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Digital Systems Audit and Policy Alignment in the City of Johannesburg

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1 ABSTRACT

The City of Johannesburg (CoJ) has articulated an ambitious vision for digital transformation through its Smart City Strategy, Information and Communications Technology (ICT) Policy Framework, and Integrated Development Plan, positioning digitalisation as a key mechanism for improving municipal efficiency, transparency, and citizen engagement. Multiple digital platforms, including e-Joburg, Joburg Connect, the GIS Spatial Portal, and the My Smart City App, have emerged as core components of this strategy. However, the extent to which these systems align with the City's regulatory, strategic and institutional frameworks remains unclear, raising questions about their capacity to support equitable and reliable service delivery. This study conducts a comprehensive digital systems audit and policy alignment review to evaluate the coherence, readiness, and governance compatibility of Johannesburg's digital municipal service ecosystem.

Using a desktop-based analytical approach, the study draws on publicly available municipal policies, digital strategy documents, Auditor-General reports, technical platform descriptions, and legislative instruments governing local e-governance in South Africa. The analysis assesses system functionality, interoperability, data governance arrangements, user accessibility, and alignment with the Municipal Systems Act, National Digital and ICT policies, and 4IR strategic goals. Findings indicate that although Johannesburg possesses a wide range of digital tools, the ecosystem remains fragmented, with limited integration across departments, inconsistent adherence to data governance standards, and uneven alignment with policy objectives relating to inclusivity, public participation, and service accountability. Significant gaps also exist between regulatory intentions and practical implementation capacities.

The study concludes that Johannesburg's digital tools have strong transformative potential but require greater strategic coherence, interoperability, and regulatory alignment to function effectively within a metropolitan governance context. Strengthening platform integration, adopting unified data governance standards, and establishing a coordinated Smart Governance Framework are essential steps toward enhancing the reliability, inclusivity, and long-term sustainability of digital municipal service delivery.

Keywords: Digital systems audit, Policy Alignement, Municipal service delivery, Smart Governance, E-governance

2 INTRODUCTION

Digital transformation has emerged as an important aspect of how cities currently govern themselves. Cities have turned to digital technology to improve the delivery of services through increased efficiency, transparency, accountability, and by engaging their citizens. The Smart City movement frames digital technologies as tools for enhancing institutional capacities, providing opportunities for data-based decision making in the context of rapid urbanization and increasing pressures to deliver services (Meijer & Bolívar, 2016). In addition, the United Nations (2022) describes digitalization in metropolitan governments in the global south as a method for addressing administrative fragmentation and limited resources, and by doing so, improve the responsiveness of governments to their citizens.

Metropolitan municipalities in South Africa are constitutionally mandated to ensure effective and sustainable service delivery and to promote participatory governance, as outlined in Sections 152 and 153 of the Constitution (Republic of South Africa, 1996). The City of Johannesburg, the largest metropolitan municipality in South Africa, is now using digital transformation as a strategic objective for its development and growth through projects like Joburg Connect and e-portal, and a range of spatial information systems, the Geographic Information System (GIS) applications intended to improve planning, administrative, and service coordination (City of Johannesburg, 2022). These projects reflect the South African government's national policy framework to encourage smart government, innovation, and the use of 4IR technology to

enhance the ability of the State to function effectively (National Planning Commission, 2012; Department of Cooperative Governance, 2016).

Although the city has made great strides in improving its service delivery, governance is still unstable, and there are ongoing issues of poor coordination within municipal departments as well as among municipal-owned entities (MOE) in Johannesburg. As such, there are several important questions raised regarding whether or not current digital municipal systems have been implemented in a manner that is consistent with the legislation and/or policy frameworks that were developed to govern how they should be implemented. This paper fills the void created by the lack of research on this topic by completing an audit of Johannesburg's digital municipal systems through the use of qualitative desktop analysis methods; and evaluating how well those systems align with applicable governance policies. The paper argues that the City's digital governance challenges stem less from technological inadequacy than from institutional fragmentation and weak policy–systems alignment.

3 CONCEPTUAL AND POLICY FRAMEWORK

3.1 Smart Governance and Digital Municipal Systems

Smart governance encompasses how governments use digital technologies to support better-informed decisions by improving the integration of stakeholders with diverse backgrounds in governance as well as enhancing collaboration among the various components of a government (Meijer & Bolivar, 2016). As opposed to an exclusively technocratic view of smart cities, smart governance focuses on the institutional and legal context in which smart city technologies are applied because smart city technologies function within pre-existing governmental systems and politics (Connolly & Bannister, 2012).

Municipal digital systems such as Service Reporting Platforms, Spatial Information Systems and Performance Dashboards function as governance Infrastructure for the circulation of information in and out of the State and Citizens. Therefore, these systems will be effective not solely based upon their technical sophistication, but also the degree of Interoperability, Institutional Capacity, and Policy Coherence (OECD, 2020) of the systems. As a result, in contexts with inequality and fragmented administration, municipalities' digital systems could create or enhance existing governance failure unless they are specifically designed to reduce it (Parnell & Pieterse, 2010).

3.2 Policy and Legislative Framework Governing Digital Municipal Governance

Johannesburg's digital transformation agenda is embedded within a multi-layered governance framework spanning constitutional, national, and municipal levels.

The Constitution of the Republic of South Africa (1996) establishes local government's developmental mandate, requiring municipalities to provide democratic, accountable, and efficient governance while ensuring sustainable service delivery (Sections 152 and 195). These principles underpin the normative justification for digital systems that promote transparency, responsiveness, and participation. The Municipal Structures Act (Act No. 117 of 1998) defines the political and administrative arrangements of municipalities, shaping the institutional environment within which digital systems are implemented. Complementing this, the Municipal Systems Act (Act No. 32 of 2000) mandates universal access to basic services (Section 73) and community participation in municipal affairs (Section 16), objectives that are increasingly operationalised through digital platforms.

At the national strategic level, the National Development Plan (NDP) 2030 identifies information and communication technologies (ICTs) as key enablers of state capability and service delivery reform (National Planning Commission, 2012). The Integrated Urban Development Framework (IUDF) further promotes smart governance, specifically through Policy Lever 9: Empowered Active Citizens, as an essential component of urban transformation (Department of Cooperative Governance, 2016). This strategic direction is reinforced by the Digital Economy Masterplan, which focuses on modernising public administration through 4IR technologies. Furthermore, the Protection of Personal Information Act (POPIA) (2013) introduces stringent data governance requirements, necessitating that municipal systems such as e-Joburg (for residents and businesses to manage, view, and pay municipal accounts (rates, water, electricity electronically) balance the drive for transparency with robust privacy protections and secure data management protocols.

Integrated Development Plan (IDP) and Digital Transformation Strategy articulate the City's commitment to digital governance, citizen-centred services, and data-informed decision-making (City of Johannesburg, 2022). Collectively, these frameworks provide a strong normative foundation for digital municipal governance, while simultaneously creating complex coordination demands across institutional structures, often resulting in the siloed technical implementations observed in the current digital ecosystem.

At the local level, Johannesburg's digital trajectory is operationalized through three primary strategic instruments:

- Joburg 2040 Growth and Development Strategy (GDS): This serves as the overarching "normative foundation" for the city. It defines Johannesburg's vision as a "World Class African City," providing the high-level, long-term justification for smart governance as a means to achieve social and economic transformation.
- Smart City Strategy (8 Pillars): This strategy provides the technical roadmap for the GDS. It specifically targets "Smart Governance" and "Smart Institutions" as foundational pillars, aiming to institutionalize digital performance across all municipal functions.
- Group Information Communication Technology (GICT) Scorecard: This functions as the City's internal governance and accountability mechanism. Through the scorecard, the City Manager establishes specific, evidence-based Key Performance Indicators (KPIs) for digital transformation. This ensures that high-level IDP goals are translated into measurable technical actions and departmental responsibilities.

3.2.1 Synthesis: The Coordination Challenge

The review of these frameworks reveals a paradoxical landscape. While a "strong normative foundation" exists, supported by constitutional mandates and local strategies, the practical reality is one of "complex coordination demands".

These demands arise because the frameworks originate from disparate sources: national mandates (National Treasury) often clash with local operational realities, while internal city departments (such as Finance vs. Communications) maintain separate reporting lines. This misalignment between multi-layered policy expectations and fragmented departmental structures leads directly to the institutional silos and technical overlaps identified in this audit.

4 RESEARCH METHODOLOGY

This research is designed as a qualitative, desktop-based evaluation of the coherence of Johannesburg's digital municipal system (municipal digital ecosystem). This research examines the gaps in the relationship between the high-level policy vision for the City and the technical implementation through a systematic review of the "paper trail" created by the City's governance practices.

4.1 Data Sourcing and Selection

The data collected for this research will be derived from secondary source data, thereby providing an overview that captures the full range of both the "promises" made by the city, and the "reality" of its systems recorded in the document collection below. The collection of documents referenced above represents the primary documentation that describes the City's systems and practices and therefore provides the best possible insight into the nature of the system.

- Legislative and Regulatory Frameworks: National laws such as the Municipal Systems Act and the Protection of Personal Information Act (POPIA).
- Strategic Municipal Mandates: The City of Johannesburg's Integrated Development Plan (IDP), Smart City Strategy, and Digital Transformation Strategy.
- Accountability and Performance Records: Annual Reports of the City of Johannesburg and the annual reports of the Auditor-General of South Africa to assess technical and financial oversight.
- Platform-Specific Documentation: Publicly accessible technical descriptions and service delivery portals for e-Joburg, Joburg Connect, the GIS Spatial Portal, and the My Smart City App.

4.2 Analytical Procedure: Document Analysis

The data was examined through a Document Analysis Process, a methodical procedure for examining/assessing both paper and electronic materials. The analysis was conducted in accordance with the framework outlined by Bowen (2009), and the documentation was systematically analyzed to determine data that would help establish empirical evidence related to the relationship between Digital Municipal Systems and the intended Policy Outcomes of those Systems.

This process was operationalized by filtering the gathered data through four critical analytical themes:

(1) Institutional Coordination: Examining how different departments and Municipal-Owned Entities (MOEs) collaborate on digital initiatives.

(2) System Interoperability: Auditing the technical capacity of different platforms to share data and function as a unified ecosystem.

(3) Accountability Mechanisms: Evaluating the "digital paper trails" and feedback loops provided by platforms for service delivery oversight.

(4) Inclusion: Assessing the extent to which digital tools accommodate diverse citizen needs and bridge the "digital divide".

4.3 Ethical Considerations

Since this research relied exclusively on publicly accessible data and did not involve interactions with human subjects, it was not necessary to obtain formal ethics approval for the study. This study maintains its integrity as an academic study using official government documents and existing qualitative analytic methodologies.

5 OVERVIEW OF DIGITAL MUNICIPAL SYSTEMS IN JOHANNESBURG

A major contradiction exists at the center of the Municipal Systems Act (2000). While Section 73 requires that all residents have access to their local government's services, the City of Johannesburg is heading toward a digital-first strategy, which may create a "fragmentation gap." In order to provide context for this agenda, this study will provide a brief overview of the digital municipal systems currently being used by the City of Johannesburg. These include e-Joburg, Joburg Connect, etc. These are the City's primary mechanisms for providing citizens with municipal services, facilitating citizen participation in decision-making processes, coordinating administrative activities, and developing spatial plans.

The table below (Table 1) illustrates the primary function(s) of each of the platforms identified above as well as the users of those platforms and the city's policy goals for those platforms. The table also maps these platforms to relevant legislation and strategies and therefore illustrates the City's formal digital infrastructure and establishes a framework to assess the gaps between the city's policy intentions and its operational practices.

Digital System/Platform	Primary Function	Primary User Base	Policy/Governance Alignment
Joburg Connect	Fault reporting & service complaints	Citizens/Residents	Public Participation: Municipal Systems Act
e-Joburg Portal	Billing, accounts, queries	Ratepayers	Transparency: ICT Policy Framework
GIS Spatial Portal	Spatial planning & land management	City Officials/Developers	Evidence-based planning: 4IR Strategic Goals
My Smart City App	Service coordination & citizen engagement	Mobile Users	Inclusivity: National Digital & ICT Policy

Table 1: Overview of Digital Municipal Systems in Johannesburg

The audit revealed that although the city has been successful in developing different platforms to support its departments, there is no one governing body that oversees how all of these platforms are developed or how their data is managed collectively; therefore, the lack of a unifying data governance framework has created many gaps between what the regulations intend and the ability to practically implement those regulations. These gaps are significant to interoperability and the ability to hold services accountable.

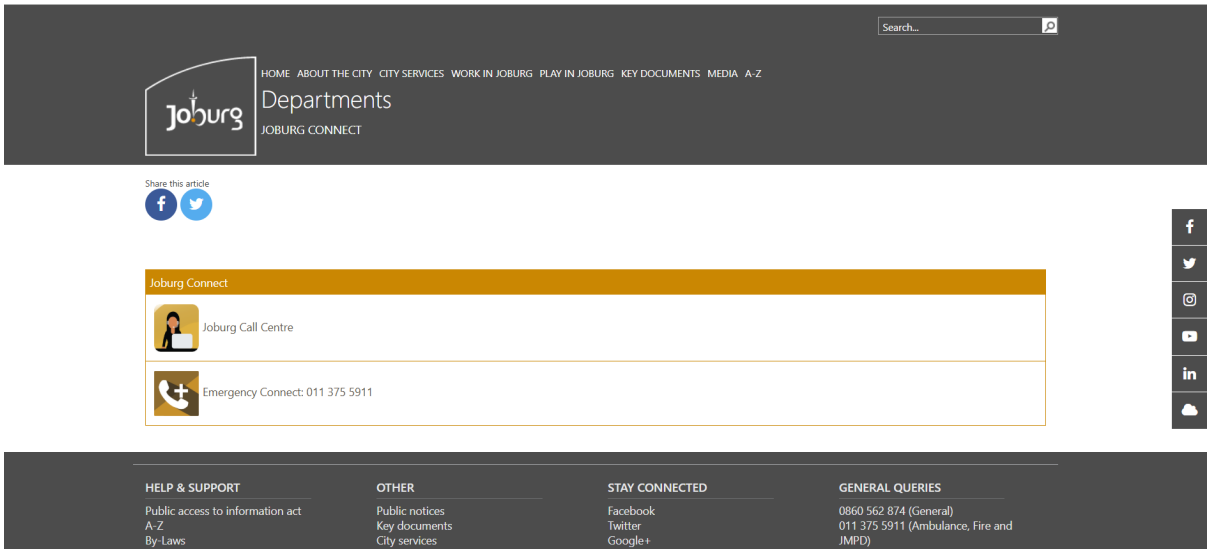

Fig. 1: Joburg Connect.

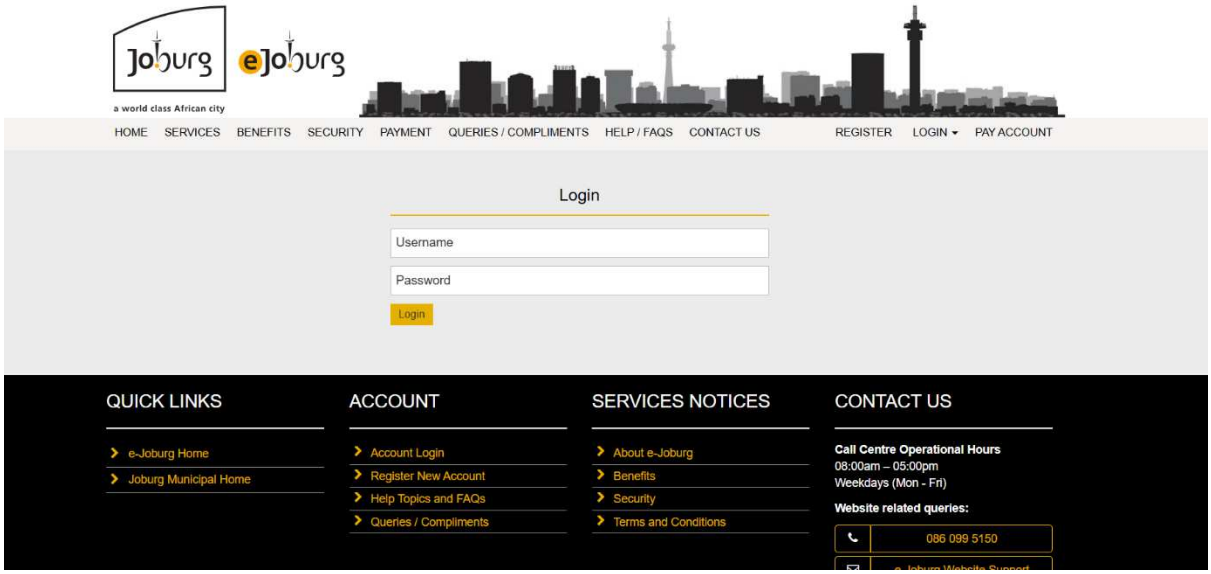

Fig. 2: e-joburg portal.

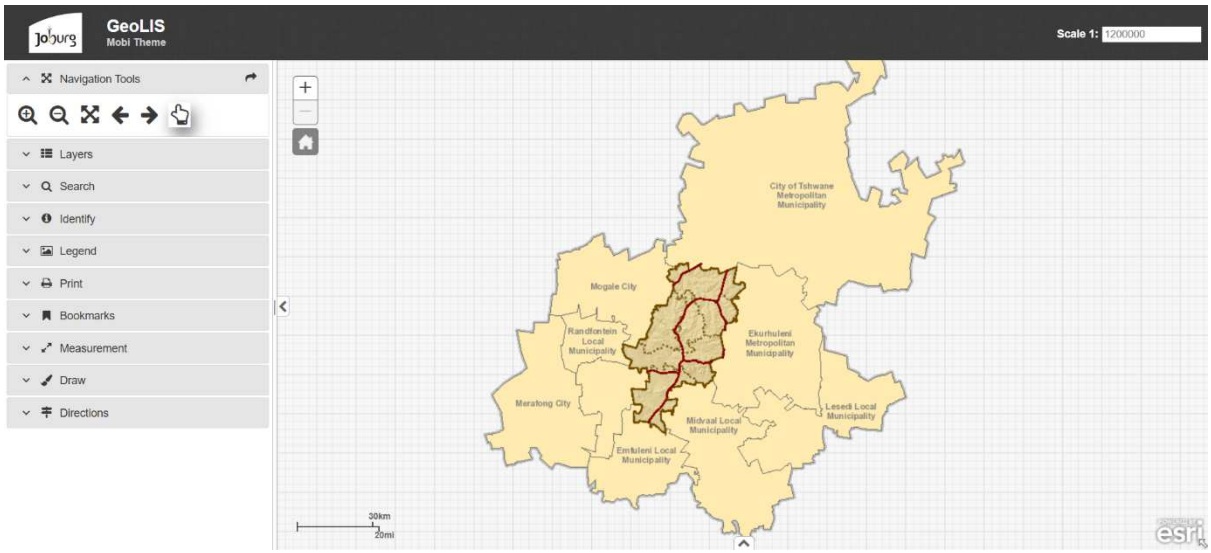

Fig. 3: GIS Spatial Portal.

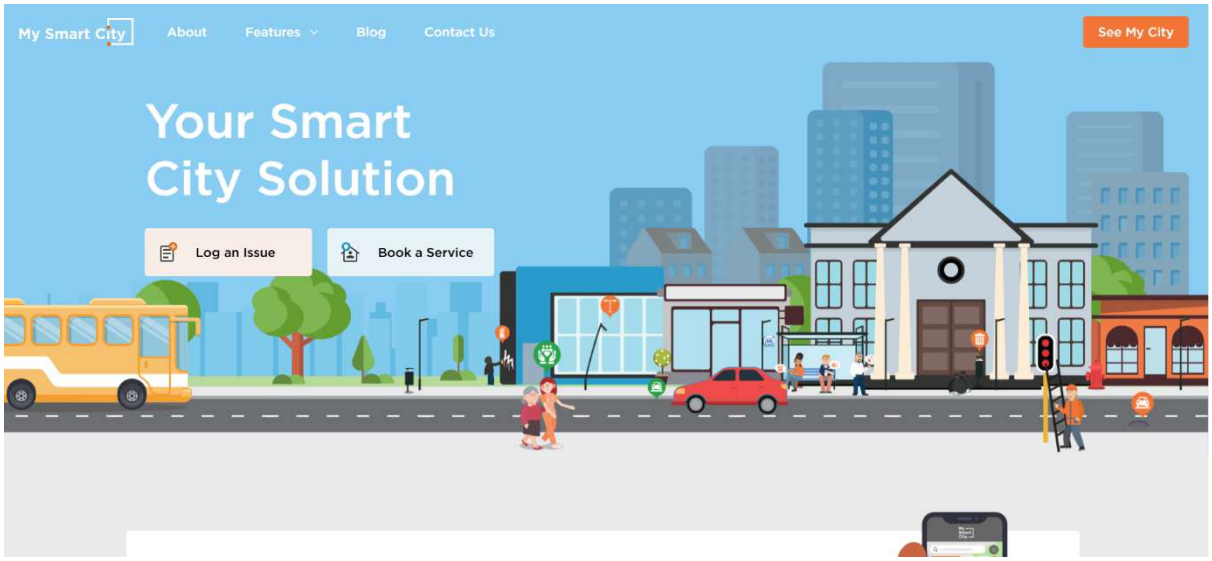

Fig. 4: My Smart City App.

Several digital systems support the operational activities of the City of Johannesburg in various ways. Some examples of these digital systems include; Joburg Connect which allows citizens to report faults with services, the e-Joburg portal that is used to facilitate customer interaction for billing and account management purposes, GIS (geographic information systems), and LIS (land information system) to enable the city's departments to plan for spatial development, and several call center and dash board type systems that are managed on behalf of the city's departments by the city's Metro Offices. While some of the digital systems listed above represent a significant digital investment by the city, the majority of them were developed and are being managed independently of one another at the departmental or entity level. This institutional configuration shapes how digital tools are used and limits their ability to function as integrated metropolitan governance instruments.

6 FINDINGS: DIGITAL MUNICIPAL SYSTEMS AND POLICY ALIGNMENT

6.1 Strategic Alignment with Policy Intent but Weak Operational Integration

The audit shows how, on a conceptual level, Johannesburg's municipal systems digitally support City of Johannesburg (2022), and Department of Co-operative Governance (2016) policy-based mandates around transparency, efficiency, and participation through platforms like Joburg Connect, which represent formal structures for citizens to interact and, in doing so, fulfill the participatory provisions within the Municipal Systems Act.

However, these concepts remain largely theoretical, and there is little empirical evidence of mandatory framework(s) requiring municipalities to ensure digital systems are being used interdepartmentally (MOE), therefore, the translation from policy aspiration to cohesive digital municipal governance practice is only partial.

6.2 Fragmented Digital Governance Across Municipal-Owned Entities

Most of the digital government exists in a fragmented manner among the various MOE's that are responsible for the most important urban service areas (e.g., electricity, water, waste collection, and roads), each of which has its own digital platforms, reporting mechanisms, and data systems, and very little interoperability.

This fragmentation limits the ability of the IUDF to achieve the integrated urban governance it seeks, and limits the city from creating a single, current view of how well services are being delivered (Department of Cooperative Governance, 2016), so that digital systems replicate the existing organizational silos instead of breaking through those silos.

6.3 Uneven Institutional Capacity and Digital Uptake

The audit highlights that there is a wide range in terms of institutional capacity among the different departments and regions. In this respect, while some have developed significant and sophisticated use of

digital dashboards and spatial data, many other departments and regions continue to operate using manual processes or legacy systems. The uneven development and implementation of digital systems and the resulting inability to integrate digital data with strategic decision-making for planning and capital investment are also identified as key barriers (OECD, 2020).

Additionally, the lack of defined digital competences and continuous capacity building initiatives restricts the strategic value of digital systems, which results in their continued use as operational tools and not as governance tools.

6.4 Digital Participation and Data Visibility Bias

While digital platforms have been implemented as a means to enhance citizen engagement opportunities for participation, there is evidence that this opportunity is spatially inequitable. Those locations that have greater internet connectivity and greater digital literacy rates tend to be overrepresented in the digital reporting data generated from the use of digital platforms, whereas informal settlements and peripheral communities are consistently underrepresented in the digital reporting data generated by their use of digital platforms. The result is data visibility bias, which reduces the visibility of digitally marginalized communities to governance systems and may also produce an unbalanced representation in how planners and policymakers make decisions about where resources should be allocated (Parnell & Pieterse, 2010).

6.5 Accountability and Feedback Loop Limitations

The findings indicate a weakness in feedback processes on digital platforms. Citizens may be able to submit complaints about services they are using, but citizens are generally unable to find out when their complaint will be addressed by which department(s) it will be assigned to, or how their complaint will ultimately be resolved. Thus, citizens have little reason to believe that their government is functioning effectively, and therefore, digital technologies cannot provide an effective means for citizens to hold government accountable for its actions (Meijer & Bolivar, 2016).

6.6 Policy Alignment and Fourth Industrial Revolution (4IR) Readiness

The audit also examined how well Johannesburg's digital local government platforms align with the policy and legislative objectives outlined in the Municipal Systems Act (Act No. 32 of 2000), South African national ICT policies, and the overall policy frameworks for the Fourth Industrial Revolution (4IR). Although the City has made significant investments in new digital systems aimed at improving service delivery and administrative processes, the audit's findings indicate that the current configuration of these systems does not provide the transformative governance desired by policy.

The Municipal Systems Act requires municipalities to provide municipal services inclusively by providing all citizens with equal access to these services. The study has found that the current digital platforms for delivering public services have the potential to exclude some residents from accessing municipal services due to a lack of digital technology in their area, low levels of digital literacy among residents, or unreliable digital connectivity in informal settlements and at the periphery of urban areas. If no alternative mechanisms, such as offline or hybrid access, are available to support residents who cannot easily use digital platforms, then they could potentially exacerbate existing social-spatial inequalities rather than alleviate them (United Nations, 2022; Republic of South Africa, 2000).

The policy framework for public participation emphasizes that citizens should be able to have an active role in the development of their local government. The digital platforms available in Johannesburg provide an opportunity for residents to report problems with city services and access information about city programs and policies. However, the current structure of these platforms is primarily used as one-way communications from the city to the resident, limiting opportunities for citizens to engage in deliberative discussions, co-create solutions to municipal issues, and receive feedback on how city policy and/or planning decisions affect them. Therefore, the potential for public participation in the digital governance of the City of Johannesburg is significantly less than what is envisioned by proponents of smart governance and the Fourth Industrial Revolution (Meijer & Bolivar, 2016).

Digital systems can produce "paper trails" for transparency and traceability in terms of service accountability; however, these systems are still not fully integrated to enable monitoring, oversight, or learning within institutions. Although there is a possibility to use digital tools to enhance accountability

through closed-loop feedback, the audit has shown an inability to do so, as there is currently no linkage from citizen input (front-end) to tracking the resolutions to those inputs (back-end).

Overall, it is suggested that Johannesburg has demonstrated partial 4IR-readiness characterized by technology adoption but without sufficient governance integration. A coordinated policy-driven strategy for advancing smart urban management will be required to align the digital system with the objectives of inclusivity, participation, and accountability in South Africa's local government framework.

6.7 Analysis of Audit Findings: The Fragmentation Gap

A substantial gap exists between the City of Johannesburg's strategic vision on how to govern digitally and its day-to-day operations. Although the City's policy debates define digitalization (and its related technological innovations) as an opportunity to make government more efficient, transparent, and to better coordinate services; however, our research finds that the City's digital landscape is a fractured one, limiting the transformative potential of those innovations.

A major barrier to achieving the transformative goals of those technologies is the lack of integration amongst them. The core technology platforms, including the e-Joburg portal, Joburg Connect, and the various geographic information systems operated by different City departments and city-owned entities, are largely incompatible, as they do not interoperate well. The media reports of late responses from the city, duplicated reporting, and unclear responsibilities all demonstrate that there are no integrated city-wide digital coordination tools in place.

Secondly, the study's findings have shown variable levels of governance of data. As a result, weak governance of data has resulted in unreliable, inaccessible, and unsustainable digital services for delivering public services. The lack of data visibility across the city (especially in informal areas) has created governance blind spots, which are likely to reduce the effectiveness of evidence-based planning as well as the ability to intervene at an early stage.

Thirdly, it can be seen that there is a significant gap between the regulatory ambition for enabling urban management through digitally enabled approaches articulated in the City's 4IR and Smart Cities Strategies, and the actual capacity for implementation, which is restricted by unstable governance, fragmented institutional authority, and limited operational integration.

This suggests that the digital challenge facing Johannesburg is less about having the technology and more about the institutional alignment and execution.

Therefore, these three aspects combined indicate that the current state of digital transformation in Johannesburg is characterized by partial adoption with no systemic integration. It is therefore critical to address this "fragmentation gap" to achieve the intended governance, planning, and service delivery benefits for municipalities and the national digital policy framework.

7 FINDINGS: DIGITAL MUNICIPAL SYSTEMS AND POLICY ALIGNMENT

Research suggests that the primary barriers to effective use of digital municipal systems in Johannesburg are largely institutional and governance-related as opposed to technological. The research is consistent with a body of literature from Global South countries, which indicates that digitalisation can only partially compensate for the consequences of a lack of coordination, poor administrative capacity, and fragmentation of authority (United Nations, 2022; Parnell & Pieterse, 2010).

Where digital systems do have some value, it is primarily when there are already high levels of integration and coordination, where they offer considerable opportunities for improved monitoring, planning, and citizen engagement.

7.1 Integrated Synthesis of Policy and Systemic Performance

The findings from the digital systems audit illustrate an extreme disconnect between the City of Johannesburg's "strong normative framework", as defined by the city's strategic frameworks and the actual operationalization of its municipal service delivery system; however, the three key points of tension identified in this synthesis represent the current state of digital governance for the City of Johannesburg.

7.2 The Disconnect Between Strategic Intent and Technical Silos

The audit verifies that "the proliferation of digital systems", including e-Joburg, Joburg Connect, and GIS Spatial Portal, is being developed in departmental silos. In contrast to the vision of an "integrated 'World Class African City'" presented in both the Joburg 2040 GDS and the Smart City Strategy, the current technical state of affairs presents a fragmented system with "little or no inter-departmental integration." Therefore, it can be inferred that the complex coordination demands generated from the overlap of multiple frameworks have resulted in a multitude of departmental function-specific systems (i.e., not integrated into a single, citizen-focused service).

7.3 Legislative Compliance vs. Practical Inclusivity

A contradiction is inherent to the Municipal Systems Act, as it provides for universal access (Section 73); the current "uneven alignment" of digital tools in terms of their inclusiveness does not currently allow for this principle. While platforms such as the My Smart City App are examples of how the community is moving toward Integrated Urban Development Framework (IUDF) Policy Lever 9 (Empowered Active Citizens), they are typically not designed or developed with the "governance compatibility" needed to provide service to all demographics of the city. Without a "coordinated Smart Governance Framework," the transition to digital-first service delivery could create a "digital divide", which would undermine the very purpose of enhancing transparency and citizen participation as provided in the National Development Plan 2030.

7.4 Data Governance as a Barrier to Accountability

The findings of this audit highlight a significant weakness in the City of Johannesburg's (CoJ) Digital Strategy due to an “inconsistent adherence to data governance standards,” as identified by the audit. Although both the Protection of Personal Information Act (POPIA) and the Municipal Finance Management Act (MFMA) require a high level of data integrity and accountability, the absence of “unified data governance standards” across all municipal platforms creates a major obstacle for the CoJ in delivering “reliable service delivery.” Until the GICT Scorecard KPIs advance from platform deployments to evaluate “interoperability” and “system functionality,” the CoJ will struggle to achieve “service accountability” as outlined in its IDP.

7.5 Synthesis Summary: Moving from Platforms to Ecosystems

The evidence presented here illustrates that the digital transformation of Johannesburg is at present platform-heavy; however, it has yet to be "ecosystem light." Therefore, to achieve the "long-term sustainability" described in the Smart City Strategy, the city needs to transition its focus from app development (or individual application) to the creation of an integrated, coordinated smart governance framework. It will require increased "integration of platforms" and "alignment of regulatory frameworks", so that technology acts as a facilitator of effective metropolitan governance, rather than a hindrance.

8 TOWARDS AN INTEGRATED SMART GOVERNANCE FRAMEWORK

To enhance digital municipal governance, this research presents a comprehensive framework to integrate:

(1) centralised digital governance oversight;

(2) enforceable interoperability standards across departments and MOEs;

(3) policy-driven system design aligned with constitutional and legislative mandates;

9 CONCLUSION

This study demonstrates that while Johannesburg has significant digital infrastructure to support governance, it is constrained by institutional fragmentation and poor policy system alignment. Conducting a digital systems audit identifies these problems and further supports the necessity of coordinated, policy-driven approaches to digital governance. To realize the transformative benefits associated with digital local government in cities such as Johannesburg in the Global South, institutional integration and accountability must be strengthened.

10 REFERENCES

BAKIĆI, T.; ALMIRALL, E.; WAREHAM, J.: A smart city initiative: The case of Barcelona.

In: Journal of the Knowledge Economy, Vol. 4, Issue 2, pp. 135–148. 2013.
BOWEN, G. A.: Document analysis as a qualitative research method. In: Qualitative Research Journal, Vol. 9, Issue 2, pp. 27–40. 2009.
CITY OF JOHANNESBURG: Integrated Development Plan 2022/2023. City of Johannesburg Metropolitan Municipality. 2022.
CITY OF JOHANNESBURG: Citizen Relationship and Urban Management (CRUM) Programme Overview. City of Johannesburg Metropolitan Municipality. 2023.
CONNOLLY, R.; BANNISTER, F.: Government transformation: Using ICT to support public sector reform. In: Government Information Quarterly, Vol. 29, Issue 3, pp. 389–399. 2012.
DEPARTMENT OF COMMUNICATIONS AND DIGITAL TECHNOLOGIES: Digital Economy Masterplan. Government of South Africa. 2020.
DEPARTMENT OF COOPERATIVE GOVERNANCE: Integrated Urban Development Framework: A new deal for South African cities and towns. Government of South Africa. 2016.
ESPINOSA, A.; PINO, R.: Smart governance and urban digital transformation: Lessons from European cities. In: Cities, Vol. 145, Article 104645. 2024.
LYTRAS, M. D.; VISVIZI, A.; TORRES-RUIZ, M.; DAMIANI, E.; JIN, P.: Smart cities: Issues and challenges – Mapping political, social and economic challenges. In: International Journal of Information Management, Vol. 43, pp. 1–8. 2018.
MASIYA, T.: Coalition governance and service delivery challenges in South African metropolitan municipalities. In: Journal of Public Administration, Vol. 57, Issue 3, pp. 456–471. 2022.
MEIJER, A.; BOLÍVAR, M. P. R.: Governing the smart city: A review of the literature on smart urban governance. In: International Review of Administrative Sciences, Vol. 82, Issue 2, pp. 392–408. 2016.
MUNYOKA, W.; MAHARAJ, M.: Privacy, security, trust, risk and optimism bias in e-government use: The case of two South African cities. In: South African Journal of Information Management, Vol. 21, Issue 1. 2019.
NATIONAL PLANNING COMMISSION: National Development Plan 2030: Our future – make it work. The Presidency, Republic of South Africa. 2012.
OECD: The digital transformation of the public sector: Helping governments respond to the needs of networked societies. OECD Publishing. 2020.
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT: OECD Digital Government Policy Framework: Fostering digital government strategies for inclusive and data-driven public sectors. OECD Publishing. 2020.
PARNELL, S.; PIETERSE, E.: The 'right to the city': Institutional imperatives of a developmental state. In: International Journal of Urban and Regional Research, Vol. 34, Issue 1, pp. 146–162. 2010.
REPUBLIC OF SOUTH AFRICA: The Constitution of the Republic of South Africa, 1996. Government Printer. 1996.
REPUBLIC OF SOUTH AFRICA: Municipal Structures Act (Act No. 117 of 1998). Government Printer. 1998.
REPUBLIC OF SOUTH AFRICA: Municipal Systems Act (Act No. 32 of 2000). Government Printer. 2000.
REPUBLIC OF SOUTH AFRICA: Protection of Personal Information Act (Act No. 4 of 2013).
Government Printer. 2013.
SHAVA, E.; VYAS-DOORGAPERSAD, S.: Digital governance and public service delivery in Africa: Opportunities and constraints. In: African Journal of Governance and Development, Vol. 14, Issue 1, pp. 1–18. 2025.
SOUZA, F. N.: Qualitative content analysis: Some methodological considerations. In: Qualitative Research in Education, Vol. 8, Issue 3, pp. 316–344. 2019.
STATISTICS SOUTH AFRICA: Census 2022: Municipal profile – City of Johannesburg. Stats SA. 2022.
UNITED NATIONS: E-Government Survey 2022: The future of digital government. United Nations Department of Economic and Social Affairs. 2022.