



CITY OF JOHANNESBURG
SMART CITY
INNOVATION CHALLENGE



a world class African city



WITS UNIVERSITY



APPLICATION DEADLINE:

2 MARCH 2021

ONLINE INFORMATION SESSIONS:

The City of Joburg and Tshimologong Innovation Precinct will be hosting a live information session to answer questions and give more information on the challenge expectations.

BRIEFING SESSION: 8 February 2021, 14h00 on Microsoft Teams.

(Link will be sent to those who RSVP for the briefing session).

RSVP by emailing: Nelson Sekgota
nelson@tshimologong.joburg

1. WHAT IS IT AND WHO IS IT FOR?

Are you a 4IR Startup? Have you been in operation for 3-7 years? Are you a company developing Smart City technologies and/or innovative solutions? Do you have a pilot-ready solution for a challenge faced by our city?

If so, apply to compete in the Smart City Innovation Challenge where the aim is to find and develop digital technology solutions or other unique and innovative approaches to solve municipal and residents' challenges.

1.1 CITY OF JOHANNESBURG SMART CITY FOCUS

Smart digital technology solutions help citizens stay connected and allow businesses, citizens and public administrations to find ways to respond faster and in a more integrated way to both crisis situations and daily life. The importance of rapid data collection and the interaction between citizens, national and local government during the COVID 19 crisis has shown how valuable smart solutions are. The development of smart digital technologies now, can help the City in the detection, tracking, and prediction of crisis situations and stress points going forward.

The City of Johannesburg and its partners have been working hard to offer the necessary support in High-Density areas like Informal Settlements, Townships, and the Inner City, but still face challenges in these core areas.



SAFETY AGAINST GENDER BASED VIOLENCE:

Increased incidents of gender based violence have been exacerbated by the pandemic. The City seeks solutions that give greater protection for women and children (e.g. panic buttons, wearable alarms amongst other solutions) and ways to improve reporting and identifying GBV incidents, facilitating reporting and developing faster response mechanisms. This includes developing an end-to-end programme that takes into account the support victims need to address the "bread-winner" challenge which impedes reporting. An integrated solution between civil society, business, medical, education, justice and resident communities is required to break silos so that proper tracking and integrative support for victims is achieved; especially in GBV hotspots.



ECONOMIC DEVELOPMENT & TOWNSHIP ECONOMIES:

The City is always looking for ways to better stimulate and build support for SMEs especially within township economies. We seek innovative DIGITAL approaches to expanding market access for township SMEs as well as diversifying business sectors prevalent in poorer communities. We seek ways to support the development of new 4IR Township economies; expanding rapid access to free or low cost/ high speed internet and linking small business to consumers.



4IR READINESS FOR SMART CITIZENS:

The City seeks low tech solutions related to how to gear our resident youth up for their 4IR future. We seek solutions related to facilitating innovative approaches that offer low cost/high impact training to township youth in 4IR future skills and career opportunities.



INSTITUTIONAL OPERATIONS AND MANAGEMENT

We seek ways to use automation to improve local government efficiencies (e.g. Robotic Process automation or similar technology). There are many processes in the City that are manual and require humans to perform 'mundane' tasks. Solution should look how to automate certain tasks within a value chain that are repeatable, which in turn frees-up time for individuals to carry out more value-adding tasks.



PREDICTIVE ANALYTICS TO IMPROVE ASSET MANAGEMENT - Assets and Infrastructure are the lifeblood of the City. Without it we will not be able to deliver the constitutionally mandated services we are meant to. There have been a number of infrastructure challenges that, over time, requires the City to be reactive rather than proactive. We seek ways to use advanced data analytics tools to help us predict when infrastructure may fail which will allow the City to forward plan and budget accordingly, whilst eliminating or minimising disruption to service. Propose a pilotable solution that focuses on predictive analytics for water infrastructure.



ENERGY EFFICIENCY

The City's seeks ways to limit the amount of electricity theft that causes financial losses and damages the City's power infrastructure resulting in power outages. A solution is sought to stop electricity theft, destruction to City infrastructure and resultant load shedding. Green energy solutions are welcome that provide resident communities who illegally link into the grid with alternative access to green, off-grid, and low cost electrification.



FOOD SECURITY

Food security is a fundamental challenge in the City due to the economic impacts of the COVID-19 pandemic on households. Innovation focusing on more than mere food distribution is needed. The City seeks solutions that use technology in relation to upstream food production (e.g. urban farming, high-rise roof farming, etc) as well as the potential to use gamification linked to civil service exchanged for points or vouchers that can be redeemed at reputable stores and/or spaza shops.

Thinking needs to be geared toward innovative solutions that solve problems within the above topical areas whilst taking into account that the responses must be designed around communities that do not have access to unlimited broadband/ Wi-Fi, data, or devices. These communities also have limited financial resources which impacts the financial sustainability of solutions. However, as a significant part of the City's population they also provide unlimited potential if solutions are found that meet their long term needs; alternating the trajectory of the City's future.

1.2 SOLUTION SCOPE

Solutions should accelerate service delivery, improve the liveability and safety of the City and enhance operational efficiencies



ACCELERATE SERVICE DELIVERY solutions are those that accelerate the speed in which the City is able to deliver services to its residents as well as improve the quality, availability and accessibility.

ENHANCE OPERATIONAL EFFICIENCIES solutions are those that will enable City employees to operate more efficient administratively and to extract the greatest value out of their dedicated time.

IMPROVE CITY LIVEABILITY & SAFETY solutions are those that help improve the quality of life in the City by reducing vulnerability, improving security, and upholding standards of human dignity. These are solutions that may additionally enable the city citizens to be entrepreneurial and find new ways to sustain themselves.

The ability to engage citizen participation through digital and mobile platforms are crucial in all technologies presented as solutions.

While the definition of 'digital technologies' is open to various digital and interactive technology solutions, we understand that the following are core areas of focus. See below for more detail.

- Artificial Intelligence
- Augmented Reality
- Blockchain
- Internet of Things (IoT)
- Gamification
- Data Collection
- Data Analysis and Visualisation
- Robotics and Drones solutions

2. PRIZES & OUTCOMES

Three winning applications will be taken into a rapid development and supported by Tshimologong's virtual bootcamp. The award will be followed by the opportunity to take solutions into a pilot phase within the City. This will be a collaborative effort between startups, corporate companies, investors, hubs, makerspaces, and government through the City of Johannesburg's Smart City Office to support young innovators toward developing viable socially impactful solutions and businesses.



CASH PRIZE

We are looking for 3 Innovations that are at the stage of development where they can be readily piloted into the city. A Cash award of **Five Hundred Thousand Rand (R500,000)** is available for 3 awardees. The Awardees have the option of taking the cash amount, or applying it – or a portion thereof – to the development of the pilot programme within the City. If accepting the cash amount, the awardee will be expected to report and account for the amount being used toward the development of the innovation to get it to Market.



PILOT & PARTNERSHIP DEVELOPMENT

Winners will get an opportunity to pilot within a Department or Municipal Entity of City and be supported by the relevant city departments (within privacy and security parameters that legislatively govern the City). The winners will be given limited, but relevant, access to infrastructure, volunteer residents, buildings and – where possible – data.

The City will also endeavor to assess the pilots' scalability, if able to demonstrate serious potential to deliver services to our residents. This support can be, but is not limited to, assisting with private sector collaborations, partnerships and other support that falls within the City's capabilities or authority to link them to.

VIRTUAL BOOTCAMP WITH ACCESS TO MENTORS

A virtual bootcamp will form part of the rapid prototyping process with the aim to assist the chosen solutions into an MVP. Expert mentors and city advisors will assist set timelines and ensure that the solutions to be launched will be impactful and relevant. Mentors will have technical, healthcare and business expertise.

2.1 BOOTCAMP EXPECTED OUTCOMES ARE:

- A. Development and full documentation of a minimum viable, pilotable, product for a system, software or hardware solution.
- B. Consultation with the relevant city department with whom the solution may be implemented.
- C. Mentorship from available relevant private sector partners
- D. Implementation strategy for the relevant City Department.
 - a. Infrastructure required.
 - b. Timeline for implementation.
 - c. Budget required.
 - d. Risks.

3. APPLICATION & APPLICATION CRITERIA

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PROPOSAL APPLICATION FORM:

[CLICK HERE FOR APPLICATION FORM](#)

3.1 APPLICANT CRITERIA:

This open call is for:

1. South African individuals 35 years old and younger,
2. Women 35 years old and younger (applicants 40 and under will also be considered)
3. 4IR companies that:
 - a) have a minimum annual turnover of R100 000 and/or
 - b) are between 3 to 7 years old.
 - c) have a technology or solution that is ready for pilot,.
 - d) are registered in South Africa and the founder being resident in the following priorities areas: Johannesburg, Gauteng Province or South Africa
 - e) preference will be given to previously disadvantaged founders, women and people living with disabilities.

All applications will go through an initial vetting process to assure that they meet the above criteria.

Following initial vetting, solutions will be chosen based upon their usability, viability and innovativeness to enter into a pitching phase from which six finalists will be chosen.

Applications must be made online (using the form link above or through the City of Johannesburg website) by completing the application for and uploading all relevant documentation.

3.1 INDIVIDUAL APPLICANT DOCUMENTATION REQUIRED:

1. Curriculum Vitae, highlighting experience in the field of the proposal.
2. South African ID
3. Rates Statement (not in arrears) or Lease Agreement as proof of address.
4. Tax Clearance Certificate.

3.2 COMPANY OR BUSINESS APPLICANT DOCUMENTATION REQUIRED:

1. Company Profile, highlighting experience in the field of the proposal.
2. South African Company Registration.
3. Municipal rates and taxes for company and all directors not in arrears for more than 90 days (if in arrears must provide proof of arrangement to pay the council) or sworn affidavit or valid lease agreement not older than three (3) months.
4. List of Company Management & IDs.
5. Tax Clearance Certificate.
6. Valid and original B-BBEE certificate or certified copy or sworn Affidavit issued from SAPS.
7. Proof of company turnover



3.3 PROPOSAL EXPECTATIONS:

1. **Problem & Solution Relevance:** Must clearly identify the problem & solution.
2. **Positioning:** Must show research or experience led position that is the impetus for the solution.
3. **Usability:** The proposal must indicate who the primary users are and how they will use the solution.
4. **Technology and Viability:** The technology and technology areas must be clearly identified and justified for the proposed solution and must be viable to manufacture and pilot in the City of Johannesburg.
5. **Innovativeness:** The solution must be original, fresh and unique (not white-labelled).
6. **Acceleration:** The Solution demonstrates how it can accelerate service delivery to customers or improve quality of services
7. **Localisation of Solution:** The solution should be authored and developed by an RSA resident/ citizen (not an exported solution being sold by a local salesperson). Local Intellectual property.
8. **Financial sustainability:** the solution must demonstrate how it will generate income to be self-sustainable after its incubation or pilot period.
9. **Illustrate of Solution:** Proposal and Presentation must include drawings, plans, graphs, etc. to shows how the technology or system works.
10. **Pilot Development Cost:** Must provide a pilot development budget and timelines.
11. **Piloting Environment Requirements:** Must provide a roll out plan and list of resources necessary to pilot the solution in the city (e.g. buildings, broadband, community access, etc.).

3.4 INTELLECTUAL PROPERTY:

By participating in the CoJ Smart City Technology Challenge each participant thereby:

1. Declares that each solution or prototype presented is an original work and in no way violates intellectual property rights of others and releases CoJ and its partners from any and all responsibility, liability, or request for compensation for damages that should be made by any third party;
2. Acknowledges that each solution or prototype presented is the property of the startup or team, which takes full responsibility for ensuring such rights of ownership;
3. Acknowledges that any publication by CoJ of the solution or prototype on websites or social media will result in the same being visible to the public and must therefore be presented with a copyright clause and registration details with the startup in question.



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4. ADDITIONAL INFORMATION

4.1 CHALLENGE TECHNOLOGY DESCRIPTIONS

AUGMENTED REALITY

An interactive experience of a real-world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory, haptic, somatosensory and olfactory.

GAMIFICATION

A set of activities and processes to solve problems by using or applying the characteristics of game elements. Gamification commonly employs game design elements to improve user engagement and productivity.

ARTIFICIAL INTELLIGENCE

'Intelligent' digital agent that perceives its environment and takes action that maximises its chance of successfully achieving a goal. Chatbot & machine learning are examples of AI in this case.

DRONES

Drones or UAVs are involved in a wide range of applications and functions in smart cities. Such through aerial image capture or live capture for monitoring traffic, key infrastructures and monitoring development work on a regular basis.

BLOCK CHAIN

Blockchain in a Smart City can provide the infrastructure necessary for transaction management. Transparency and security are core fundamentals of blockchain are two very important elements in smart city implementation.

ROBOTICS

Autonomous systems that may be connected to traffic systems or drones, significantly helping the work of the Smart City by collecting data or engaging control systems

IoT - INTERNET OF THINGS

System of interrelated devices, mechanical and digital machines with the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

DATA COLLECTION

Data Collection via digital means with citizens, smart city sensors, vehicular networks, and many more validated sources are important contributions to rapidly dealing with crisis situations and assessing response effectiveness.

DATA ANALYSIS & VISUALISATION

Data Analysis is the process of bringing order and structure to collected data. It turns data into information people can use to look for trends, groupings, or other relationships between different types of data. Data visualization is the process of putting data into visual format that helps inform analysis and interpretation. Data visuals are used to communicate results to stakeholders and community.

4.2 CHALLENGE PARTNERS

CITY OF JOHANNESBURG SMART CITY OFFICE

The Smart City Office has the responsibility of providing strategic guidance for the implementation and oversight of the City's Mayoral Priority that requires all departments and entities to adopt measures to ensure that Johannesburg delivers services in an innovative and digitally enhanced way. With technology as an enabler, services must become easier to access and use, delivered more efficiently and responsively; whilst governance of the institution becomes more open, transparent and financially and environmentally sustainable for generations to come. It is also the SCO's responsibility to initiate and Incubate and demonstrate innovative and strategic smart city initiatives.



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TSHIMOLOGONG INNOVATION PRECINCT & TSHIMOLOGONG MAKERSPACE

Tshimologong Innovation Precinct operating as a private company and innovation precinct, Tshimologong was established by Wits University to facilitate the creation and incubation of technology and digital startups. Attracting entrepreneurs and innovators with real life solutions to African problems, Tshimologong Precinct strives to, methodically and in common purpose with others of the same mind, move the needle on technological and digital innovation.

Tshimologong Makerspace seeks to promote and enable access to innovation through collaborative making, training, upskilling and experimentation / purposeful play (R&D). Some of the practical engagements housed in the space include 4IR (Fourth Industrial Revolution) technologies such as 3D printing (e.g. prototyping & customisation), IoT (Internet of Things), Electronics & robotics, Augmented Reality (AR), Virtual Reality (VR) and Design for digital fabrication to production management.



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