li><li>Must be secure – a sharing mechanism – Surplus shared i.e. coffee shops collaborating & having a WiFi "mesh" system (broader coverage).</li><li>What have other cities done? Research to be done on JHB/CPT/Pretoria and elsewhere. Who can the municipality connect with and these other municipalities to facilitate these conversations.</li><li>What is already in place & how can this be leveraged? (We need a consolidated view of municipal & Private Infrastructure that can be leveraged.</li><li>What do we need to do to enable more affordable Bandwidth vs. Free Bandwidth? (Who do we need to engage – service providers / Dark Fibre - Broadband Iinfraco.</li></ul> |

| machine to machine | |
|---|---|
| • We want to be having conversations beyond WiFi – what other connectivity mediums can we leverage – long range radios / blockchain etc. and a connected city is an attractive destination for investment | |

| Who is not here that should be here? | How can we resource our smart city? |
|---|---|
| • The Municipality – currently a challenge in that many Municipality Directorates involved and to get them to collaborate. We need a champion to facilitate this within our municipality<br>• Service Providers – will need to be involved. Business must become involved; Include the likes of Dark Fibre Africa / Broadband Intra co. etc in the conversation<br>• Business Representatives / Business Chamber to assist with skills sell for our steering committee | • Need a steering committee to keep this impartial comprising 6 people – private sector (service providers) mainly & include municipality<br>• Skill sets – need to know what is financially viable and technically possible.<br>• Cannot all be from IT industry – need free thinkers/ innovative<br>• Identify areas of decision making & appoint a person with that skills set to advise e.g. Security, cost, innovation, infrastructure. |

## 4.2 **Human Smart City**

| Where are we now and where do we want to be in our working group? | What does the city have, need and feel about your working group focus? |
|---|---|
| • Engage with our communities.<br>• Leadership – What are the conversations we should be having?<br>• Connecting<br>• Measures of success: job creation, collective responsibility, awareness and education around social issues & the effect it has on the city – cost (alcohol & drugs), values driven – change behaviour, investments / funding into the city, information protection – communication – transparently<br>• Challenge: overcoming scepticism | • What is best practice?<br>• Do you know what a Smart City is?<br>• What if we don't make the change to a smart city?<br>• Who can we look at as an example – other cities, countries who have succeeded<br>• Ask communities – stakeholders, what do you need? What are you going to do and what are you going do to contribute.<br>• What are the most critical areas to prioritise? |

| Who is not here that should be here? | How can we resource our smart city? |
|---|---|
| • Industry: FNB; Shatterpruf; VW<br>• Youth kleadership: schools; varsities<br>• How to get the influences to act and get involved? | • Space; to have the conversation<br>• The right people<br>• Effective communication (Tools) |

| | • Champions who can influence the various communities<br>• Speakers |
|---|---|

### 4.3 E-health

| Where are we now and where do we want to be in our working group? | What does the city have, need and feel about your working group focus? |
|---|---|
| • Disengaged employees = decreased productivity (need further research)<br>• Lack of current strategy in the city<br>• Access to health care is limited – this may require days off to take children to clinic<br>• Need a coordinate private and public sector approach | • We need a global overview of what is happening<br>• What technologies can we develop now to improve health care eg. Finger scanning at clinics<br>• National e-health strategy (data)<br>• Mobile clinics – partnerships (eg. Mercedes-Benz / VW donating vehicle)<br>• Easier access to communicate (eg. Smart City mental health hotline (work hotline), linked to retrenchments, etc.)<br>• Impact of business behaviour (profit minded) on our communities<br>• EC E-health strategy? Is there one? (NMB)<br>• Find data for absenteeism related to illness. <u>NB</u> for discussion making & interventions<br>• Wellness Programme – Tailored to needs<br>• Health Data (not only hospitals )<br>• Self-service kiosk? Use cellular technologies<br>• Practical health issues<br>• Private practitioners must come up @ solutions<br>• Sharing data - how?<br>• Written permission is required<br>• Integrated systems e.g. medical aid / insurance eg. Depression / suicide / exclusion abuse<br>• Data gathering as first initiative<br>• Mobile medical services; data gathering / analysis<br>• Drone technology to deliver medication |
| Who is not here that should be here?<br><br>• NMMU (Darelle van Greunen)<br>• Department of Health<br>• Propella incubator<br>• City's Health Directorate | How can we resource our smart city?<br><br>• Darelle to lead working group and if not, who can she recommend<br>• Dr Stephen Grobler (psychiatrist) to be contacted for gathering data |

| | |
|---|---|
| • Insurance companies<br>• Private Practitioners forum (GP, Physio's, Opto, Occ Nurses, wellness centre)<br>• SIOPSA<br>• IOD Centre<br>• CIR (Neil)<br>• Health Profession Council (perhaps not at first)<br>• At what stage do we involve the night role players (night time) | |

## 4.4 Smart Government

| Where are we now and where do we want to be in our working group? | What does the city have, need and feel about your working group focus? |
|---|---|
| • Smart Government should be effective and efficient<br>• But currently government = red tape / bureaucracy – dull process not following legally compliant but not timeous<br>• NMBM – some IT<br>• SME vs. municipal employees: the ease of business<br>• Smart people need to be employed – can we have a HR<br>• Too many silo's in vs. relationships<br>• Industry stakes  eg, Vodacom Synapsis<br>• Equal representation – Each directorate<br>• Information decimation doesn't e-government do industry & government officials generation. (We need to know what we already know. | • What is the municipal mandate? There is a blue print from national government (do a gap analysis)<br>• Can we use e-smarts to solve various electricity challenges?<br>• Local government is responsive to its citizens<br>• Now we create a foreman for effective communication<br>• Take hands approach<br>• We wait to be invited to conversation<br>• 21st century classroom FMF WIFI in township areas<br>• Investments needed in infrastructure, ports, road, logistics, banking<br>• Stability in the leadership of government<br>• We need to capacitate government officials<br>• Education: know how |
| Who is not here that should be here? | How can we resource our smart city? |
| | • Amelia Buchner to lead working group |

## 4.5 Smart mobility

| Where are we now and where do we want to be in our working group? | What does the city have, need and feel about your working group focus? |
|---|---|
| <ul><li>Laphumilanga / challenges blocks to our program</li><li>Movement, eonomy, care issue</li><li>Now: Apartheid special development</li><li>Opportunities Reserves/ pedestrians</li><li>Cycling / public transport / efficient integrate?</li><li>Need upgrade – Cangesha Infrastructure</li><li>Accessibility</li><li>Road infrastructure</li><li>Sidewalks/ accidents precautions</li><li>Transportation for children / scholar transport</li><li>(Scholar transport, IPTS, City Algoa bus, Prasa, Transnet, Uber logistics & freight, Coaga freight logistics, meter cabs, Provincial DOT, PXE, TAA</li><li>Smart Mobility – Tech</li><li>Efficiency / Renewables</li><li>Civil Society / business/ SANCO/ trade unions</li><li>Tourism interface</li></ul> | <ul><li>Define Smart Mobility?</li><li>How do we make appointments to ever market of log finance & forwarding + accessible to new entrants?</li><li>How do we collectively deliver our vision for smart vision for the long term?</li><li>Included- Universal Access</li><li>Geographical spacial</li><li>Integrate modes of transport (Industry? Transform sooner/later)</li><li>Short-term – needs to be phoned, consider infrastructure development for better road rework - access market</li><li>How do we link planning / infrastructure development/ IPTS to public education to use the system to cater for all?</li><li>Quarterly household spend & time</li><li>Road accident cost of enhancing of city</li><li>Apple express? Room?</li><li>Tourism - urban renewal plan</li><li>Recon & integrate society renews spaces – indecisive?</li><li>How do we develop a long term strategy?</li><li>How do we embrace disruptive tech?</li></ul> |
| **Who is not here that should be here?** | **How can we resource our smart city?** |
| | <ul><li>Time & space to deeper conversation</li><li>Tech collaboration – comms</li><li>Energy / intellect » start a conversation. Resources to meet.</li><li>Develop a working document to show what next, Apps</li><li>Creative economic links to transport</li><li>Skills required are communication, connectivity and thought leaders</li></ul> |

## 4.6 Smart infrastructure

| Where are we now and where do we want to be in our working group? | What does the city have, need and feel about your working group focus? |
|---|---|
| • Fragmented - pocket of excellence<br>• No unified vision - holistic<br>• No green building without smart building<br>• Bay West leading smart mall in Africa<br>• Smart devices cannot connect<br>• Limiting factor is the backbone » no fiber = no connectivity<br>• Smart house for $49 system<br>• Smart<br>• Inner delay on opportunity<br>• Biodegradable material in the building space<br>• Awareness is low<br>• Resistance to market adaption<br>• Material characteristics | • How do we regenerate our deceasing inner city in a Smart city?<br>• How information gets to our citizens from our Smart infrastructure?<br>• How do we repurpose libraries for information distribution? (Mobile library?)<br>• What are the smart solutions for infrastructure backlog?<br>• Smart partnerships - bringing together<br>• Innovation showcase – e.g. Baakens Valley |
| Who is not here that should be here? | How can we resource our smart city? |
| • NMNM<br>• SABS<br>• ESKOM<br>• Telkom<br>• Mobile network<br>• MBDA<br>• The business place<br>• Industry Association<br>• GBSC<br>• ECSA<br>• SAIA<br>• NMMU<br>• Transnet & TNPA<br>• CPC | • Website page from this working group » RIF<br>• Getting the key Stakeholders » NMMU, MBDA, CDC<br>• Knowledge<br>• Create funding partnership<br>• Green<br>• Municipality to lead working group as political will is key |

### 4.7 Smart agriculture

| Where are we now and where do we want to be in our working group? | What does the city have, need and feel about your working group focus? |
|---|---|
| • Currently a strong tradional farming focus<br>• There is some awareness to build on; interest has been piqued by trending / novel methods, like: Permaculture; Aquaculture / Aquaponics; Vertical farms; Urban / Guerrilla gardening<br>• Education element – Teach others how to<br>• Greater awareness needed around agriculture options & how doable they are<br>• This speaks to the Circular Economy mindset / shift | • Who is doing what & where?<br>An overview will lead us to community ambassadors – grass roots buy-in is vital for success of e.g. a community bartering system<br>• Who is our primary target group?<br>Communities, restaurants, hotels, etc. in the service / food industry - others will follow<br>• How do you feel about Smart Agriculture? Hungry! |
| **Who is not here that should be here?** | **How can we resource our smart city?** |
| • Key academics, farmers & doers:<br>Dr Tim Pittaway (Agriculture, NMMU); Leslie Ter Morshuizen (aquaponics, Grahamstown); Brad Lancaster (TED TALK ); Marcus Oshry (local farmer); Andrew Mugford; Brian van Niekerk (Rhino Group); Andrew Barton; Rushka Johnson (activist / guerilla gardener).<br>• Darelle Van Greuen (CCT, NMMU)<br>• Keith Finnemore<br>• Krag Lottey (US) - free indigenous nursery (Wellington Park)<br>• Wayne Heath (hemp)<br>• The empty plate - Dr Trazq? | • Leoné Nowell to coordinate (for now) due to passion/ interest/ connector role - in-roads to NMMU, Propella, etc.<br>• By using the examples currently out there and realizing that this is relatively low cost outlay action (compared to the others), more interest and the action can be generated<br>• Willingness to share knowledge is assumed to be a given here, based on the types of people already active in urban agriculture – i.e. the more the merrier<br>• Everyone in this room knows someone who can help in some way<br>• Food & water security funding options, among others |

| Where are we now and where do we want to be in our working group? | What does the city have, need and feel about your working group focus? |
|---|---|
| • NMMU – Survey Completed – including / covering destination<br>• Marketing events, requirements, wants (citizen, tourists)<br>• How best to communicate<br>• Including townships to Summerstrand<br>• 70% South African travellers (mainly for sports events)<br>• Use this as a base to work<br>• Start with a valid baseline such as this survey<br>• Need better accessibility & better connectivity – make it easy to get here, travel & get around<br>• Competitive – land 10 minutes then at hotel then 10 minutes to venue<br>• Business conferences are needed in the bay<br>• Focus on growing the Sporting Events (Sevens, Train Race, School Events)<br>• Are these events accessible ?<br>• What can we achieve in the short term?<br>• Make use of smart technologies<br>• Notify people as they come into the city (Welcome with the App)<br>• Connectivity | • Could we use a Car Rental Company's 'hangers' to promote?<br>• Should we have to hop on/off bus for NMB destinations / highlights (Cape Town Red bus)<br>• Why can't we get Tour Operators to include the Bay in their Garden Route Tours?<br>• How can we get 'someone' behind the brand? (We have the name of a legend, how can we promote this more?)<br>• Why don't we have a joint marketing Committee?<br>• How can we increase 'Proudly NMB Brand'?<br>• Within 100km we have access to everything one could want, how do we promote this jointly?<br>• How can we get an international airport?<br>• How many Tourists come in via buses vs. airports? (need statistics)<br>• Could we promote the App at specific destinations?<br>• Hop on/off bus to push brand and App to promote on all fronts?<br>• Tourism – people fly in either stay 1 night / leave immediately. (Need to create & promote more Routes ie. Mandela Bay Meander) |
| Who is not here that should be here? | How can we resource our smart city? |
| • Need local tourism ( why we are bypassing them)<br>• ACSA Aiports company<br>• Conference industry (SACI) | • Project NMB Survey by NMMU<br>• Why are we passing them?<br>• Do we fight for more budget from them?<br>• Why isn't NMB Tourism here to do all this? |

## 4.8 **Internet of Things and Industry 4.0**

| Where are we now and where do we want to be in our working group? | What does the city have, need and feel about your working group focus? |
|---|---|
| • Big industry who has already implemented some of this<br>• More industry should be represented, lots of smaller ICT cost here<br>• Debt trade and industry?<br>• International groups for funding<br>• Topic vs broad – need to define & scope this<br>• Is our group the umbrella group or Industry 4.0?<br>• Us enable conversation together going to facilitate other groups' requirements?<br>• 4:0 = industry (manufacturing only)<br>• SMART CITY vs. SMART FACTORY?<br>• Disconnect between consumer & ICT / IOT<br>• Bigger knowledge gap at citizens level than industry level<br>• Educate citizens so they can understand IOT potential<br>• Awareness / marketing / education<br>• Industry, bug business – business to business<br>• Link start-ups to bigger businesses<br>• Collaboration – skill deficit if individual silos doing own research. Brenda says more interdisciplinary approach at NMMU.<br>• Interdisciplinary – electronics, IT Software<br>• Clusters of innovation – opportunity for African countries<br>• Germany – upskill, we can learn quickly from them<br>• Link research & industry<br>• Employment & education (what is industry doing?) | • International sources of funding<br>• Link start-ups to bigger businesses<br>• Working group should be called: "Technologies in IOT"<br>• What skills are needed? How do we get skills in our field? - not technical, data analysis, data source, AI, machine learning<br>• How do we encourage innovation: B2B, clusters of innovation<br>• Best practice: first world, leveller<br>• Collaborative platforms |
| **Who is not here that should be here?** | **How can we resource our smart city?** |
| • Business chamber<br>• Large corporates & man companies (UNIDO, PE) | • Industry, big business – business to business<br>• UNEDO – funding |

## 5. WHAT HAPPENS NEXT?

i) Confirm **working groups** and ask Smart City stakeholders to commit to working group(s)

*What*:    Identify additional working groups, if need be, and communicate with stakeholders to establish commitment to working group(s)

*When*:    Immediately

*Who*:    Regional Innovation Forum, in partnership with the Smart City Manager sponsored by Propella Business Incubator.

ii) Develop SMART CITY **communication strategy**

*What*:    Develop inclusive communication strategy for SMART CITY

*When*:    Immediately

*Who*:    Regional Innovation Forum, in partnership with the Smart City Manager sponsored by Propella Business Incubator and working group champions.

iii) Confirm working groups' **champions**

*What*:    Confirm and meet with champions of the working groups

*When*:    Mid August

*Who*:    Regional Innovation Forum, in partnership with the Smart City Manager sponsored by Propella Business Incubator and working group champions.

iv) Develop the **Nelson Mandela Bay Smart City strategy**

*What*:    Develop a SMART CITY strategy, including hosting a strategic planning session

*When*:    Host strategic planning session by mid August, including champions of working groups, and draft strategy to be developed by mid September 2017

*Who*:    Regional Innovation Forum, in partnership with the Smart City Manager sponsored by Propella Business Incubator and working group champions.