



THE REVOLUTIONARY GOVERNMENT OF ZANZIBAR

**PRESIDENT’S OFFICE, CONSTITUTION, LEGAL AFFAIRS,
PUBLIC SERVICE, AND GOOD GOVERNANCE**

ZANZIBAR DIGITAL GOVERNMENT STRATEGY 2023-2027



FOREWORD



THE PUBLIC SECTOR IS UNDERGOING UNPRECEDENTED CHANGE BROUGHT ABOUT BY MEGATRENDS, INCLUDING DRAMATIC CHANGES WHERE TECHNOLOGICAL INNOVATION DISRUPTION PERMEATES EVERY ASPECT OF LIFE AND BUSINESS AS WE KNOW IT.

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Disruptive innovation refers to using technology to positively upset the public sector, enabling the government to establish a diverse and inclusive workplace and deliver affordable services accessible to a broader segment of society.

The digital revolution puts the RGoZ at the epicenter of this “disruptive force.” Therefore, its institutions need to re-think how best to adapt and thrive in this new

era. Public sector organizations worldwide seek to streamline their operations through digital technologies to deliver services more efficiently. Most governments today are transforming Public Services by exploiting Integrated Services Delivery (SID) models, as exemplified by the World Bank-funded One- Stop Centers (Huduma Pamoja) initiative. Digital technology has emerged as an irrefutable and indispensable enabler for the effective



and efficient delivery of public services, allowing governments to bring services as near as possible to the masses.

Rapid global digitalization impacts all aspects of our lives and how we interact, work, shop, and receive services. While technology offers the opportunity to provide citizens with improved services and better accessibility, it also offers the potential to reduce government costs and expenditures drastically. The Revolutionary Government of Zanzibar is on the verge of deploying e-service systems and platforms to enhance the delivery of services, as well as promote accountability, transparency, and good governance.

The COVID-19 pandemic has extensively limited human mobility, leading to international and national lockdowns. These and the implementation of social distancing resulted in the widespread interruption of in-person meetings, conferences, exhibitions, and other events.

These and other COVID-19 induced related challenges would profoundly impact the business landscape. For one, they accelerated digitalization in the

public sector. Notable achievements include transforming the health and education sectors, re-engineering government processes to automate operations, and coordinating national and local Governmental entities in service delivery and decision-making.

I am delighted and honored to present this Digital Government Strategy, which augments those achievements. It aims to enhance effectiveness and efficiency in delivering public services by eliminating institutional fragmentation. In their fragmented mode, departments tended to operate in isolation to become the traditional bureaucratic silos within the framework of public institutions.

The Strategy, anchored on a series of quantifiable key performance indicators and outcomes for tracking its progress, is part of a bigger picture of the Government's institutional efforts and strategies. The most fundamental of those efforts is the Blue Economy initiative as a catalyst for inclusive and sustainable economic growth and development in Zanzibar.

The Revolutionary Government of Zanzibar (RGoZ) is committed to quality



and accessible service provision to the people of Zanzibar, improving accountability, transparency, efficiency, and effectiveness. This Digital Government Strategy will ensure that public institutions in Zanzibar operate collaboratively by pooling their digital resources, significantly reducing operating expenses (OPEX). With this digital strategy, the Government is setting the direction for Zanzibar to seize and capitalize on the opportunities inherent in the digital transformation. The transformation will also improve its

operational capacity by prioritizing digital investments to fuel growth in Zanzibar's emerging digital economy.

I, therefore, encourage all government institutions to actively participate and assist in successfully implementing this citizen-oriented Digital Government Strategy in every feasible manner. This way, we can leverage technological progress to create new employment opportunities and promote economic growth and prosperity for all Zanzibaris.

"I AM DELIGHTED AND HONORED TO PRESENT THIS DIGITAL GOVERNMENT STRATEGY, WHICH AIMS TO ENHANCE EFFECTIVENESS AND EFFICIENCY IN DELIVERING PUBLIC SERVICES BY ELIMINATING INSTITUTIONAL FRAGMENTATION, THROUGH WHICH DEPARTMENTS TEND TO OPERATE IN ISOLATION DUE TO TRADITIONAL UNPRODUCTIVE BUREAUCRATIC SILOS IN THE CURRENT OUTDATED ZANZIBAR GOVERNMENT INSTITUTIONAL STRUCTURES".

PREFACE



NUMEROUS STUDIES CONDUCTED GLOBALLY HAVE SHOWN THAT ECONOMIES WITH THE MOST ADVANCED ICT SECTORS HAVE THE BEST LEVELS OF COMPETITIVENESS, IMPLYING THAT HAVING A COUNTRY ENABLED BY ICT BOOSTS THE GDP AND LONG-TERM ECONOMIC PERFORMANCE

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In addition to providing rural, economically isolated communities with access to digital services, direct investments in digitalization also generate new employment and economic opportunities to benefit the general public. With Zanzibar seriously engaging in the Blue Economy Initiative, this digital transformation is even more crucial.

However, notable inefficiencies exist in service delivery within some public institutions. Most of this is due to inadequate institutional coordination.

Information Technology has stepped in to rectify the situation in many such cases. Among others, that is what this Strategy is about. Through it, public and business awareness will be heightened, and expectations raised for transparent, responsive, and seamless government services.

By doing so, GoZ's vision and strategic objectives of transforming Zanzibar into a digital economy will be realised.

The strategy will enhance the



effectiveness and efficiency of service delivery in the public sector by eliminating institutional fragmentation. At its core, ZDGS is a means of improving public service delivery and increasing citizen engagement while enhancing government transparency and accountability to stimulate inclusive economic growth. Ultimately a prosperous, resilient digital economy will be achieved that will raise the standard of living for all Zanzibaris.

The Digital Government Strategy will

ensure that public institutions in Zanzibar operate collaboratively by pooling their digital resources, significantly reducing operational expenses (OPEX). The Zanzibar e-Government Agency (eGAZ) is excited to unveil this forward-looking Digital Government Strategy. It is a strategy aiming at leveraging cutting-edge digitalization technologies to create a paradigm shift in the delivery of Zanzibar's public sector services, hence achieving the RGoZ vision of creating a robust digital economy.

“THE ZANZIBAR DIGITAL GOVERNMENT STRATEGY (ZDGS) WILL ACT AS A BLUEPRINT AND ROADMAP FOR REALIZING THE RGOZ'S VISION AND STRATEGIC OBJECTIVES OF TRANSFORMING ZANZIBAR INTO A DIGITAL ECONOMY. THE STRATEGY WILL ENHANCE THE EFFECTIVENESS AND EFFICIENCY OF SERVICE DELIVERY IN THE PUBLIC SECTOR BY ELIMINATING INSTITUTIONAL FRAGMENTATION”.

ACKNOWLEDGEMENT

Our most profound appreciation goes to all those who, in one way or another, assisted in the preparation of this Zanzibar Digital Government Strategy. The Planning Director at the President's Office, Constitution, Legal Affairs, Public Service and Good Governance worked tirelessly to review and improve earlier versions. We highly appreciate this invaluable assistance, without which this document would not meet its current quality.

We equally acknowledge the generous assistance from the e-Government Agency – Zanzibar (eGAZ) staff, the President's Office, Constitution, Legal Affairs, Public Service and Good Governance, and the President's Office, Finance and Planning. The professional excellence reflected in their recommendations and contributions bolstered highly raised the level of effectiveness of this Digital Government Strategy.

This Digital Government Strategy's completeness is also due to key government stakeholders' contributions.

Their inclusion and participation proved crucial to the effective and coordinated preparation of the digital strategy. The list of these stakeholders includes but is not limited to,

President's Office, Finance and Planning (POFP), Zanzibar Revenue Authority (ZRA), Zanzibar ICT Infrastructure Agency (ZICTIA), National Identification Authority (NIDA), Ministry of Blue Economy and Fisheries (MBEF), Ministry of Health in Zanzibar (MOHZ), Ministry of Education and Vocational Training in Zanzibar (MOEZ), Zanzibar Civil Status Registration Agency (ZCSRA) and Zanzibar Public Procurement and Disposal of Public Assets Authority (ZPPDA).

The assistance of these institutions and many others otherwise not appearing on the list is highly honored and deeply appreciated. Last but not insignificance, many thanks to the Public Finance Management Reform Program for providing the funds required to prepare this strategy.

EXECUTIVE SUMMARY

Overview

Recognizing the significance of public service, the Government of Zanzibar has made substantial investments in a vast array of public sector reforms and capacity-building initiatives in the public sector. Among them is the creation of an enabling digital government ecosystem through the application of cutting-edge digital technologies.

Digital government emanates from e-Government services by transforming public services digitally with the support of digital platforms. This redesigning and reengineering of government services will eventually fulfill the vision of transforming Zanzibar into a sustainable, inclusive, innovative, and secure digital Economy.

Furthermore, it aims to transform the Government's decision-making mechanism from service-oriented to data-driven. It will therefore ensure that citizens and businesses are prioritized over government agencies, thus improving public service delivery,

increasing citizen engagement and enhancing functionality.

Establishment of Zanzibar e-Government Authority

For a focused management of digital governance, a centralized entity for the provision of strategic direction, leadership, and oversight cannot be avoided. In its current structure, the Zanzibar e-Government Agency would have fitted into that role. Unfortunately, it runs short of being accountable enough for such a daring responsibility. It runs short of enough resources, mandatory powers, and institutional independence necessary for such an ambitious but necessary undertaking.

It needs transformation into an entity capable of that mammoth task, including overseeing the procurement of government ICT platforms and infrastructure as well as introducing other digital innovations such as Unmanned Aerial Vehicles (Drones).

It needs powers to oversee safe ICT

utilization to safeguard government-related electronic communication's security.

All these, in turn, would require a sizable amount of resources otherwise hard for the government to find. There is hence needed a fully-fledged entity capable of bearing all those responsibilities while requiring relatively less government funding.

An entity that would turn e-government activities into reliable sources of funding to run itself and contribute to the Treasury. Rather than starting afresh, all that is needed is to transform the e-Government Agency into a self-governing, self-reliant Authority. Such Authority shall provide guidance and direction on Zanzibar's digital transformation roadmap and play an ownership and coordination role in developing, rolling out, and regulating digital government services.

Digital Government Strategy Description Approach

A four-step approach is found desirable for Zanzibar's Digital Government Strategy:

1. Analyzing the current situation and government digital initiative
2. Articulating a clear vision of the government's digital transformation and how to leverage digital technologies to the fulfillment of the government's objectives
3. Creating digital government strategic pillars to support the government vision with an implementation roadmap with targets.
4. Establishing, implementing, monitoring, and evaluating plans and making necessary adjustments and fine-tuning to the strategy of sustainable blue economy growth.

Digital Government Strategic Pillars

The following five strategic pillars will support the Digital Government Strategy during the first five years :

Pillar-1: Creation of comprehensive digital governance and collaboration framework.

Pillar-2: Integration of processes and institutional service-delivery platforms

for the coordinated delivery of digital services.

Pillar-3: Implementation of a robust and secure government digital infrastructure that includes a modern data center, disaster recovery site, government network, and dedicated international submarine fiber-optic cable gateway.

Pillar-4: Development and operationalization of innovative ICT systems and services to accelerate inclusively and

Pillar-5: Development of Human Capital for Digital Government

Converged Digital Infrastructure and Integrated Services

The Zanzibar Digital Government Strategy offers a unique and “genuinely exciting” opportunity to improve service delivery. This is important because the 4th Industrial Revolution (4IR) is imposing additional demands on most public sector institutions, while citizens and businesses will tolerate nothing short of responsive, efficient, and quality services.

Big Data and Cloud Computing are two mainstream trending technologies that would figure prominently in the Zanzibar digital government agenda. Big Data involves storing, processing, and analyzing large amounts of data collected by various government entities. Cloud computing provides the infrastructure for the cost-effective and efficient processing of Big Data.

In addition to big data and cloud computing and not to be technologically isolated from the universal business mainstream, the digital government approach is catching up with all the trending cutting-edge technologies of the time. In the meantime, these include Artificial Intelligence, Machine Learning, Blockchain, Autonomous Drones, Robotics Process Automation, and 5G Wireless.

A proposed Zanzibar National Data Center will be the hub of the interoperability associated with those technologies.

Need for Employee

Reskilling and Upskilling

Most of the employment related to digital government transformation requires digital skills, which are yet to be acquired sufficiently in Zanzibar. There is a serious deficit of local talent in the emerging digital technologies mentioned above. Studies rank talent deficiency near the top of digital transformation challenges. The inadequacy is among the greatest obstacles against a digital literate economy.

For the Zanzibar Digital Government Strategy to be a success, a plan to increase the number of technology-skilled employees in government over the next five years has to be developed. Some existing employees must also be reskilled or upskilled on these core digital technologies for capacity building.

The government of Zanzibar must invest in ICT training programs to bridge the present digital skills gap and provide sufficient funds to support employee participation and engagement. The Zanzibar e-Government Authority should

have powers to create and coordinate upskilling and reskilling programs to support the Digital Government Strategy.

Funding Sources for Digital Government

The will and commitment to invest in essential information technology initiatives is a direct factor for any successful digital government initiative. Rather than depending mostly on Development Partners for funding, the RGoZ will have to establish its own ICT-based source of income generation. Among The digital tax is Among the most successful sources in established e-Governance regimess is the tax to be paid for a range of digital services, from cross-border digital services to online advertising to e-commerce. On their part Government, institutions should create financial roadmaps to facilitate the implementation of their digital transformation Goals. The goals should be considerate of many overlying factors lik,e strategic priorities. Implementation timeframe, desired outcomes and quantifiable benefits. Priority focus areas for these budgets



shall include:

- Development of an advanced and reliable ICT system to boost ZRA revenue collection.
- Modernizing MDA legacy systems to support backend integration for process automation.
- Repairing, replacing, and upgrading critical Government ICT infrastructure to enhance service delivery.
- Ensure the availability of digital skills in the public sector through targeted recruiting and training.





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ABBREVIATIONS AND ACRONYMS

API : Application Programming Interface

CMS : Corporate Management System

DHIS2 : District Health Information System-2

DTP : Digital Tanzania Programme

eLMIS : electronic Logistics Management Information System

EEC : Exclusive Economic Zone

eGA : e-Government Authority

eGAZ : Zanzibar e-Government Agency

eProZ : Electronic Procurement Zanzibar

FDI : Foreign Direct Investment

GDC : Government Data Center

GDP : Gross National Product

ZanMalipo : Zanzibar Government e-Payment Gateway

GMS : Government Mailing System

GOT : Government of Tanzania

GSD : Government Services Directory

GovNet : Government Network

GSD : Government Services Directory

HCMIS : Human Capital Management Information System

HMIS : Health Management Information

ICT : Information and Communication Technology

IT : Information Technology

KPI : Key Performance Indicators

LGA : Local Government Authority

M&E : Monitoring and Evaluation

MDAs : Ministries, Independent Departments, and Executive Agencies

GMSG : Government Mobile Services Gateway

MOHZ : Ministry of Health in Zanzibar

MOFP : Ministry of Finance and Planning

MTH : Ministry of Tourism and Heritage

NICTBB: National ICT Broadband Backbone

NIDA : National Identification Authority

POFP : President's Office Finance and Planning

PO-PSMGG : President's Office Public Service Management and Good Governance

PoS : Point of Sale

ZPPDA : Zanzibar Public Procurement and Disposal of Public Authority

PS3+ : Public Sector Systems Strengthening Plus



PSRP : Public Sector Reform Programme

PWD : Persons/People with Disabilities

RGoZ : Revolutionary Government of Zanzibar

TR&I : Technology Research and Innovation

TDV-2025 : Tanzania Development Vision 2025

TRA : Tanzania Revenue Authority

VAT : Value-Added Tax

WB : World Bank

ZAGONet : Zanzibar Government Network

ZDGS : Zanzibar Digital Government Strategy

ZDV20 : Zanzibar Development Vision 2020

ZDV50 : Zanzibar Development Vision 2050

ZeGA : Zanzibar eGovernment Authority

ZESB : Zanzibar Enterprise Service Bus

ZICTIA : Zanzibar ICT Infrastructure Agency

ZNDC : Zanzibar National Data Center

ZPDC : Zanzibar Petroleum Development Corporation

ZPRA : Zanzibar Petroleum Regulatory Authority

ZPSRP : Zanzibar Public Service Reform Programme

ZRA : Zanzibar Revenue Authority

ZSGRP : Zanzibar Strategy for Growth and Reduction of Poverty

ZURA : Zanzibar Utilities Regulatory Authority



1 INTRODUCTION

1.1 Background

The latest advances in technological development made possible by the wide adoption of the Internet and mobile communication have become a strategic driver for improved efficiency and effectiveness in delivering services to the public and businesses. Globally, digital transformation has a profound impact on nearly every aspect of human life.

Governments and businesses are no exception; they have improved the performance and delivery of public services more efficiently and effectively by adopting these latest technologies. They have launched unique and forward-looking programmes to improve the level of health, education and other government services provided to citizens.

No wonder digital governments have become top priorities worldwide. The resultant economic development imperatives are indicative of efforts by Governments' focus on the use of digital platforms and integration.

Evidently, the most advanced ICT countries score the highest levels of competitiveness. That GDP and overall economic performance in the long run are heavily dependent on ICT is therefore a fair conclusion.

Direct investments in digitalization can also be seen in providing access to public services to remote, underserved areas. This creates new jobs and economic activities that benefit the people on those areas.

Likewise, the Revolutionary Government of Zanzibar (RGoZ) is looking forward to reaping those benefits. That is why it continues to make significant investments in the deployment of the latest digital technologies.

Through this Strategy, RGoZ seeks to introduce the latest technological advances for a more responsive and resilient leadership. The objective is to meet the evolving business demands and expectations.

All this, however, depends on

considerable government investment in ICT along with fundamental short- to medium-term reforms.

1.2 Digital Transformation in the Public Sector

Notably, Government dealings with the private sector are impacted by the traditionally strict adherence and over-conformity to institutional hierarchies. Such tendency sometimes impede and create reluctance for institutions and their employees to interact efficiently with each other and other public organisations.

They end up inward-looking in their own self-contained silos. In combination with traditional Government bureaucracy, such tendencies creates increased inefficiency.

The targeted Digital Government transformation is set to bring about institutional reforms necessary to fix these historical and long-standing snags within the public sector.

Fortunately, the RGoZ has already invested heavily in a wide range of reforms and capacity- building initiatives, including the design and implementation of the Zanzibar Public

Service Reform Programme-ZPSRP.

Among others, the programme paved the way for the transformation of public institutions towards more efficient and effective performance in line with the universal advancements mostly triggered by the ICT Revolution. The Zanzibar Digital Government Reform is therefore well anchored to this programme.

In order to raise the employees' innovative thinking capacity and cross-pollination levels, a four-step approach is used within the Zanzibar's Digital Government Strategy:

- a) Analyzing the current situation and government digital initiatives, including government policies to improve service delivery to citizens and businesses.
- b) Articulating a clear vision of the government's digital transformation and how to leverage digital technologies to achieve the government's objectives.
- c) Creating digital government strategic pillars and roadmap which underpins the implementation of the Digital

Government Strategy.

- d) Establish a monitoring and evaluation plan to track digital strategy implementation progress and make the necessary adjustments.

1.3 Document Organization and Presentation

This document describes a Digital Government Strategy. It involves involves setting strategic goals, determining actions to achieve the goals, setting a timeline, and mobilizing resources to execute the actions. It is not a Strategic Plan, which normally involves allocating resources to help coordinate the implementation of the Strategy.

This report is organized into four chapters

- **Chapter 1** is the introductory phase, explaining the background information related to the Strategy.
- **Chapter 2** provides a quick situational analysis examining past and current government initiatives related to technology platforms, infrastructure, electronic services, enabling

technologies, the blue economy, and digital government governance, policy, and regulatory framework. It is intended to set the stage for a detailed discussion of the Zanzibar Digital Government Strategy and the expected outcomes.

- **Chapter 3** provides a detailed description of the Zanzibar Digital Government Strategy mission and vision in the context of the proposed governance structure, emerging technological trends, and targets
- **Chapter 4** describes the Monitoring and Evaluation plan for the proposed strategy. It is a Zanzibar Digital Government Strategy and the expected outcomes. systematic and objective exercise for checking progress achieved in the digital strategy's operationalization through active and continuous monitoring and evaluation of the Key Performance Indicators (KPIs) for the Digital Government Strategy.



2 SITUATIONAL ANALYSIS

2.1 Strategic Government Initiatives

2.1.1 Blue Economy

Zanzibar Development Vision 2050 (ZDV50) regards the Blue Economy as a priority area for its socio-economic development in the next 30 years. It identifies the surrounding ocean as an effective means of sustainably improving the lives of Zanzibaris by modernizing and transforming its economy.

Tourism, one of the Blue Economy's major components, contributes directly or indirectly to 80% of Zanzibar's foreign currency earnings and 60,000 jobs. Therefore sustainable development and management of the Blue Economy are crucial. That is why Zanzibar is mainstreaming ocean governance and the Blue Economy in the national development agenda.

The Blue Economy seeks to promote economic growth and sustainable exploitation of ocean or 'blue' resources to improve the livelihood of the people of Zanzibar. Vision 2050 (ZDV50) aims for

a prosperous Zanzibar by boosting the islands economically and socially to achieve Upper Middle-Income Status by the year 2050.

ICT has been singled out as a strategic area and key driver to achieving this objective. Strong emphasis has been placed on the use of digital technologies for the provision of government services.

The RGoZ has established the first-ever Ministry of Blue Economy and Fisheries with the prime mandate of developing policy interventions to exploit Zanzibar's Blue Economy. These efforts led to the formulation of the Zanzibar BE Policy (2022) and its strategic implementation plan.

Specific policy interventions identified in support of the Blue Economy initiatives include:

- Spearheading structural transformation of Zanzibar's economy through the promotion of sustainable investments in the Blue Economy.

- Empowering and enabling Zanzibaris to recognize the actual socio-economic benefits of embracing the Blue Economy

Significant investment needs to be directed to the Blue Economy to ensure that outdated fishing gear and associated technologically advanced systems are upgraded. It is also imperative that the primary focus be devoted to developing human capital through capacity-building activities through education and training. The end game is to create a technologically trained and highly productive blue economy workforce.

Ensuring the beneficial and sustainable exploitation of Zanzibar's marine and coastal resources requires the Government to develop effective strategies to confront increasing pressure from existing activities such as:

- Pirates spotted conducting illegal fishing in deep waters of the surrounding Indian Ocean using dynamite, posing a serious threat to sustainable exploitation of the marine resource.
- Maritime security threats range from Illegal, Unreported, and Unregulated (IUU) fishing and drug smuggling around Zanzibar's Recognized Exclusive Economic Zone (EEZ) to environmental degradation. Law enforcement agencies cannot monitor the seas due to the lack of modern naval assets and associated surveillance technologies.

2.1.2 Public Sector Strengthening

Public Sector Systems Strengthening Plus (PS3+) is a five-year USAID project led by Abt Associates intending to strengthen existing systems at national and local levels to improve Government service delivery across sectors.

The PS3 project has identified four major system components: governance and citizen engagement, human resources, financing, and information systems. The primary goal is to strengthen the Government of Tanzania's management systems by:

- Improving evidence-based planning and management of public services at the local level

- Strengthening local governance through citizen engagement and social accountability
- Increasing efficiency in the collection and transparent use of financial resources

The information systems component is of primary interest to the Zanzibar Digital Government Strategy. It focuses on transparency, accountability, citizen participation, technology, and innovation to facilitate access to quality data for all project stakeholders. PS3+ interventions focus on the following priority areas:

- Health Facility Registry
- Electronic Medical Records
- Planning, Budgeting, and Reporting system
- Health Financing, including Health Insurance

From the perspective of the Zanzibar Government Digital. The PS3+ Human Resources component is also vital, because it can assist in achieving equity in the distribution of IT trained personnel for the effective delivery of government

services to the most vulnerable populations, including women, youth, people with disabilities, and people experiencing poverty in rural areas who are excluded from the changing technology economy.

2.1.3 Combating Rampant Tax Avoidance and Underreporting

To date, the RGoZ has been unable to fully exploit the benefits of an expanding economy, especially the tourism sector, due to revenue “leakages” and uncollected taxes. The leakage of revenues in the Tourism sector can only be described as rampant. Some of the revenue leakages identified include:

- a) Rampant tax avoidance and underreporting of revenues, tax exemptions outside the line with incentives, transfer pricing, and foreign tour operators.
- b) Importing agricultural products by tourist hotels from abroad due to the lack of quality products in Zanzibar and the absence of a world-class agro-processing industry.

These and other related issues need to be addressed in policy, legislation, and tax administration simplification so that the tourism dollars would have a contributory spillover impact on the socio-economic development of Zanzibar. Some of the significant Banks operating in Zanzibar are getting in on the tourism act to help in the Government's plan to plug all the leakages, giving room for tax avoidance and accelerating corruption.

To simplify tax administration to enhance voluntary compliance and improve revenue collection, the Revolutionary Government of Zanzibar intends to use ICTs and e-government to review administrative regulations and, most importantly, enhance transparency and accountability while reducing corruption.

The RGoZ, through the Zanzibar Revenue Board, has launched the 4th Corporate Plan (CP4) 2020/21 - 2024/25 to strengthen the Tax Administration through the Modernization of ZRA tax collection systems and processes. The Corporate Plan focuses on modernizing systems and processes by harnessing

digital innovations in Information and Communication Technology (ICT) to transform organizational processes and promote operational efficiency.

Outsourcing Revenue Collection to Financial Institutions:

ZRA's cooperation with a financial institution can be effectively leveraged to expand the Government's base. For example, the NMB Bank signed a cooperation agreement with the Ministry of Tourism and Antiquities. The Bank will invest in implementing digital channels, allowing visitors to pay government revenues digitally to curb tax evasion and boost revenue collection in the tourism sector.

NMB Bank has deployed Point of Sale (PoS) machines to Zanzibar's Tourism and Antiquities Ministry to digitalize revenue collections in the Isles. Additional PoS are slated for deployment across various hotels, restaurants, recreational centers, and shops to ensure a tourist can handle hard cash while in Zanzibar. This will allow the ZRA to track digital and real-time tourist payments for tax compliance. The

NMB Bank PoS services are available across a network of 1ATMs in popular tourist locations such as Nungwi, Paje, Macho Manne, Wete, Mkoani, and at International Airports.

Virtual Fiscal Device Management System:

The Zanzibar Revenue Board and the Ministry of Trade intend to implement Virtual Fiscal Device Management System (VFDMS) to improve revenue collection by simplifying tax administration to enhance voluntary tax payment compliance. VFDMS is a new-generation sales transactions data collection solution supporting domestic revenue mobilization and tracking VAT and sales taxes.

VFD is an online invoicing web-based software that uses a smartphone, tablet, or a computer app instead of specialized physical, fiscal devices allowing retailers to issue EFD receipts using a smartphone or any electronic device with Internet access. No receipt printing is necessary; customers may receive e-Receipts via SMS or email optionally. A VFD reduces a retailer's tax compliance reporting burden. A Virtual

Fiscal Device (VFD) sends electronic invoices to the VFDMS hosted at the ZRA or ZeGA data center in real time and receives a validation response from ZRA.

VFD can be used with other POS systems for billing to enable taxpayers to send invoices directly to the ZRA without needing a physical EFD. Transactions submitted using VFD are highly secure transactions data are protected through encryption technology.

Re-engineering Tax Process:

Process Reengineering involves radically redesigning core ZRA tax administration processes to achieve dramatic improvements in tax collection. It facilitates tax compliance by eliminating redundant and unnecessary steps that taxpayers must go through using advanced service delivery platforms such as Government Electronic Payment Gateway (ZanMalipo). As stated, process reengineering involves breaking down the tax payment requirements into its fundamental steps, which are then subjected to critical analysis to determine how the process can be

dramatically improved – also referred to as the de-bureaucratization aimed at reducing obligations that are unnecessarily and disproportionately burdensome or complex for citizens and businesses.

Tax Payment Consolidation through One-stop Centers:

In the context of public administration, a one-stop service center is a government service outlet equipped to offer multiple services, including government payment services, allowing citizens and businesses to access public services in one location under one roof instead of in different physical areas. In addition to consolidating tax collection services, one-stop service centers may support other essential government services requiring visits to different MDAs, such as business registration and licensing, National ID and Passport application, and customs clearance of imported goods.

2.1.4 Transforming Zanzibar into a cashless economy

A growing number of people in Tanzania prefer to use contactless cards or digital (mobile) wallets for purchases instead of

cash. Cashless transactions are growing exponentially in Tanzania due to the convergence of Mobile Communications and banking. Cashless transaction channels popular in Tanzania include contactless credit cards and debit cards, mobile wallets, Point of Sale (POS), Internet banking, and mobile banking

A cashless society can be described as an economic phenomenon in which financial payments are carried out electronically instead of using banknotes and coins. If most of the payment transactions in the private and public sectors are carried out in a cashless environment, international or domestic money flows would be transparent. The government would be able to see where the money went and how it was spent.

The Government can use digital transformation to accelerate the cashless economy for Zanzibar while also closing the financial inclusion gap. It requires the private and public sectors to work together to harness the latest technology to realize the full economic potential of a cashless society.

Managing the Risk of Fraud in a Cashless Economy

There are, of course, many challenges to overcome as we embrace this level of disruption. And governments will need to take preemptive and proactive action in areas such as identity management and protecting security and privacy.

Internet crimes such as identity theft, account takeovers, and fraudulent transactions will increase when digital payments become the dominant payment mode for purchases.

Managing risk in digital cashless transactions is a challenging task. A significant risk that needs immediate attention is the risk of fraud. While cashless technologies could be the greatest weapon for the Government to combat tax evasion, corruption, and fraud, known risks must be carefully managed.

A common risk management framework comprises four key elements: determine risk appetite, identify risks, establish controls, and monitor effectiveness. Mitigating the risk of fraud

shall be the primary objective in a risk management plan for digital Government strategy.

Since customers are often the victim of online fraud because they do not adequately protect their PIN, the Government should mandate through legislation that all online transactions be enrolled in push notifications services. On the other hand, SMS push notifications are brief alerts triggered by a service provider when a transaction is attempted on a client's account, e.g., funds transfer, withdrawal, or purchase.

The Government could also legislate multifactor authentication for all online transactions. Multi-factor authentication is an electronic authentication method in which a client is granted access to a service or application only after successfully presenting two or more pieces of evidence to an authentication mechanism:

This sort of safety net is essential for the tourism industry in Zanzibar to grow and attract foreign visitors. Thus, the Government must work closely with

multinational payment service providers such as Visa and MasterCard, who control the underlying architecture of these payment gateways.

2.1.5 Education Information Management

Various professional and authoritative studies indicate that involving parents with school academic activities and monitoring and tracking student's academic progress significantly improves student academic achievement.

More specifically parental involvement refers to discussions held between parents and teachers regarding students' academic progress and achievement. At the core of these parent-teacher engagements is the implementation of automated tools for collecting, storing, and disseminating educational information.

Virtually all Zanzibar schools lack these important information management systems leading to the manual collection and storing of such vital information in the nation's education system. Thus, when parents want to

monitor their children's academic performance, they are forced to pay a physical visit to the school, which is time-consuming and therefore, most parents opt out of such visits.

Thus, the education system in Zanzibar is in immediate need of an Education Management Information System (EMIS) capable of tracking and managing students' performance. This requirement has been identified by the Ministry of Education and Vocational Training in Zanzibar as an essential tool for enhancing parental involvement in monitoring and tracking student's academic progress as a vital step in the ongoing digital transformation of the Revolutionary Government of Zanzibar intended to improve the delivery of quality education for sustainable development.

2.1.6 Health Information Management

Implementing Health Management Information (HMIS) is crucial for strengthening Zanzibar's healthcare system. The main problem facing the healthcare system in Zanzibar is

collecting and managing healthcare data, especially in referral hospitals, due to the lack of standards in reporting from the wards and clinics. Some essential indicators for senior hospital management and decision-makers on pertinent issues, such as average length of stay in the hospital, bed occupancy rate, and death rate, were lacking.

Implementing the electronic logistics management information system (eLMIS) in Zanzibar improved, to some degree, data visibility and the quality of data collected. The electronic logistics management information system (eLMIS) was purpose-built to manage the medical supply chain more efficiently. eLMIS is integrated with the Central Medical Stores (CMS) – a key player in the healthcare supply chain in Zanzibar – allowing health facilities to place orders for medical supplies electronically, thereby saving valuable in comparison with manual processing of orders.

The rapid growth in population in Zanzibar is a serious threat to the management of land resources. According to the 2022 census, Zanzibar's population is approximately 1,900,000, with an annual growth rate of 4.1%. Over 30 percent of the population lives in urban areas, and Zanzibar is one of the most densely populated countries south of the Sahara.

Due to the high unemployment, the people of Zanzibar are forced to employ themselves through natural resources, including government-owned land, resulting in unplanned urbanization – which refers to the progressive spread of disconnected, unplanned, and carelessly scattered towns and cities in the isles without consideration for sustainability. The burden of unplanned urbanization rests squarely on the shoulders of the government. Zanzibar requires well-planned urban management.

The land registration process in Zanzibar currently needs to be simplified and more organized. Consequently, much of Zanzibar's land and property taxes must

2.1.7 Land Management

be assessed or collected. The government's tax revenues are expected to increase significantly if the current manual land and property tax system is modernized and automated through digitization.

Therefore, Zanzibar requires a modern GIS-based cadastral land-use mapping system designed to contain spatially referenced land-related data. A current GIS-based Zanzibar Land Administration System (ZLAS) is vital for a well-functioning Government in terms of land ownership management and secure tenure. ZLAS can also collect information for property adjudication and other property-related activities, such as use, occupancy, and availability of utilities, and an integrated system for managing cadastral data, including collecting geographic and non- geographic data.

Good land governance is a catalyst for economic growth and sustainable development. From a revenue collection point of view, this catalyst would support Zanzibar's land and property tax system, which is essential for

efficiently running a modern Government. Policymakers can use ZLAIS as a decision-making tool that creates, visualizes, analyzes, reports, and publishes land-based data such as parcel information, zoning, land use, ownership, and general property information.

2.1.8 Electronic Procurement



Any discussion on digital transformation in Government invariably leads to procurement reform involving process improvement and re-engineering, considering the significant budget the government of Zanzibar spends on procurement. The primary objective of procurement regulations is to encourage open competition and prevent improper influence.

The Zanzibar Public Procurement and Disposal of Public Assets Authority (ZPPDA), vested with oversight powers and responsibilities to regulate all public procurement and disposal activities carried out by all public institutions in

Zanzibar, has introduced an Electronic Procurement Zanzibar (eProZ) system effective July 2022. All Government offices have been instructed to start using the system.

This modern e-Procurement system uses process automation to alleviate the challenges associated with manual procurement processes, including human errors and fraud. For example, instead of manually preparing purchase orders or invoices, they can be generated automatically by eliminating unnecessary delays associated with manual processes. Similarly, and more importantly, the e-Procurement system can be configured to enforce departmental budget limits to prevent over-budget purchases automatically.

To successfully operationalize this new system, the Zanzibar Public Procurement and Disposal of Public Authority (ZPPDA) must ensure that staff from all Zanzibar public institutions are trained on using the e-Procurement system. E-procurement training should be organized for management & procurement officers in the public sector, which is an effective and efficient way of improving

procurement while saving taxpayers money and reducing procurement fraud.

2.1.9 Comprehensive Government Services Directory

The successful integration of Government business processes requires these processes to be fully documented before re-engineering for automation. However, it has been determined through a Feasibility Study report on Huduma Pamoja prepared by the President's Office

of Public Service Management and Good Governance (PO-PSMGG) that most Government business processes are not adequately documented. Therefore, there is a need for the process documentation gap first to be addressed before the successful backend integration of RGoZ service delivery platforms and business process automation through re-engineering can be attempted.

Accordingly, it is recommended that a comprehensive, authoritative Zanzibar Government Service Directory (ZGSD)

be established in which all business processes associated with providing Government services are fully documented. Identification of government services that should be given priority for integration and automation will be based on their completeness in the unified Government Services Directory (GSD). This is a crucial first step towards integrating, harmonizing, and envisaged improvements in delivering public services.

2.1.10 Convergence of Births and Identity Registration

The Zanzibar Births and Deaths Registrar and the Zanzibar-ID department systems have been merged to create a robust identity management system with a unified ID number assigned to Zanzibaris from the cradle to the grave.

The issuance of a unique identification number from birth to death enables the support of interoperability across government systems, which is now virtually impossible owing to the absence of a unique identity number. Interoperability simplifies the fight against organized crime and identity

theft for law enforcement authorities.

2.1.11 Workplace Diversity and Inclusion

Despite the rapid growth of ICT services in the public sector, the representation of women and persons with disabilities in the digital workplace is still pegged at about 30%. The Government of Tanzania – and by extension, the RGoZ – has demonstrated commitment to diversity and inclusion through the enactment of the Persons with Disabilities Act of 2010 in addition to being a signatory to the United Nations Convention on the Rights of Persons with Disabilities (CRPD),

Diversity, defined as the representation of a particular group in the workplace, while inclusion refers to how well the perspectives of these groups are valued and integrated into the workplace, is crucial in transforming the Zanzibar public sector workforce. The aim is to ensure that underprivileged groups and individuals benefit from technological advancements to enhance their daily lives. Thus, everyone would feel equally involved and supported in a diverse and

inclusive digital workplace.

Current employment trends in the Government show that women are gaining ground but still facing challenges. Known issues that women and persons with disabilities face include recruitment, retention, compensation, and promotion. As we advance, the RGoZ needs to put more effort into improving these diversity and inclusion numbers through targeted recruitment and training programmes.

2.2 Enabling Digital Technologies

Digital transformation in the public sector has opened up opportunities for the RGoZ to develop innovative solutions for service delivery and shared value creation. The Government is increasingly targeting emerging ICT technologies to reform service delivery in the public sector to accomplish better planning and utilization of Government resources consistent with evolving demands from citizens and businesses; an example is the introduction of e-Procurement.

Additionally, these emerging solutions are strategically being introduced to

improve internal and external collaboration through technology-enabled Government service platforms. Emerging technologies have recently been embraced or are currently under development, presenting a “positive” disruption to the government’s current operational model.

Emerging strategic digital technologies that have the most significant potential of further transforming the public sector as Zanzibar embraces the digital economy are:

- Artificial Intelligence and Machine Learning
- Blockchain
- Robotic Process Automation
- Autonomous Drones
- 5G Wireless

2.2.1 Artificial Intelligence and Machine Learning

Artificial intelligence allows machines to replicate the capabilities of the human mind. Artificial intelligence and its related fields, including deep learning, have many applications. They represent what has been dubbed the “forthcoming AI revolution.”

Machine learning is an application of artificial intelligence concerned with using statistical techniques to facilitate computers in learning how to perform tasks and improving their performance at those tasks without specific programming.

These technological innovations are still new to not only Zanzibar, but many other developing economies. Luckily, though, the existing legal and institutional framework as enforced by the ongoing transformations is capable of adapting these technologies.

Deep learning is a more advanced form of machine learning that can be used in applications ranging from classifying objects in images and assisting healthcare professionals with diagnosis through medical image analysis.

AI and deep learning have been identified as cutting-edge technologies that the RGoZ can use to defend against sophisticated cyber-attack forms. Also, Powerful machine learning and deep learning algorithms can be used in Predictive Traffic Congestion to

address internet traffic congestion problems that systems like ZanMalipo data centers frequently face due to the large number of transactions submitted.

2.2.2 Blockchain

Blockchain is a digital mechanism for creating a distributed digital ledger in which two or more participants in a peer-to-peer network can exchange information and assets directly in a network not controlled by a single central authority. The content of the transactions is validated through a consensus mechanism verified and secured through advanced cryptography.

Blockchain is used globally by many governments to improve the quality of their public services and processes, making them more efficient, transparent, dependable, and traceable.

Transaction records are chronologically organized and packaged in blocks and cryptographically linked, making them unmodifiable for integrity.

Specific use cases for Blockchain technology in the public sector include Digital Identity Systems, eProcurement, Land Registration, Public Health Vaccination, Tax Records, Education Records, Supply Chain Systems, Self-executing contracts, etc.

2.2.3 Robotic Process Automation (RPA)

Robotic process automation (RPA) is a type of business process automation that enables anyone to define a set of instructions for a robot or 'bot' to carry out. RPA bots can emulate most human-computer interactions to conduct many error-free operations at high volume and speed.

RPA automates routine processes that once required human intervention, most of which were frequently repetitive and time-consuming. Also, this is precisely how RPA promises to boost organizational efficiency. The key motivation for deploying RPA in the government sector is the opportunity to save work hours by automating laborious, time-consuming activities. Government institutions can leverage

RPA for the following activities:

- **Data digitization:** The conversion of physical paper documents into digital or electronic document help governments automate internal business processes.
- **Data migration:** RPA can transfer data among legacy systems and institutional platforms. Bots can be used to check for duplicates and delete data that are deemed unnecessary.
- **Processing of applications and forms:** Citizens fill out various forms and applications on government online portals to access multiple services. RPA bots may extract vital information from these forms and applications, validate the application, validate personal information, and approve and route them to various agencies for further action.
- **Healthcare management:** During epidemics and pandemics, RPA can be integrated into healthcare systems to manage public records of healthcare and vaccination information.

- **Data security:** Government employees process sensitive data, including Bank Account Numbers, Tax Identification Numbers, VAT Registration Numbers, Health Insurance Numbers, Payment Information, etc. Handling sensitive data by employees can result in various privacy and security breaches, including purposeful data theft and inadvertent information exposure. By eliminating the human element from the equation when processing sensitive information, RPA may be an invaluable tool in safeguarding data and mitigating risks.

2.2.4 Autonomous Drones

Uncrewed Aerial Vehicles (UAV), or drones, can be used cost-effectively to monitor and combat illegal, unregulated, and unreported (IUU) fishing activities in Zanzibar's Exclusive Economic Zone. Today, when local fishermen report illicit fishing activities, enforcement agencies frequently can't react quickly enough before offenders flee across the EEZ boundary.

Autonomous drones equipped with various types of surveillance and manage the navigation and movement of drones using GPS tracking, computer vision, and machine learning algorithms. Drones fundamentally serve to expand the capacity of patrol boats to document illicit fishing activities and alert the authorities about suspicious vessels in the EEZ.

2.2.5 5G Wireless

5G, the 5th generation mobile network, is a new global wireless standard after 4G. 5G enables a new kind of network designed to connect virtually everyone, including machines, objects, and devices.

With supercharged wireless up to 10 to 20 GBPS and low latency, 5G will revolutionize the mobile experience and is often compared with a wirelessly accessed fiber-optic Internet connection. Candidate applications for 5G include the Internet of Things, Fleet Management, high-definition medical imaging, autonomous driving, augmented reality, and virtual reality.

Vodacom Tanzania, one of the largest providers of Internet services in Tanzania, has launched a 5G service in Tanzania and plans to deploy 5G to over 200 sites in Tanzania mainland and Zanzibar awaiting Government institutions, entrepreneurs, businesses, and innovators to tap into this 5G network to accelerate digital transformation and fuel economic growth.

E-Health, Water Management, and Agriculture are potentially early beneficiaries of 5G technology. In the case of e-Health, 5G is an enabler of remotely assisted surgery needed due to the shortage of specialists in many Zanzibar hospitals. 5G would allow local surgeons to perform procedures with the assistance of remote specialists. In water management and agriculture, 5G holds the key to innovative water management and intelligent agriculture systems supporting the sensors with wireless connectivity in farming to minimize the use of water and fertilizers through the more targeted application.

Situation analysis for the Zanzibar Digital Government Strategy critically evaluates the internal and external conditions that affect the operations of the RGoZ conducted before developing the new digital strategy. It is the first step in strategic planning for any new initiative. It involves thoroughly assessing what is known (i.e., the current situation) based on a desk review of available literature and reports and other input from stakeholders, such as policy documents and enacted legislation.

Situation analysis seeks to identify current digitalization prospects and opportunities for the Government to help develop a forward-looking strategy to move from the current situation to the desired position. It helps to define the nature and scope of the digital system and identify the everyday activities to overcome the challenges. First, the policy and enabling legislative environment are presented, followed by an in-depth analysis of significant initiatives undertaken by the Government of Zanzibar.

Situational analysis discussion about

2.3 Strategic Assessment

digital transformation in Zanzibar covers the following focus areas:

1. Digital Government
2. Digital Tanzania Programme
3. Zanzibar National Data Center
4. National Broadband Fiber Backbone
5. Zanzibar Submarine Cable System Gateway
6. Zanzibar Government VPN
7. Government Internet Service Provider
8. Zanzibar Government USSD-SMS Gateway
9. Integration of Service Delivery Platforms
10. Zanzibar Government Services Portal
11. Zanzibar Digital Special Economic Zone
12. ICT Integration into Zanzibar Education
13. Policy, Regulatory and Institutional Framework

2.3.1 Digital Government CURRENT STATUS

Digital technology has transformed how governments manage daily operations and delivery of services to

various stakeholders, including citizens and businesses. The concept of digital government represents a fundamental shift in how governments leverage information technologies in transformative ways to enact evidence-based policies to strengthen public service delivery while improving transparency and accountability in the emerging digital economy. Digital government is designed and operated to use digital data and technology to create, optimize and transform digital government services.

While e-Government focuses only on the essential information and communication technologies, the government utilizes to achieve its goals, Digital Government refers to the comprehensive digital ecosystem that includes initiatives and structures set up by the government to address the requirements and demands of its citizens. It enables the government to be more efficient, responsive to citizen input and needs, transparent and responsible, and quick to act and adapt.

With the appropriate data and “last mile” connection efforts, government

services can be better targeted and extended to underprivileged and rural populations.

Zanzibar Government Digital Strategy will fully embrace an adaptive service paradigm to allow government systems to seamlessly evolve to real-time based on situational changes by leveraging the latest and most advanced automation technologies, such as Artificial Intelligence (AI), Machine Learning (ML), and Robotic Process Automation (RPA), powered by big data analytics.

OPPORTUNITIES

Government digitalization can improve revenue collection, particularly in personal income tax and VAT areas, by enhancing tax administration and compliance through information sharing.

Digital government enables tax collecting agencies, such as ZRA, to access vast amounts of real-time information, including information from other government agencies, online sources, and private sector entities, such as commercial bank transactions.

Access to such information is facilitated by the expanding usage of digital reporting systems, standardized electronic interoperability interfaces (APIs), and enhanced analytical tools, such as the increasing use of artificial intelligence and machine learning.

Improved access to digital data on time strengthens the ZRA's ability to enhance voluntary tax compliance and enforcement by providing more opportunities to verify the information necessary to compute tax liability for individual taxpayers and businesses. This, in turn, strengthens the ZRA's ability to enhance tax compliance overall.

CHALLENGES

Governance is a vital driver for the successful implementation of digitalization in the government, and it is critical to the accomplishment of any digital transformation strategy. As a result, it is essential to establish a central entity and structure with oversight responsibility for government digitalization in Zanzibar. This entity should provide strategic direction and leadership in developing and managing all digital government

initiatives. As the RGoZ embarks on its digital transformation journey, it is recommended that a central government digitalization coordination team be formed to help the programme get off the ground.

Other obstacles to the successful implementation of the Zanzibar Government Digital Strategy include:

- **Limited Implementation Budget:** The budgetary space for funding significant IT investments in Zanzibar is severely limited. Extra effort is required to identify additional funding sources and secure adequate funding for implementing digital government projects.
- **Lack of an Integrated Digital Infrastructure:** Digital infrastructure represents the digital technologies that provide the foundation for the Zanzibar Government's information systems and operations. Examples of digital infrastructure include Broadband internet backbone, National data centers, Government VPN, Government Mobile Services Gateway, and Cloud Computing. Integrating these digital
- infrastructures is considered critical to the Zanzibar Digital Government Strategy.
- **Digital Skills Gap:** Digital transformation cannot succeed without workforce transformation. Digital skills required for the successful digitalization of include the design, implementation, and maintenance of digital systems as well as software development, software customization, cybersecurity, machine-learning programming, etc.; meeting the skills requirements requires significant investments in the training of government employees and therefore the cost of such activity should be adequately factored in specific digitalization projects.
- **Laws and Regulations:** Government digitalization must be supported by identifying and enacting the legal and regulatory changes needed to support the digitalization process. This includes, for example, the need to share information among various government entities on a need basis supported by a robust cybersecurity

framework.

2.3.2 Digital Tanzania Programme CURRENT STATUS

Digital Tanzania Programme (DTP) is a World Bank (WB)-a funded initiative aiming to boost businesses' and citizens' access to internet services. The objective is to strengthen the capacity of the governments of Tanzania and Zanzibar to deliver high-government quality digital services.

DTP is a new project in Tanzania Mainland and Zanzibar currently in the planning and implementation stages. The Digital Tanzania Programme covers three main areas:

- a) Digital Ecosystem: This component seeks to create an enabling digital environment aiming to focus on factors such as ICT Policy, Regulatory and Fiscal Reforms; Government ICT cadre training programmes, Citizen Digital Literacy; as well as Cybersecurity and Privacy Protection
- b) Digital Connectivity: This component addresses the issue of

Connected Government and the development and extension of national fiber-optic broadband infrastructure to rural areas in support of digital inclusion.

- c) Digital Government Platforms and Services: This component will be accomplished by deploying one-stop service centers across Unguja and Pemba islands and establishing the core ICT infrastructure, including a modern Data Center in Zanzibar that is required to support the efficient delivery of digital public services.

Lack of a Zanzibar Digital Government Policy (ZDGP) that articulates a much broader and forward-looking vision for the digital transformation of Zanzibar in alignment with the other national policies, including the Zanzibar Development Vision 2050.

OPPORTUNITIES

The Digital Tanzania Programme is an opportunity for the Government of Zanzibar to introduce Huduma Pamoja Service Centers in Zanzibar to speed up the delivery of Government services by

eliminating service delivery silos and unnecessary bureaucracy. Among the concepts emerging from the DTP are the following:

> Huduma Pamoja Backend

Service Integration:

The key concept that underpins the Huduma Pamoja service model is the backend integration of government business processes among institutional service delivery platforms to ensure the seamless delivery of government services. From the customer's perspective, seamless service delivery implies that the service is accessible from any location, at any time, and through any device. It also translates into a connected and coordinated service delivery model that provides an end-to-end digital experience through a Government Process Integration Platform.

Full integration of business processes across administrative boundaries implies total integration of government systems and services across Government MDAs. A unique

Zanzibar Government Enterprise Service Bus should be developed and deployed to support the integration of business processes in Zanzibar.

> Unified Government

Services Directory:

A Unified Government Services Directory is a unified and authoritative repository of various services offered by the various institutions of the Government of Zanzibar. It adequately represents a detailed description of the As-Is processes currently implemented before making changes for automation improvement through business process re-engineering.

CHALLENGES

While the Digital Tanzania Programme is fully funded by the World Bank, harmonizing the programme between Tanzania Mainland and Zanzibar presents a disconnect due to the unique position of Zanzibar in the Union. More specifically, the primary service platforms required to support service integration implemented in Tanzania

Mainland will not be able to help equivalent services in Zanzibar; therefore, customized solutions must be developed for Zanzibar.

Among the service platforms and systems that need unique customization for Zanzibar are:

- Huduma Pamoja Backend Integration Hub
- Process Workflow Management System
- Backend Service Management and Control System
- Integrated Huduma Pamoja Payment Platform
- Unified Government Service Directory
- Huduma Pamoja Call Center Thus, the budget for the DTP should be reallocated between Tanzania Mainland and Zanzibar to ensure the programme is adequately supported in Zanzibar.

2.3.3 Zanzibar National Data Centre

CURRENT STATUS

Zanzibar currently lacks a modern Tier 3+

data center with an associated disaster recovery site that can be used to host critical government service delivery platforms. The main advantage of a government data center is that it provides complete control over how sensitive client data is captured and where such data is securely stored. It also implies the need for security-cleared and highly trained, dedicated in-house IT personnel to manage the data center equipment and perform upgrades and maintenance regularly.

Data center facilities rely on backup facilities or disaster recovery sites to back crucial data and applications to ensure that services will be largely uninterrupted.

OPPORTUNITIES

Implementing a Tier 3+ data center infrastructure would allow the RGoZ to host various institutional service delivery platforms at a central location supported by Cloud Computing technology.

Data Center based resource concentration promotes the optimal use of digital assets to ensure effectiveness, eliminates duplication, and maximizes

value for money due to economies of scale. Furthermore, it enhances collaboration among government institutions and facilitates the integration of Government services and business processes in an increasingly complex

IT environment. Concentrating IT resources in data centers [in the cloud] enables government agencies to run services more effectively and scale gracefully as their requirements change. It also decreases operational expenses. Strategic opportunities identified to remedy the data center situation include:

- Implementation of Zanzibar National Data Center (ZNDC) support central hosting of government service provider institutions, including Cloud Computing. The aim is to deliver computing services such as servers, storage, databases, networking, analytics, and business intelligence to government institutions over the internet (the cloud). The aim is to keep up with technology innovations and allow clients to pay only for cloud services used to

reduce operating costs.

- Implementation of an institutional backend integration platform (ESB) to support the seamless integration of legacy applications supported on various institutional service delivery platforms. Many legacy systems managed and operated by Zanzibar Government institutions such as Zanzibar Revenue Board (ZRA), Zanzibar Civil Status Registration Agency (ZCSRA), Zanzibar Business and Property Registration Agency (ZBPRA), National Identification Authority (NIDA), etc., cannot be ripped out and replaced with new systems as part of the digital transformation program for a variety of reasons, including risk. Replacement of such systems must be gradual and evolutionary, and ESB integration is the preferred approach.
- Ensuring that all critical service delivery systems are gradually migrated to the new Zanzibar National Data Center cloud computing infrastructure to reduce expenses associated with

upgrading legacy systems. Cloud computing has other benefits, such as enhancing responsiveness by ensuring government systems can automatically adjust to service demand during peak periods.

- Establishing a Data Center-based Government Services Performance Monitoring System to collect health and performance data from various Government service delivery platforms and systems, such as servers, virtual machines, containers, databases, and other backend components. Infrastructure monitoring enables monitoring essential performance parameters for data center systems, such as servers, load balancers, routers, and switches, to keep track of and minimize any failures.

biggest hurdles in the effective execution of the Digital Government Strategy.

Other challenges include:

- Limited engagement of stakeholders necessary for cross-functional interaction and coordination among government institutions
- Inadequate cooperation among RGoZ institutions due to the existence of silos in government whereby government departments become more insular and distrustful, making it increasingly difficult for MDAs to work together.
- Inadequate IT skills to oversee the implementation and operation of advanced ICT systems.

CHALLENGES

The main challenge for the proposed projects is financial. The need for more funding for implementing a Zanzibar National Data Center is one of the

2.3.4 National Broadband Fiber Backbone CURRENT STATUS

The National Broadband Fiber Backbone represents the internet's core: high-speed fiber-optic links connecting high-performance routers for transporting internet traffic. Zanzibar ICT Infrastructure Agency (ZICTIA) is a

Government Agency responsible for implementing and managing the National Fiber backbone in Zanzibar. ZICTIA has established fiber-based Point-of-Presence across most administrative regions in Unguja and Pemba to provide broadband connectivity among public and private institutions.

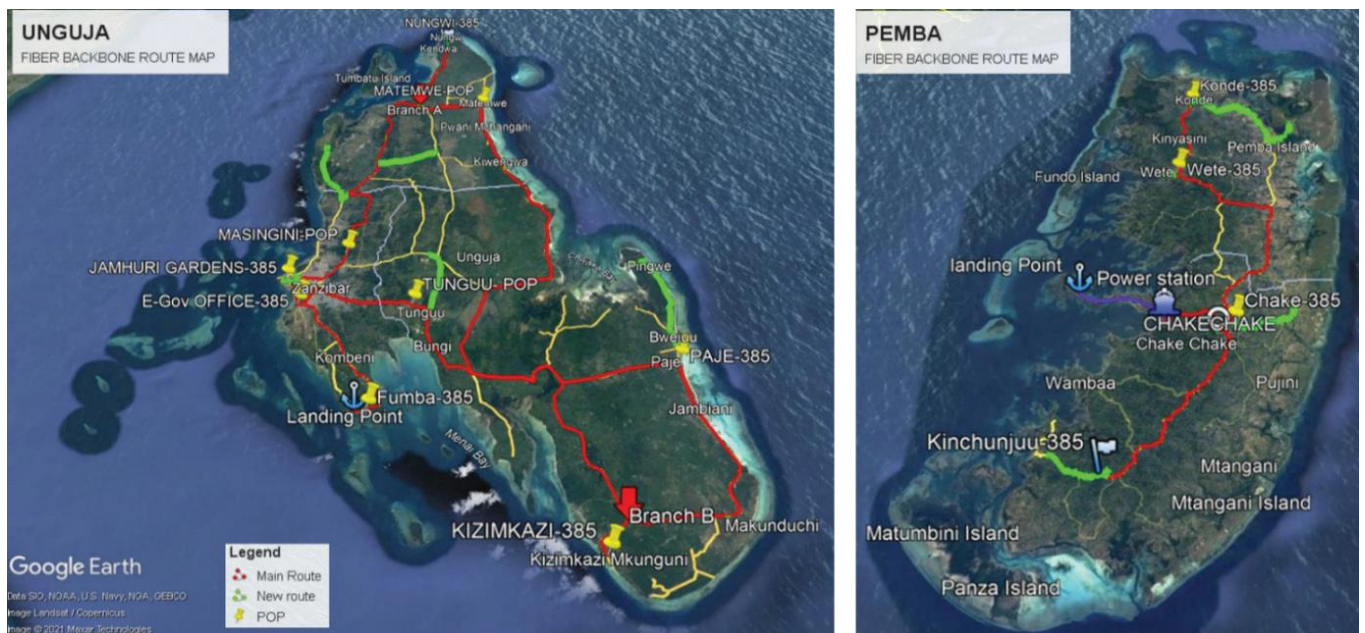


Figure 1: Fiber Connectivity Infrastructure Routes in Unguja and Pemba

The fiber backbone is also connected to the mainland's National ICT Broadband Backbone through high-speed undersea fiber-optic links from Pemba to Tanga and from Zanzibar to Dar es Salaam where access to the global internet is provided through the international submarine cable systems.

Full redundancy for the national fiber backbone is a severe threat to the nation

as more and more of the economy and the livelihood of Zanzibaris depend on the internet. If the fiber-optic cable is accidentally severed or damaged, the backbone network could be out of service for an extended period until repairs can be performed. Meanwhile, internet services and all the government services that depend on the fiber-optic backbone infrastructure will be disrupted.

OPPORTUNITIES

Zanzibar's fiber-optic connectivity backbone was completed several years ago and is presently experiencing traffic congestion owing to the exponential growth of domestic and international internet traffic. Traffic congestion can be attributed to the installed networking equipment and other hardware, not the physical fiber-optic.

The collection of Government revenues is also inextricably linked to the performance of ZanMalipo. This revenue collection system generates payment control numbers to ensure that all government payments are collected electronically in near real-time to ensure traceability and eliminate revenue leakages. Extending the digital fiber backbone to remote areas would expand online services to Zanzibaris in rural areas, who currently need to be connected to reduce the digital gap.

CHALLENGES

The main challenge for the proposed projects is financial. Implementing a fiber backbone covering all Unguja and

Pemba islands is costly. Therefore, insufficient financial resources to construct this crucial ICT infrastructure is a considerable obstacle to successfully implementing Zanzibar's digital government agenda.

Other challenges include:

- Lack of a comprehensive study and analysis of the actual performance bottlenecks in the existing fiber backbone before corrective action can be taken to address the problem
- Inadequate skills and knowledge deficit on the latest ICT technologies for the personnel entrusted to oversee the implementation and operation of advanced ICT infrastructure

2.3.5 Zanzibar Submarine Cable System Gateway

CURRENT STATUS

Submarine cables provide over 95% of international telecommunications, which form the “backbone” of the Internet. Tanzania is connected to four major fiber-optic submarine cables

system, namely:

- SEACOM Cable System
- Eastern African Submarine Cable System
- 2 Africa Submarine Cable System
- Seychelles East Africa System

All four international submarine cable systems land in Dar es Salaam; SEACOM and ESSAY provide international bandwidth to Internet users in Tanzania. SEAS connects Seychelles to Tanzania to gain access to international bandwidth through EASSy. 2Africa is a recently announced submarine cable connecting Africa, Asia, and Europe. The 2Africa consortium comprises China Mobile International, Facebook, Djibouti Telecom, MTN GlobalConnect, Orange, Saudi Telecom Company (STC), Telecom Egypt, Vodafone, and WIOCC.

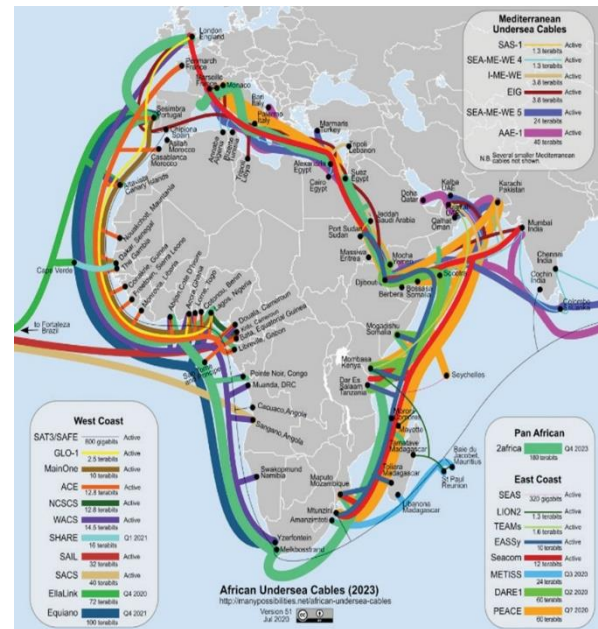


Figure 2: International Submarine Cable Systems in Africa

OPPORTUNITIES

The foremost opportunity presented by the existence of several International submarine cable systems to carry internet traffic is implementing a submarine cable system gateway fully managed and operated by the RGoZ, specifically by the ZeGA.

The objective is for ZeGA to have complete control over domestic internet traffic via the Zanzibar Government Network (ZAGONet) and international internet traffic via the Zanzibar submarine cable system

gateway.

Other opportunities related to the submarine cable system gateway include implementing a Zanzibar Internet eXchange Point (ZIXP) to reduce internet costs by keeping Zanzibar internet traffic local to eliminate traffic congestion on the fiber-optic link to TIX in the mainland.

CHALLENGES

The main challenge for the proposed implementation of the Zanzibar submarine cable system gateway is the availability of financial resources, which would be a considerable obstacle to achieving the digital government agenda.

Other challenges include:

- Lack of a comprehensive study and analysis of the existing submarine cable system performance to identify the significant traffic bottlenecks before corrective action can be taken to address the problem
- Inadequate local skills and expertise in the latest ICT technologies for the personnel entrusted to oversee international

submarine cable service implementation and operation.

2.3.6 Zanzibar Government VPN CURRENT STATUS

The responsiveness of public services offered by various institutions dramatically depends on the fiber-based ICT infrastructure connecting government institutions to the global internet.

Zanzibar currently needs to manage or operate its virtual private network or Zanzibar Government Network (ZAGONet); however, most government institutions are directly connected to the national fiber-optic broadband backbone ZICTIA works to support the delivery of public.

The last mile connection to the fiber-optic backbone is a mishmash of unstandardized connectivity solutions that are neither planned nor continually monitored for performance.

Therefore, when government entities report an internet performance issue, it is difficult to investigate and establish the

source of the problem, much less devise a solution in a fair amount of time.

of the government virtual private network (ZAGONet).

OPPORTUNITIES

Implementing a formally operated and managed Zanzibar Government Network (ZAGONet) to promote the exchange of data and information at high data rates among government institutions is a digital government imperative. A Zanzibar Government Network (ZAGONet) is a secure and reliable virtual private network for exchanging data securely among government ministries, departments, and agencies (MDAs). Affordable Internet connectivity and last-mile access costs are fundamental factors that determine Internet usage by government employees and the public in general.

The recommended institution to manage ZAGONet is ZICTIA. Managing the government virtual private network in Tanzania Mainland, the eGovernment Authority (eGA) has proven quite effective. Therefore a similar model is recommended for Zanzibar, where the ZICTIA shall assume responsibility for the central management and maintenance

CHALLENGES

The availability of the requisite financial resources is the primary challenge that must be overcome to successfully deploy the Zanzibar Government Virtual Private Network (ZAGONet). The inability to operate ZAGONet because of a lack of requisite skills is another challenge that has to be addressed through training and capacity development which requires long-term planning.

2.3.7 Government Internet Service Provider

CURRENT STATUS

Internet Service Providers (ISPs) are at the front line of a nation's cyber-defense and therefore shoulder more responsibility for protecting national security. Internet insecurity is a national security issue for Zanzibar and every other country. Thus, internet service for the government should not be offloaded entirely to profit-driven organizations like Mobile Network Operators.

Affordable internet access is essential for the government, schools, hospitals, and the public as all institutions of the RGoZ embrace the digital economy. The RGoZ lacks a high-performance Government ISP (GISP) connected directly to an international fiber-optic submarine cable system to offer affordable internet services to government institutions. This is commonly regarded to be the primary reason for most of the reported poor Internet performance experienced by the vast majority of Zanzibar's government entities.

OPPORTUNITIES

The fact that the government of Zanzibar will at some point operate its virtual private network (ZAGONet) and its own Zanzibar National

Data Center (ZNDC) requires the government to address Zanzibar's national security risks and vulnerabilities in terms of cyber-defense, by introducing a government operated Government Internet service provider (GISP) to fill the gap in the end-to-end internet service provisioning ecosystem. The recommended institution to manage GISP is the new ZeGA (Zanzibar

eGovernment Authority). ZeGA shall be dedicated to providing broadband internet service to all government institutions

CHALLENGES

The main obstacle in implementing the Zanzibar Government Internet Service Provider is the availability of the necessary financial resources. Lack of the required skills to operate the Government ISP is also a challenge that may take some time to address through capacity building and training.

2.3.8 Zanzibar USSD-SMS

Mobile Gateway

CURRENT STATUS

The Government of Zanzibar has not implemented a Government Mobile Service Gateway, which enables the delivery of public services over mobile devices through various mobile-based channels, such as SMS, USSD, IVRS, and mobile applications. A mobile service delivery gateway can be leveraged to improve Government revenue collection and provide access to other public services.

OPPORTUNITIES

The Government of Zanzibar must proactively ensure that all its citizens, businesses, and government institutions are digitally equipped to deliver innovative digital services to the masses to support the rapidly expanding digital economy. Implementing critical digital services is essential to promote the delivery of e-Services to the groups while bridging the digital gap between rural and urban Zanzibar communities.

The limitation of location-based services entrenched in conventional government services delivery models could be eliminated by introducing the government Mobile Service Delivery Platform (MSDP) to empower and facilitate public services accessible to individuals and businesses. Services that can be offered through the MSDP include both Short Message Service (SMS) and Unstructured Supplementary Service Data (USSD) services. These services shall be provided over major Mobile Network Operators (MNOs), namely Vodacom, Airtel, Tigo, Halotel, TTCL, and Zantel.

Short Message Service (SMS) is the popular mobile texting service that allows the exchange of plain text messages of up to 160 characters, primarily between mobile devices. SMS is a store and forward technology, meaning SMS content remains stored in the mobile subscriber's phone memory for later viewing or deletion.

Unstructured Supplementary Services Data (USSD) is a session-based service in which a user interacts with menu functions of the specific public institution which operates with the mobile platform. With USSD, users interact directly from their mobile phones by selecting a menu. The user is expected to respond to USSD in a limited time window; otherwise, the service timeouts. USSD is based on the Global System for Mobile Communications (GSM) standard.

CHALLENGES

The availability of the requisite financial resources is the most significant barrier and threat that could derail the implementation of the USSD-SMS mobile gateway in Zanzibar. For the successful deployment of the service, improving

the skills of employees responsible for administering and operating the Government Mobile Services Gateway through capacity building will also be essential.

2.3.9 Integration of Service Delivery Platforms

CURRENT STATUS

Existing Zanzibar Government systems, also known as legacy systems, are based on old and outdated technologies which do not interoperate, which makes it virtually impossible to automate business processes to allow government institutions to cooperate and coordinate in the delivery of services requested by a citizen or a business. These legacy systems with outdated software and hardware are still in use and, in one way or another, can still meet the needs for which they were initially designed.

Exorbitant maintenance expenses, departmental silos that restrict data

exchange across government systems, poor security, and a lack of compliance with governmental regulations are some of the problems linked with unintegrated legacy systems.

Platform integration allows diverse government service delivery platforms, both legacy and new platforms, to interoperate seamlessly at the service and process level –sharing data, functions, and features. At the core of the integration architecture are the following enabling systems that need to be developed and customized specifically for Zanzibar:

- ESB Integration Hub
- Unified Government Service Directory
- Process Workflow Automation Engine
- Integrated Huduma Pamoja Payment Platform
- Government Services Portal
- Service Control and Management System

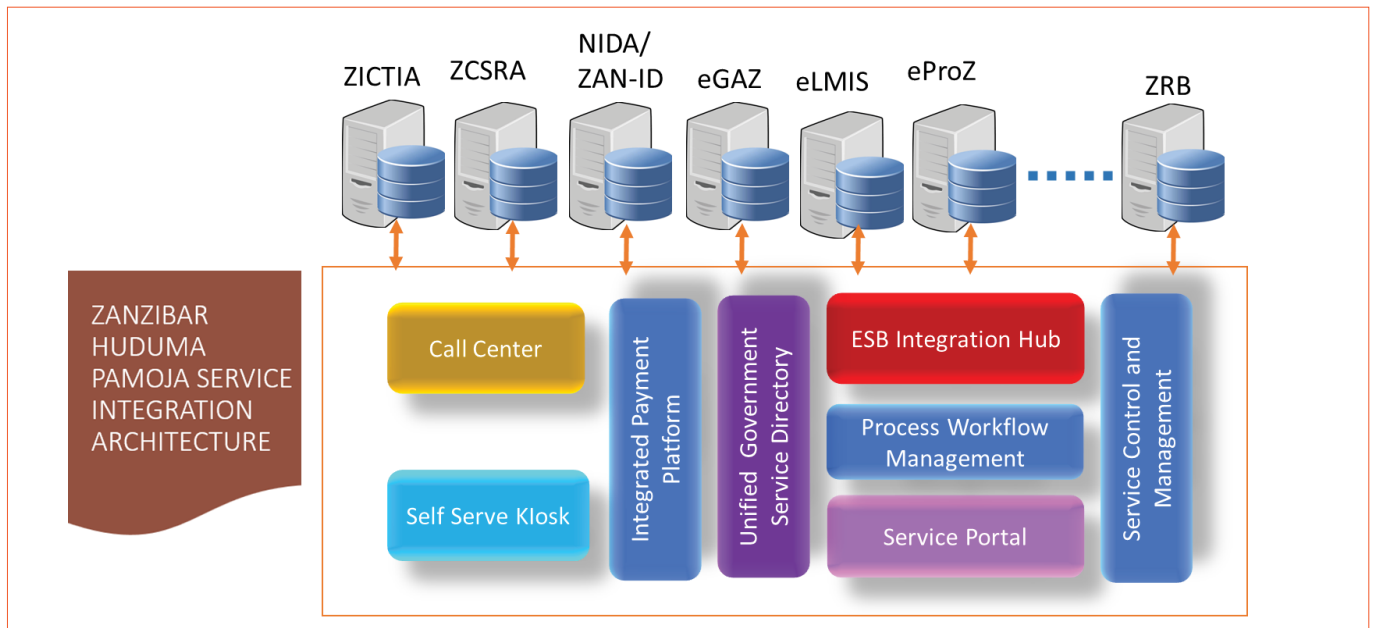


Figure 3: Zanzibar Huduma Pamoja Service Integration Architecture

OPPORTUNITIES

Service delivery platforms in Zanzibar are based on outdated technologies and must use the latest advanced technologies, such as Artificial Intelligence (AI), Machine Learning, Deep Learning, Distributed Ledger or Blockchain, and Robotics Process Automation (RPA). If correctly leveraged, these technologies can eliminate redundant, error-prone data from manual data entry, time wasted searching for data from the unsynchronized source, and slow service delivery due to unautomated and

inefficient workflows.

Soloed legacy systems need to be integrated to improve efficiency and effectiveness in the delivery of services and enhance employee productivity. These inefficiencies can be eliminated by introducing new technologies such as Enterprise Service Bus (ESB) to eliminate error-prone data and slow service delivery due to unautomated and inefficient workflows by creating effective service delivery models and standardizing business processes.

CHALLENGES

Among the challenges and risks associated with legacy systems, integrations are the following:

- Legacy systems lack comprehensive documentation for legacy systems, making the integration process complex and challenging.
- Legacy systems are represented by monolithic architectures, meaning their components are blended rather than modular, making the integration function complex and significantly more difficult.
- Legacy systems are vulnerable to security threats, so the integration process must also have risk exposure to security threats.
- Legacy systems are based on legacy programming languages, and many developers lack the necessary IT skills to integrate them.

Other challenges include:

- Lack of funding to upgrade the legacy systems and develop standard APIs for backend system integration.

- Existence of an outdated and restrictive legal framework that does not recognize the need for integrated systems and departments to cooperate in delivering public services.

2.3.10 Zanzibar Government Services Portal

CURRENT STATUS

Most RGoZ institutions have websites, although the vast majority either need to be completed or are easier to access. Additionally, the information is seldom updated; as a result, in most instances, the information is out of date and inaccurate.

OPPORTUNITIES

Zanzibar Government Portal (ZGP) needs to be implemented as an official one-stop and single window dissemination point of government information and services provided by the RGoZ to the citizens, non-citizens, and businesses. The government portal is essential because most citizens would instead go online and look for

information rather than pick up the phone or physically call visit a government office to get the information they need. This makes it crucial to not only have a wealth of information available online but to make it easily accessible.

The Zanzibar Government Portal shall provide comprehensive and reliable information about the RGoZ, focusing primarily on services provided to the general public and businesses. Two types of services have been identified for support at the web portal: informational services and transactional services.

Informational services:

- Informational services refer to providing processed or published information on specific topics to the general public as part of a system that collects data from various government sources for dissemination to the general public. The information provided is primarily static and value-added.
- Examples: Student registration information, Voting registration information, Census information, Tax payment deadlines, scheduled power outage, price of

petroleum products, road closure, expected emergencies such as heavy rains and floods, etc.

Transactional services:

Transactional services are any services that lead to a change in the records held by the government. They typically involve some payment of fees in exchange for a document.

Examples: Business registration application, Birth and death registration, Marriage, divorce, adoption registration, National ID application,

Passport application, Driver's License application, Health insurance application, Tax payment, Land lease payment, Payment of utilities, etc.

CHALLENGES

The main challenge for the proposed implementation of an integrated Zanzibar Government Service Portal is the availability of financial resources, which is one of the obstacles and risks to achieving the digital government agenda.

2.3.11 Zanzibar Digital Special Economic Zone

CURRENT STATUS

A Zanzibar digital special economic zone (ZDSEZ) is a geographical area designated by the Government of Zanzibar for the promotion of digital technologies and digital services to support digital businesses and industries in the interest of promoting economic growth and development. The concept of a ZDSEZ is similar to that of a traditional special economic zone (SEZ). Businesses in this designated geographic area can enjoy special tax, tariff, and regulatory policies designed to encourage investment and economic growth.

In a ZDSEZ, businesses can take advantage of advanced digital infrastructure, such as high-speed internet connectivity, cloud computing, and artificial intelligence (AI) technologies.

Additionally, ZDSEZs often have a regulatory framework designed to foster innovation and entrepreneurship, making it easier for businesses to start and grow.

The status of the digital special economic zone in Zanzibar can be described as embryonic, which means that more work needs to be done to achieve the government's strategic objectives.

OPPORTUNITIES

The fact that the government of Zanzibar is investing considerably in digital transformation implies that the ZDSEZ will enable businesses to utilize advanced digital infrastructures, such as broadband internet connectivity, modern data centers, cloud computing services, and artificial intelligence technologies, to foster technology innovation and entrepreneurship.

Thus, ZDSEZ will attract foreign and domestic investments by providing a conducive environment for digital businesses. This investment can lead to job creation, economic growth, and increased revenue for the government of Zanzibar.

On the other hand, ZDSEZ needs to be designed to promote innovation by providing a platform for collaboration between technology companies, research institutions, and startups to

facilitate the transfer of technology, knowledge, and skills between local and foreign businesses, leading to innovation and increased competitiveness. Such collaboration can lead to the development of new products and services, boosting Zanzibar's competitiveness on the global stage.

Establishing an effective and successful digital economic zone is always challenging; it takes a collaborative effort from the government, the private sector, and other stakeholders. Zanzibar can achieve building a successful digital economic zone by following these steps:

- **Streamline regulations:**

The government should establish a regulatory framework conducive to digital businesses and streamline the process of setting up and managing a business in the zone.

- **Provide incentives:**

The government of Zanzibar should offer incentives to attract businesses to the digital economic zone, such as tax breaks, subsidies, and other financial incentives.

- **Establish partnerships:**

To support the development of

the digital economic zone and promote innovation, the government of Zanzibar should form

partnerships with other stakeholders, including the private sector, academic institutions, and international organizations.

- **Promote the zone:**

Through marketing campaigns and outreach initiatives, the government should actively promote the digital economic zone to local and foreign businesses, investors, and other stakeholders.

The ZDSEZ initiative for Zanzibar goes hand in hand with Digital Nomad and e-Residency initiatives.

- **Digital nomad** is an initiative that would allow remote workers, freelancers, and entrepreneurs to live and work in Zanzibar for an extended period. The initiative is designed to promote tourism, economic development, and cultural exchange in Zanzibar while offering various benefits to participants, such as access to co-

working spaces, affordable housing, networking opportunities, and cultural activities.

e-Residency is a digital identification and business initiative that would allow individuals from anywhere in the world to apply for a secure ZaniD, which they can use to access government services and conduct business online. For example, they can establish and manage a company in Zanzibar, sign documents digitally, and access financial services without needing to travel to Zanzibar physically.

The main challenge the government of Zanzibar is facing in implementing the Zanzibar Digital Special Economic Zone includes the:

- **Lack of the Legislative and Regulatory Framework:** ZDSEZ investors require a supportive, flexible, and adaptable legislative and regulatory framework incorporating the following key elements: Data protection and privacy laws; Intellectual property rights, and, enforceable

cybersecurity regulations.

Lack of an advanced digital infrastructure: ZDSEZ requires significant investment in digital infrastructure, such as broadband internet backbone, international submarine cable system, data centers, and other technology-related infrastructures, which are needed to improve the quality and reliability of digital services across Zanzibar.

- **Lack of stable and reliable power:** Digital technology and infrastructure require a stable and uninterrupted source of electricity to function properly. Digital investments, such as data centers, cloud computing, and other forms of technology infrastructure, consume large amounts of energy, and any interruption or outage can result in data loss, system failures, and significant financial losses.

ICT Integration into Zanzibar Education

SITUATIONAL ANALYSIS

ICT's role in education and human capacity development in Zanzibar is articulated in the Zanzibar Education Policy (2006, Updated 2019). The policy emphasizes the “use of ICT to enhance competitiveness, modernize teaching and the learning environment and facilitate equity of access and to develop individuals who are capable of functioning effectively in a technologically driven society.”

The education policy aims to empower the people of Zanzibar, especially school age children, with the skills they will need to thrive in the digital economy that has emerged due to recent advances in information and communication technology. ICT can and should be used to achieve inclusive, equitable, and lifelong educational opportunities for all the citizens of Zanzibar to produce knowledge workers that can contribute effectively to the emerging digital economy.

OPPORTUNITIES

Digital learning, E-learning, and e-Content and Inclusive education are quick-win opportunities that can be achieved in the education sector by embracing ICT.

Digital Learning and e-learning:

- ICT presents an excellent opportunity for the government of Zanzibar to introduce the concept of digital learning and e-Learning. Digital learning is an umbrella term that refers to any learning that includes using digital technology. It encompasses using digital tools and platforms in combination with other offline formats to provide a holistic learning experience. On the other hand, E-Learning refers only to delivering education or any training online, specifically using online tools in a remote training environment.

Inclusive Education:

- The government of Zanzibar and other stakeholders, including but not limited to Development Partners in the education sector, should work toward bridging the

rural-urban digital gap by ensuring equitable access to ICT resources by students, teachers, and educational administrators in all educational institutions through the extension of the national fiber-optic digital infrastructure to rural areas.

- Furthermore, ICT represents a significant opportunity for inclusive education by providing disadvantaged children and those with Special Education needs a chance to develop to their full potential. The Government can ensure that special ICT infrastructure is available to support underprivileged children and those with special education needs, for example, by promoting the use of assistive technologies to support those who are physically and mentally challenged.

e-Content:

- e-Content, or electronic content, refers to any digital information created, published, and distributed digitally, including text, images, audio, video, and interactive

multimedia. E-content is an integral part of e-learning, as it provides the material that is delivered through electronic channels such as online courses and virtual classrooms.

Education Management

Information System Zanzibar

- The Education Management Information System Zanzibar (EMIS-Z) is a critical tool in the Revolutionary Government of Zanzibar's education toolset for leveraging better data for policy decision-making in the education sector. The Ministry of Education and Vocational Training (MoEVT) intends to modernize its education management information system by developing and deploying a customized school-based digital information system.

The current system, which places a significant emphasis on data collecting, has to be must be upgraded to allow systematic processing and analysis of the collected data to facilitate evidence-based decision-making

among MoEVT and other education stakeholders such as development partners.

- The proposed EMIS-Z shall centrally incorporate certain School Information System (SIS) functions, acting as the new EMIS-primary Z's component. The objective is to standardize the reporting systems used in all public and private pre-primary, primary, and secondary institutions. The SIS component of EMIS-Z shall be used as an information capture and data management system to support the delivery and management of education services by schools and teachers and the delivery and management of education services at the district level.
- Through the SIS, schools will be able to generate and submit annual, termly, and even monthly reports on individual students, teachers, and their schools utilizing laptops, smartphones, and Android-powered tablets. In addition, head teachers will be able to submit detailed reports on individual

students, instructors, and schools that are automatically generated by the integrated EMIS system. Overall, senior management at the MoEVT will be empowered to conduct data-driven planning, monitoring, and evaluation.

CHALLENGES

Despite the rapidly increased deployment of information communication technologies in Zanzibar, a significant digital divide still exists between the rich-poor and urban-rural. The challenge facing the government of Zanzibar is to expand the reach of ICT infrastructure, particularly the national ICT broadband backbone, to rural schools where the need for such services is much greater.

The lack of funding to support some of these initiatives in ICT teaching and learning is a major and serious obstacle to the successful implementation of e-Learning and e-Education strategy for Zanzibar. The goal is to provide reliable and affordable secured broadband internet access for all schools, teacher training colleges, teacher centers, and all

regional and district education offices. E-content generation is currently a challenge in Zanzibar for several reasons:

- a) **Limited access to technology:** Zanzibar schools still lack the necessary infrastructure and resources, such as broadband internet connectivity and computers, to access and utilize e-content.
- b) **Language barriers:** E-content for education must be available in Kiswahili to be effective in Zanzibar. Producing and translating educational content into Kiswahili is a challenging and costly proposition.
- c) **Limited resources for e-content development:** Developing quality e-content requires significant resources, including skilled personnel, hardware, software, and content creation tools. Zanzibar lacks the necessary resources and funding to invest in e-content development.

Regulatory Frameworks

CURRENT STATUS

Policy Framework

According to the RGoZ e-Government Policy Statement 2012, supported by the Public Service Act, No. 2 of 2011, Section 97, the Government of Zanzibar is establishing an institution whose mission will be to strategize, ensure, and monitor the effective and efficient implementation of e-government.

The general objective of the Zanzibar ICT Policy 2013 was to establish a reference framework for harmonization and sustainable development of the ICT sector in Zanzibar and constitute the main base for preparing development plans and action plans that include the Zanzibar Development Vision 2050.

Among the specific objectives of the ICT policy is to transform Zanzibar into an information-based society by providing equitable and affordable access to ICT to all its citizens to promote the development of a vibrant and sustainable digital economy. Specific policies impacting Zanzibar government digitalization include

2.3.12 Policy, Institutional and

education, health, tourism, economic, energy, and local government policies.

Institutional Framework

This e-Government Policy Statement 2012, supported by the Public Service Act, No. 2 of 2011, Section 97, resulted in the formation of the e-Government Agency Zanzibar (eGAZ). The e-Government Agency Zanzibar (eGAZ) was established through the Zanzibar e-Government Agency Act, 2019 as a public institution responsible for coordinating, overseeing, and promoting e-government initiatives to enforce

e-Government related policies, laws, Regulations, Standards, and Guidelines for Public Institutions. Specific objectives of the Agency include to:

- a) Coordinate automation of e-Government administration processes and the provision of Government services through the utilization of ICT
- b) Ensure that shared ICT systems are installed, secured, and maintained in adherence to a common set of policies and standards, leading to better

information sharing, cost optimization, and streamlining of government operations

- c) Ensure accessibility of government services countrywide in an affordable, effective, and efficient manner through the appropriate use of ICT
- d) Promote the use of ICT in the public sector.
- e) Become a center of excellence in preparing and promoting policies, standards, and other practices to improve ICT usage in Zanzibar public service.

Legislative and Regulatory Framework

The Zanzibar e-Government Agency Act 2019 was enacted by the House of Representatives in 2019 to provide for the establishment of the Zanzibar e-Government Agency. The primary functions to be performed by eGAZ as stipulated in the eGovernment Agency Act 2019 Section (6), which are even more relevant today in the implementation of the Zanzibar Digital Government Strategy, are:

- a) Develop and administer the implementation of ICT policies, rules, and guidelines in the public services
- b) Regulate the development and application of ICT in the public sector.
- c) Give effect to policy directives and other decisions made by the Government about ICT in the public sector.
- d) Establish frameworks to facilitate and coordinate accessibility of e-Government services.
- e) Advise relevant authority and any public institution on the appropriate utilization of ICT in the administration and public services delivery
- f) Establish, manage, and maintain shared and central e-Government systems and services
- g) Establish and maintain the open data system for public use.
- h) Harmonize and coordinate e-Government interventions, developments, and systems in the public service.
- i) Establish and maintain registers of e-Government systems and services.
- j) Establish and maintain records of ICT experts, recommend benefits, and coordinate their allocation in the public service
- k) Supervise e-Government projects performed by public institutions.
- l) Establish a monitoring and evaluation system for assessing the performance of the e-Government
- m) Certify the compliance of information systems with the requirements for interoperability, safety, and security;
- n) Exercise powers under the convention and treaties adopted by the Government on matters relating to e-Government;
- o) Conduct research and development activities on matters pertaining to e-Government and

- p) Perform any other function that may be necessary for better carrying out its objectives under this Act.

OPPORTUNITIES

Digital Government presents unique opportunities for eGAZ to become the focal point agency responsible for overseeing and coordinating all RGoZ to ensure the successful implementation of the Government's cross-sectoral digital transformation efforts. At the center of these transformational efforts are the users of Government services internal and external of digital services, including ordinary citizens, Government employees, and businesses.

Quick-win opportunities that can be implemented in support of the Zanzibar Digital Government strategy include:

- Assist the RGoZ in developing a Digital Government Policy in coordination with other Government MDAs. There is a need to establish a solid institutional focal point for digital Government in Zanzibar with a clear legislative mandate. Currently, competencies are dispersed

between eGAZ (e-Government Agency Zanzibar) and ZICTIA (Zanzibar ICT Infrastructure Agency)

- a) Establish and maintain an authoritative Government database of Digital Experts focusing on emerging technologies such as Artificial Intelligence, Machine Learning, Autonomous Drones, Blockchain, 5G Wireless, Cloud Computing, Big Data, and Real-time Analytics. The RGoZ may benefit significantly from the knowledge of sectoral professionals in creating novel, innovative, and compelling technologies to enhance the performance of existing Government operations and, ultimately, the quality of services delivered to citizens.
- Implement new legislation to support Zanzibar's transition to a cashless economy based on digital wallets and smart cards (debit and

credit cards). The legislation must be geared towards online transaction security to prevent fraud by mandating real-time SMS notification and multifactor authentication services

CHALLENGES

A key challenge facing digital transformation in the public sector is the capacity required at institutional and individual levels which entails fundamental changes in the mindsets of public servants and in the way public institutions collaborate.

Also, the lack of a single mandated government agency or institution with to oversee digital transformation for the government of Zanzibar is a serious weakness in Zanzibar's digital transformation agenda. This entity would also be responsible for ensuring that the requisite ICT skills for the successful implementation and operationalization of the Zanzibar Government Digital Strategy are present or acquired through the provision of suitable training and capacity building.

A specific challenge regarding the public sector's digital transformation involves training or hiring



3 ZANZIBAR DIGITAL GOVERNMENT STRATEGY 2022 - 2027

Scarcity of digital skills including data analysts and data scientists, challenges the ability of grooming digital talent and integrating digital-related tools, strategies and culture employees within the digital sector. The government must hence develop strategies for coping with emerging technologies like blockchain, artificial intelligence, and machine learning.

The Zanzibar Digital Government Strategy is a blueprint for long-term digitalization. It establishes the path for modernizing and transforming the public sector by placing the people and the business sector at the center of Government services. The strategy includes initiating innovative digital transformation programs and projects involving the latest digital technologies and metrics.

The strategy is therefore a call for action whereby the Zanzibaris public service could operate in a modernised and efficient way, thus enhancing the livelihoods of all Zanzibaris.

At its core, digital government is about modernizing government operations using the latest digital technologies to make the RGoZ more responsive and more resilient to challenges imposed by the existing and forthcoming circumstances. New digital services will be created so as to improve internal Government processes through re-engineering.

The integration of outdated computing software, hardware or both that are still in use (legacy systems) will make transactions with a Digital Government secure and seamless. Public employees will be able to continuously acquire new skills to adapt to developing technology.

3.1 Digital Vision

Zanzibar effectively using digital economy strategies to achieve the upper-middle income status.

3.2 Digital Mission

Introduce and utilize appropriate Government digital ecosystem to ensure seamless interactivity and coordination among electronic tools for communication (digital platforms) used for service delivery.

3.3 Strategic Pillars

The Zanzibar Digital Government Strategy includes initiatives that will accommodate some of the most significant challenges that Zanzibar public service faces. They include integrating Government service provider platforms for leading-edge ICT technologies to improve public service delivery, and expanding the tax collection base to strengthen the economy.

The five strategic pillars for the next five years are:

1. **Pillar-1:** Establishment of a digital governance framework
2. **Pillar-2:** Integration of institutional service-delivery platforms and processes
3. **Pillar-3:** Implementation of a robust and secure digital infrastructure
4. **Pillar-4:** Development of innovative ICT solutions for the blue economy
5. **Pillar-5:** Development of digital government Human capital

3.3.1 Pillar-1: Establishment of a Digital Governance Framework

Context:

Digital governance framework is for establishing accountability, roles, and decision-making authority for an organization's digital presence. The framework specifies institutional leadership levels and responsibilities regarding input for digital strategy, digital policies, digital processes, and digital standards.



It will be designed to serve all Zanzibaris by promoting digital inclusiveness. Zanzibar's special case of digital exclusion will be given special consideration due to the inherent challenges posed by the digital divide between those with technological skills and those without. The growing urban-rural digital divide demands the modernization of digital platforms and the extension of digital infrastructure to rural and remote areas. This will provide access to digital services essential for rural communities.

Digital governance is a significant driver in successfully assisting the RGoZ in implementing its digital transformation strategy. Since the proposed digital government roadmap contains so many “moving parts,” it is essential for the Government to create a central authority that will serve as a focal point for implementing the Digital Government Strategy. This entity will be responsible for providing strategic direction, leadership, and oversight on developing and managing all digital government initiatives.

The ensuing Zanzibar e-Government Authority (ZeGA) shall replace the current e-Government Agency Zanzibar (eGAZ) and should be given a new legislative mandate to oversee government digitalization. ZeGA shall play an ownership and coordination role in implementing the Digital Government Strategy by advocating and promoting the integration of digital government platforms; also by developing an infrastructure to provide secure, reliable, and seamless connectivity among all RGoZ institutions.

Furthermore, the Zanzibar e-Government Authority (ZeGA) should set up a Digital Transformation and Innovation Office (DGIO), which shall be a multidisciplinary organizational unit with representation from critical digital transformation institutions that include:

- E-Government Agency
- Zanzibar ICT Infrastructure Agency
- President's Office, Finance and Planning
- President's Office, Regional Administration, and Local Governments
- Zanzibar Revenue Board
- Ministry of Health

- Ministry of Education

The Digital Transformation and Innovation Office would set priorities for implementing digital services for citizens and businesses. It will also coordinate activities related to the roll-out of digital government services and improving government processes. It shall be an overarching government entity for digitalization and legally empowered to encourage, motivate, control, and compel institutions to comply with the Zanzibar Digital Government agenda.

Digital government policy framework

Best practices in digital governance entail that the government designates responsibility for developing digital government policies to a selected team represented by all the leading Government digitalization MDAs. The appointed overseer and digital government policy development coordinator would normally be working under the ministry responsible for local governance. Ideally, such arrangement is applicable to Zanzibar also.

Digital government standards and guidelines

On digital governance, best practices show that the responsibility for developing digital government standards and guidelines is normally handed to specific units or organizations. Such establishments shall articulate the minimum criteria that digital components must meet to serve the government professionally and securely.

For Zanzibar, improved service delivery to the public dictates that manual processes should be automated workflow through process re-engineering. Responsibility for networking infrastructure standards, including fiber-optic, should be assigned to an institution other than ZeGA. In contrast, responsibility for services and service delivery platforms, including the international submarine system, Government ISP and data centers should be the responsibility of ZeGA.

Digital government legislation and regulatory framework

The legislative and regulatory framework for digital government in Zanzibar shall lay the foundation for successful government-wide digital transformation initiatives. Digital

Government laws and regulations are cross-cutting that need to be coordinated centrally to eliminate existing silos in government that prevent cross-department collaboration.

3.3.1.1 Pillar-1 Objectives, Strategy, and Targets

Table 1: Pillar-1 Objectives, Strategy, and Targets

OBJECTIVE:	Establishment of a digital governance framework that includes Digital Government Strategy, policy, legislative, regulatory, and institutional frameworks
STRATEGIES:	<ol style="list-style-type: none"> 1. Approve this Digital Government Strategy and promote digital government awareness in every RGoZ institution 2. Establish a Zanzibar Digital Transformation Committee or Unit responsible for ICT project oversight and operational coordination in support of Government digitalization initiatives 3. Ensure that sector-specific legal and regulatory frameworks allow digital opportunities to be seized 4. Establish a practical framework to coordinate the implementation of digital government strategies within and across levels of government 5. Enact new legislation in support of Zanzibar as an emerging cashless society
TARGETS:	<ul style="list-style-type: none"> • Zanzibar Digital Government strategy created, approved, and its awareness promoted across all RGoZ institutions by June 2023 • Zanzibar Digital Governance Innovation Office established with representation from key institutions by June 2023 • Zanzibar Digital Government institutional framework created and approved by June 2023 • Zanzibar Digital Government policy framework created and approved by Mar 2023 • Zanzibar Digital Government legislative and regulatory framework created and approved by Dec 2023 • Zanzibar security framework legislation in support of online digital cashless transactions enacted by 2027

3.3.2 **Pillar-2: Integration of service-delivery platforms and processes**

Context:

The Internet allows the re-engineering of government services to serve the public better. This strategy promotes public service delivery through institutional collaboration and coordination in the Zanzibar public sector. To be transformative, among other requirements, digital services need to be personalized, paperless, cashless, and integrated.

Thus, at the core of the government digital transformation journey is automating today's manual processes and eliminating many of the dysfunctional aspects of traditionally bureaucratic Government operations. The Silo mindset, which refers to reluctance to share information with employees of other government departments, is one of the significant drivers of inefficiency in the public sector. When paired with intrinsic bureaucracy, such mentality leads to increasing ineffectiveness in government service delivery institutions.

Two specific initiatives that are directly impacted by this strategy are:

- The implementation of one-stop service centers (the so-called Huduma Pamoja Centers) in Zanzibar and Pemba under the World Bank Funded Digital Tanzania Programme (DTP)
- The adoption and integration of Zanzibar's digital health solutions that include the District Health Information and Electronic Logistics Management Information Systems, for improved health data availability and health outcomes to all Zanzibaris

Integrating services and processes between the backend and the front end can produce positive outcomes for Zanzibar. Besides creating a person-centered service delivery approach that enables government institutions to be more responsive to clients, it eliminates duplication of tasks and expensive service delivery technology platforms.

3.3.2.1 Pillar-2 Objectives, Strategy, and Targets

Table 2: Pillar-2: Objectives, Strategy, and Targets

OBJECTIVE:	Integration of backend institutional service delivery platforms to harmonize and facilitate the coordinated delivery of digital Government services.
STRATEGIES:	<ol style="list-style-type: none"> 1. Establish One Stop Service Centers for the unified and efficient delivery of public services to Zanzibar citizens and businesses. 2. Establish a Zanzibar data-sharing platform (Zanzibar Enterprise Service Bus or ESB) to support the integration of disparate legacy Government service delivery systems. 3. Establish Process integration and interoperability architecture and API to tie together a mix of disparate Government service platforms and applications. 4. Promote the delivery of innovative digital service solutions through pilot technology initiatives, including Artificial Intelligence, Machine Learning, and Robotics Process Automation. 5. Assess the potential for developing Government digitalization standards to promote deeper process integration between Zanzibar Revenue Board revenue collection systems and the MNOs and Commercial Banks.
TARGETS:	<ul style="list-style-type: none"> • The One Stop Centers capable of delivering various e-Services under one roof through a single window system operationalized in Unguja and Pemba islands by June 2024 • The Data sharing platform (Zanzibar Enterprise Service Bus or ESB) with associated APIs to support backend integration of legacy service delivery platforms operationalized by December 2023. • 50 Government systems will share data through the Zanzibar Data Sharing Exchange Platform by June 2027 • The Zanzibar Government Services Directory (GSD) is created as an authoritative central source of standard Zanzibar Government e-Services and associated business processes by December 2023 • The Business processes integrated and automated through process re-engineering for at least 20 Zanzibar Government institutions that, includes National ID, ZanID, company registration, land registration, health insurance, and TASAF by June 2027 • All RGoZ institutions connected to ZanMalipo – Zanzibar's Institutional Payment System – by December 2026

- The Tax and Revenue Collection Systems improved and integrated by December 2026
- The Land and Property Registration Systems implemented and integrated by June 2027
- Authoritative Petroleum Natural Gas and Electricity Information System implemented for ZURA by June 2026
- Zanzibar Government Mobile Services Gateway to support Government SMS and USSD services launched by December 2026

3.3.3 Pillar-3: Implementation of a Robust Digital Infrastructure

Context:

Implementing one-stop service centers in Zanzibar and Pemba is a significant step in ensuring that digital services provided by the Government are easily accessible. However, no matter how sophisticated the e-services may be, they would only serve the purpose of digitalization if a large segment of our population could access them. Developing a broadband connectivity infrastructure that extends to isolated rural communities is essential to remove one of the main obstacles to digital inclusion.

Zanzibar lacks a modern Tier 3+ data center with an associated disaster recovery site that can be used to host critical government service delivery platforms. Furthermore, there exists a lack of a high-performance Government-managed and operated ISP (Internet Service Provider) connected directly to an international fiber-optic submarine cable system. This also contributes significantly to the lackluster performance of the most popular internet-based services including Teams, Zoom, WebEx, YouTube and WhatsApp.

The collection of Government revenues is also dependent on the performance of ZanMalipo. This ZRA-managed revenue collection system generates payment control numbers to ensure that all payments that Government Institutions receive are collected electronically. The collection itself needs to be traceable and visible in near real-time to control revenue leakages. Extending the digital connectivity infrastructure to remote areas to provide connectivity to Zanzibaris in rural areas is critical; it would

expand government revenue collection bases and the economy at large.

Ministries-Departments-Agencies (MDA), Local Government Authorities (LGAs), and Payment Service Providers (Mobile Network Operators and Banks) are all connected to ZanMalipo Gateway via the fiber backbone infrastructure; therefore, the implementation of a Zanzibar GovNet is crucial for expanding the revenue collection base.

Backbone and Last Mile Fiber-Optic Infrastructure Performance Investigation

Recently, users of the Government's fiber backbone and last mile have complained about the responsiveness of the digital services offered by these digital assets. It is unclear what is generating the performance bottlenecks. Therefore, before attempting to enhance the existing fiber-optic infrastructure, it is imperative to do a performance investigation and analysis to determine where the performance bottlenecks are.

A bottleneck occurs when data traffic is interrupted or slows down due to insufficient capacity to accommodate the peak traffic volume. Practical performance testing should yield the diagnostic information required to alleviate bottlenecks that result in poor performance and user complaints. In most cases, the optimal solution may be the combination of enhanced networking equipment capacity and traffic management configuration; these include buffering to absorb sporadic traffic spikes and overwhelming the infrastructure.

3.3.3.1 Pillar-3 Objectives, Strategy, and Targets

Table 3: Pillar-3 Objectives, Strategies, and Targets

OBJECTIVE:	Implementation of a robust digital infrastructure that includes a modern data center, disaster recovery site, Government Virtual Private Network, and dedicated international submarine cable system
STRATEGY:	1. Conduct a detailed adequacy assessment of the Zanzibar fiber-optic backbone infrastructure to determine the coverage and reach, current equipment configuration, bandwidth provisioning, and

	<p>bandwidth requirements.</p> <ol style="list-style-type: none"> 2. Conduct a detailed adequacy assessment of the Zanzibar fiber-optic backbone last-mile connectivity infrastructure to determine the coverage and reach, current equipment configuration, bandwidth provisioning, and bandwidth requirement. 3. Establish a Secure Zanzibar Government Virtual Private Network Interconnecting and serving all Government Institutions 4. Establish an International Submarine Cable System for Zanzibar Internet Traffic that is managed by the Zanzibar e-Government Authority (ZeGA) 5. Establish a modern Tier 3+ Zanzibar Government Data Center capable of consolidated hosting of public services delivery platforms for all Government Institutions that is managed by the Zanzibar eGovernment Authority (ZeGA) 6. Ensure improved cyber defense to safeguard Zanzibar Government networks and protect critical infrastructure with enhanced cyber security. Integrate point solutions across government digital estate and use automated intelligence to stay ahead of advanced threats. 7. Establishment of a state-of-the-art Unified Customer Service Centre and enterprise telephony system, ensuring citizens can contact reliable and consistent manner.
TARGETS:	<ul style="list-style-type: none"> • Assessment conducted on the geographic coverage of the fiber-optic backbone infrastructure in both Unguja and Pemba to determine if any significant coverage gaps need to be addressed by June 2023. • Assessment conducted on the equipment installed for the fiber-optic backbone infrastructure in both Unguja and Pemba to determine if it has sufficient capacity and identify any traffic bottlenecks to support the requirements of the RGoZ by June 2023. • Assessment conducted on the equipment installed for the fiber-optic last-mile infrastructure connecting Government institutions to the fiber-optic backbone infrastructure in both Unguja and Pemba to determine if it has sufficient capacity to support the requirements of each RGoZ institution by June 2023 • Assessment conducted on the equipment installed institutional LANs for Government MDAs in both Unguja and Pemba to determine if these LANs have sufficient capacity to support the requirements of each MDA by June 2023

- Assessment conducted of the traffic carrying capacity of various connecting links of the fiber-optic backbone infrastructure in both Unguja and Pemba to determine if any significant internet traffic bottlenecks need to be resolved by June 2023
- Assessment conducted of the equipment installed on the fiber-optic backbone infrastructure in terms of its service features, traffic carrying capacity, as well as vendor support and maintenance by June 2023
- Tier 3+ State Data Center implemented to support Government Cloud service and host IT equipment for other Government institutions by June 2027
- Zanzibar Government Virtual Private Network implemented to interconnect Government institutions in support of the integration of Government systems involved in the delivery of public services by June 2025
- Government budget allocated to expand broadband availability for residents of “unserved and underserved” rural areas in Zanzibar by Dec 2026
- Public access Wi-Fi hotspots and computers kiosks operated by the Government and accessible to the public established to expand broadband services to rural areas lacking affordable high-speed Internet services by June 2024
- Zanzibar Government Contact Center established and fully operational by June 2027

3.3.4 Pillar-4: Development of innovative solutions for the Blue Economy

Context:

The Blue Economy is a key component of Zanzibar's sustainable , just as it is in many coastal states, especially those with vast water expanses like Zanzibar. Various sustainable fisheries and aquaculture development prospects exist. When properly exploited they boost economic growth considerably. The same is expected for Zanzibar, in line with the Zanzibar Development Vision 2050.

The Blue Economy seeks to create a renewable and sustainable economy that benefits from the ocean while eliminating waste and pollution. Digital transformation in the Blue Economy promotes the adoption of cutting-edge, disruptive digital technologies. The ocean activities needs to be sustainable, which could be the case through the use of digital innovations like Artificial Intelligence, Machine Learning, Deep Learning, the Internet of Things, Big Data, Blockchain, Process Automation, and Robotics.

The Government strategy to transform Zanzibar into a Digital Hub should include the establishment of the Zanzibar Blue Digital Lab to encourage research, local testing, and rapid adoption of currently available digital technologies. Specific digital technologies and targeted systems would be utilized. They include autonomous drones, vessels assisted by artificial intelligence and terrestrial ocean observation infrastructure. The later includes Vessel Monitoring Systems, Terrestrial-based Automatic Identification Systems, and Satellite SAR-based (Synthetic) Aperture Radar Automatic Identification Systems. These solutions can be used for enhanced maritime Zanzibar Exclusive Economic Zone monitoring and improved maritime search and rescue operations.

Zanzibar's uptake of investment in digital systems to support the blue economy could be faster. But more investment is needed to accelerate the deployment of digital technologies to support inter- institutional collaboration. The local and regional authorities, telecommunications sector, tourism and fisheries sectors, are vital stakeholder institutions for enabling the blue economy. Digital systems identified for implementation to support the Blue Economy include:

- **Terrestrial Automatic Identification System (AIS):** This system supports ship-to-shore and shore-to-ship communications and is primarily used for collision avoidance as well as search and rescue operations through vessel tracking and is in compliance with standards established by the International Maritime Organization's (IMO) 1974 International Convention for the Safety of Life at Sea (SOLAS).

- **Synthetic Aperture Radar (SAR):** This satellite-based system uses synthetic aperture radar technology, one of the most valuable technologies in remote sensing applications. SAR is used principally to synthetically produce higher-resolution images in any weather condition, including nights. In other words, SAR based imaging system can “see” through the darkness, clouds, and rain to offer all- weather and day/night illegal fishing monitoring opportunities. It is also a digital tool for monitoring the environment, managing ecosystems, and enforcing the law.
- **Vessel Monitoring Systems (VMS):** This system is used in commercial fishing to allow environmental and fisheries regulatory organizations to track and monitor the activities of fishing vessels. VMS is typically used to monitor ships in a country’s territorial waters. As such, it is a critical component of monitoring control and surveillance (MCS) programs at national and international levels. The primary goal is to ensure adherence to proper fishing practices and the prevention of illegal fishing to protect and enhance the livelihoods of fishermen.

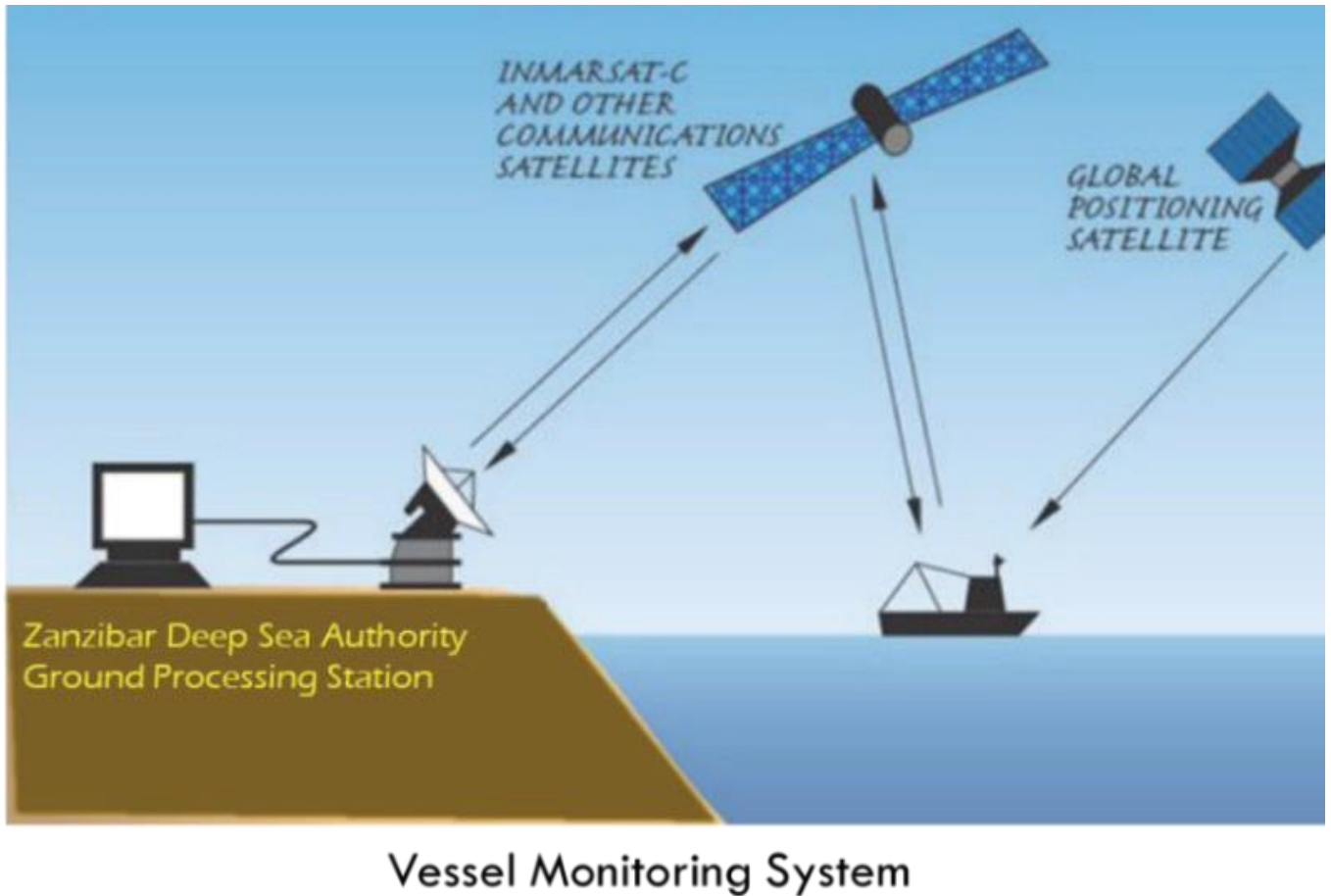


Figure 4: Integrated Vessel Monitoring System

3.3.4.1 Pillar-4: Objectives, Strategy, and Targets

Table 4: Pillar-4 Objectives, Strategies, and Targets

OBJECTIVE:	Development, Deployment, and Operationalization of Innovative ICT Solutions to Promote and Accelerate the Growth of a Sustainable Blue Economy in Zanzibar.
STRATEGY:	<p>Deploy Autonomous Drones to monitor and track Illegal, Unreported, and Unregulated Fishing activities in the Zanzibar Exclusive Economic Zone</p> <p>Establish a terrestrial Automatic Identification System (AIS) for ship-to-shore communications as a collision avoidance system as well as to monitor and track Illegal, Unreported, and Unregulated Fishing activities in the Zanzibar Exclusive Economic Zone</p> <p>Establish a Vessel Monitoring System (VMS) to allow environmental and Zanzibar fisheries regulatory organizations to track and monitor the</p>

	<p>activities of fishing vessels in the territorial waters of Zanzibar, including search and rescue.</p> <p>Establish a Synthetic Aperture Radar (SAR) Satellite Imaging System as an all- weather system for producing high-resolution images of vessels in the EEC in all- weather and day/night conditions.</p> <p>Establish a Zanzibar Blue Digital Hub Lab to promote research, local development, and rapid adoption of innovative home-grown digital solutions to transform, grow and diversify the economy.</p>
TARGETS:	<p>Establishment of Zanzibar Blue Digital Hub Lab established as a joint undertaking by the ZeGA and the State University of Zanzibar (SUZA) to conduct research and develop digital solutions that incorporate Blockchain, Artificial Intelligence, and Machine Learning technologies by June 2024</p> <p>Autonomous Drones deployed by the Zanzibar Deep Sea Authority in conjunction with the Zanzibar Navy to monitor and enforce the law regarding Illegal, Unreported, and Unregulated Fishing in the Zanzibar Exclusive Economic Zone by 2027</p> <p>Implementation of Integrated Synthetic Aperture Radar (SAR) and Automatic Identification System to produce high-resolution images to assist law enforcement in the continuous war against vessels involved in illegal Fishing in Zanzibar's Exclusive Economic Zone by 2027</p>

3.3.5 Pillar-5: Development of Human capital for digital government

Context:

Digital transformation continues to bring new technologies and tools such as artificial intelligence, machine learning, process automation, and big data analytics to the workplace,. Identifying the proper digital skills for government is a continuous challenge and bridging the widening digital gap is an even more challenging.

As job roles evolve in response to adopting new technologies, government employees require up-to- date skills and tools to perform their new job functions. Such skills include using digital tools such as applications, devices, and platforms to fulfill

various personal tasks. Such tools are vital in today's workplace.

Ensuring the availability of the digital skills needed to keep pace with the dynamic digital technologies is an increasingly challenging proposition, requiring the availability of professional staff with the capacity to learn new skills. As technology evolves, employees' existing skills and knowledge become less applicable.

Government workers who provide services to the public must undertake training programs created specifically for the fields they operate to keep up with the latest technological advances. Training allows employees to develop new skills and accumulate the necessary knowledge to achieve specific organizational and personal goals. A well-trained and diversified Government workforce is more likely to spur innovation and implement new and more efficient business processes. Workforce productivity correlates directly with employee skills and knowledge; the more knowledgeable and skilled an employee, the higher the productivity.

The strategy establishes the grounds to strengthen human capital and innovation skills development to ensure a successful digital transformation. The RGoZ's investments in Human Development would play a pivotal role in scaling the economic value chain to reduce dependency on tourism. Innovation-driven digital economy would be developed to achieve the goal.

The public sector and higher learning institutions must work together to build a well-educated workforce with sufficient digital knowledge to transform Zanzibar into a Digital Hub. Such a workforce should be monitored and measured annually and supported by training, conferences, and workshops.

3.3.5.1 Pillar-5: Objectives, Strategy, and Targets

Table 5: Pillar-5 Objectives, Strategies, and Targets

OBJECTIVE: Invest in developing creative digital skills among Zanzibaris to improve the adoption of digital platforms via the Internet and mobile channels to benefit from the growing availability of digital services.



<p>STRATEGY:</p>	<ol style="list-style-type: none"> 1. Promote investment opportunities in training and digital skills to democratize access to ICTs and to build a more inclusive society by reducing the urban and rural digital gap 2. Establish a Blue Digital Hub Lab to offer specialized training on Blockchain, Internet of Things, Artificial Intelligence, and Machine Learning in Zanzibar Higher Learning Institutions 3. Establish Zanzibar Digital Special Economic Zone to foster innovation and entrepreneurship by making it easier for businesses to start in Zanzibar. 4. Organize technology trials to promote the use of emerging technologies such as 5G in e-Health as well as Water Management and Agriculture 5. Develop knowledge-sharing mechanisms with both regional and international partners
<p>TARGETS:</p>	<ul style="list-style-type: none"> • Talent gap analysis on RGoZ employees with the requisite digital skills conducted and plan to fill the digital skills gaps developed by June 2023 • Focused study launched to determine suitable training and digital skills development needs of vulnerable groups that, include women, youth, persons with disabilities, and poor rural communities by Dec 2024 • Establishment of Zanzibar Blue Digital Hub Lab as a joint undertaking by the ZeGA and the State University of Zanzibar (SUZA) to conduct research and develop digital solutions that incorporate the latest digital technologies such as Blockchain, Internet of Things, Artificial Intelligence, and Machine Learning by June 2024 • Establishment of Zanzibar Digital Special Economic Zone by June 2025. • Identification and engagement of International digital partners to support technology transfer and knowledge sharing through conferences and workshops hosted in Zanzibar. • Conduct a Pilot trial with MNO stakeholders to assess the viability of 5G technology in e-Health and Agriculture by June 2027 • Identification of local entities to develop and master strategic digital skills for the creation of local digital content in Zanzibar to promote tourism and the blue economy by June 2026

- Deliver e-procurement training to upskill PMU management and support staff in all Zanzibar public institutions by June 2024
- Organize International training, conferences, and workshops in Zanzibar to promote digital technologies, including Blockchain, Artificial Intelligence, and Machine Learning, among other technologies, by June 2026

3.4 Digital Government Budgetary and Financial Implications

The lack of a secure implementation budget can lead to a resource gap in the digital transformation projects. It could also undermine the ability of Government MDAs to make sound and forward-looking decisions. All Government institutions are required by this strategy to create a financial roadmap to facilitate the implementation of its digital transformation goals based on its strategic priorities, implementation timeframe, desired outcomes, and quantifiable benefits.

Therefore, the Government must identify financial requirements based on its digital transformation projects to allow the setting aside of budgets to fund these ICT projects over the next five years and beyond. Priority focus areas for these budgets shall include:

- Development of an advanced and reliable ICT system to boost ZRA revenue collection.
- Modernizing MDA legacy systems to support backend integration for process automation.
- Repairing, replacing, and upgrading critical Government ICT infrastructure to enhance service delivery.
- Ensure the availability of digital skills in the public sector through targeted recruiting and training.
- The ability and willingness of governments to invest in essential information technology initiatives are a direct factor in determining whether or not the transition to a digital government will be successful. A portion of the money for



these significant initiatives will need to come from Development Partners; however, the RGoZ may need to consider levying a digital tax to assist digital transformation in the public sector.



4 MONITORING, EVALUATION, AND PERFORMANCE INDICATORS

4.1 Monitoring and Evaluation

The first step to determine if the government is taking the right steps in digital transformation progress is to use clearly defined metrics as part of the monitoring and evaluation framework. All RGoZ institutions designated for digital transformation must employ well-defined metrics to assess the effectiveness of the Digital Government Strategy. They should also determine if adjustments or additional interventions are required. Metrics serve as a means of tracking and evaluating progress.

Evaluation constitutes the objective assessment of the implementation and results of an active or completed digital strategy intervention. For each strategic intervention, the stakeholders must take stock of the experience gained, including successes and failures, best and worst practices, and anticipated future challenges and constraints.

Unlike monitoring which involves collecting data continuously during project execution, evaluation consists of collecting data at specific points during and at the end of the project implementation. Data collected during the assessment is used to assist decision and policymakers in planning new interventions by factoring lessons learned from the successes or failures of the past.

The success of the Digital Government Strategy requires continuous monitoring and course correction based on what determines thorough assessment. Measurement and evaluation of the actions and outcomes of the Digital Government Strategy will be used to demonstrate whether the process has been successfully executed and has had the intended results and impact.

4.2 Strategic Objectives

Creating a meaningful assessment framework for the performance of the Zanzibar Digital Government Strategy 2022 or any other digital transformation initiative is challenging but necessary to determine if the digital strategy is on the right track.

Launching the ground-breaking Digital Government Strategy is an exciting and attention-grabbing proposition. Still, it is just as crucial, if not more so, to monitor and analyze the effectiveness of the Digital Government Strategy based on well-defined KPIs and, therefore, should be kept from the project background.

4.3 Strategic and Operational KPIs

Key Performance Indicators (KPIs) metrics allow RGoZ to measure the progress of its strategy and operations. Two types of KPIs are proposed for measuring progress in the implementation of this Digital Government Strategy: Operational KPIs and Strategic KPIs. Both strategic and operational key performance indicators are equally essential. However, the information they provide is utilized for different objectives and serves distinct functions.

The templates for completing the strategic and operational KPIs for this Digital Government Strategy are provided in Annexure B. Each institution is responsible for implementing a specific government digitalization project. It has to define and specify a monitoring and evaluation framework based on the KPI templates proposed in this strategy.

4.3.1 Operational KPIs

Operational metrics are tied to improvement in the delivery of services that are critical to digital transformation in the public sector. Tracking operational KPIs indicates how well the internal Government processes and service delivery have improved in terms of performance. The revenue collection ZanMalipo platform, for example should document service availability and response time.

Each RGoZ institution will use operational KPIs to provide information in real-time that can be used to assess system performance on an hourly, daily, weekly, and monthly basis. These real-time performance insights provide crucial information on where systems, processes, or individuals are falling behind or straying off track. They will in turn allow action to be taken swiftly by project managers. System administrators would likewise resolve issues before becoming fully-blown operational crises. The Operational KPIs to be monitored and assessed for the Digital Government Strategies are provided in Annexure A.

4.3.2 Strategic KPIs

Strategic KPIs are used for monitoring progress or trends toward a stated objective as defined in the pillars of the Digital Government Strategy. Real-time performance monitoring is not required for strategic KPIs. However, monitoring the KPIs over a relatively long time is essential to get an accurate picture of progress towards the stated destination.

Some fundamental strategic KPI questions that should be addressed throughout the monitoring of the project are:

- Is the proposed digital strategy delivering against its desired outcomes?
- Which strategy elements need to be adjusted to meet the strategic objectives better?
- Do the original plan and assumptions achieve progress, or are refinements needed?

The Strategic KPIs will be monitored and assessed for the Digital Government Strategies provided in Annexure A.

4.4 Project Monitoring and Evaluation Budget

Each intervention or project identified in this strategy will be assigned to a particular Government institution for implementation. Each stakeholder institution must create a



comprehensive and detailed implementation plan for each project, including a completed monitoring and evaluation plan based on the Operational and Strategic KPI templates proposed in Annexures A and B.

The project implementation plan must include a budget estimate and funding source. To properly monitor and assess the effectiveness of each project, an estimated 5% of a project's budget should be allocated for monitoring and evaluation.

ANNEXURE-A: STRATEGIC IMPACT PERFORMANCE INDICATORS

I. Modernized Digital Infrastructure

Modernization of the government's ICT infrastructure is a crucial prerequisite for successful digital transformation. A modernized infrastructure is essential to deliver the efficiency and resilience required to support sophisticated digital applications and cloud computing requirements. The enabling infrastructure makes all the difference in the public sector's digital transformation. Thus each government department or agency must develop a plan for infrastructure modernization consistent with the Zanzibar Digital Government Strategy. The following systems are prime candidates for modernization:

- Migrate to virtual servers to improve efficiency, productivity, and security and minimize downtime.
- Migrate applications and systems to a cloud computing environment for resource utilization optimization
- Upgrade to high-performance SSD storage to harness the power of Big Data analytics, Artificial
- Intelligence (AI), and Machine Learning

DIGITAL INFRASTRUCTURE	OWNER INSTITUTION	PERCENTAGE INSTALLATION COMPLETED	SCHEDULE VARIANCE	BUDGET VARIANCE
Zanzibar National Data Center	EGAZ/ZCTIA			
Broadband Backbone	ZCTIA			
Government Virtual Private Network	ZCTIA			
Huduma Pamoja Service Infrastructure	EGAZ/ZICTIA			
Mobile Service Gateway	EGAZ/ZCTIA			

Petroleum and Gas Information System	ZURA			
Submarine Cable System	EGAZ/ZICTIA			
Public WI-Fi Hotspots	EGA/ZICTIA			
Government Contact Center	EGAZ			
Drones to Monitor IUU Fishing	MoBEF			
Vessel Automatic Identification System (AIS)	MoBEF			
Vessel Monitoring System (VMS)	MoBEF			
Synthetic Aperture Radar Imaging System (SAPIS)	MoBEF			
Zanzibar Blue Digital Hub Lab	MoBEF			
Zanzibar Land Administration System (ZLAS)	MLHSD			

II. Digital Infrastructure Modernization Report

The Government Digital Infrastructure's average age monitors the IT infrastructure's age in place. The age of the infrastructure may be a predictor of system failures and service disruptions. Each institution must report the average age of all critical digital equipment infrastructure. This information will be kept in a database managed by eGAZ for auditing purposes. Typical infrastructure equipment monitored for this purpose includes Computing Equipment (Server, etc.) Storage Systems (SAN, etc.) and Networking Equipment (Routers, Switches, etc.)

DIGITAL INFRASTRUCTURE	RESPONSIBILITY	AVERAGE AGE OF DIGITAL INFRASTRUCTURE (YEARS)				
		2023	2024	2025	2026	2027
Zanzibar National Data Center	EGAZ/ZCTIA					
Broadband Backbone	ZCTIA					
Government Virtual Private Network	ZCTIA					
Huduma Pamoja Service Infrastructure	EGAZ/ZICTIA					
Mobile Service Gateway	EGAZ/ZCTIA					

Petroleum and Gas Information System	ZURA					
Submarine Cable System	EGAZ/ZICTIA					
Public WI-Fi Hotspots	EGA/ZICTIA					
Government Contact Center	EGAZ					
Drones to Monitor IUU Fishing	MoBEF					
Vessel Automatic Identification System (AIS)	MoBEF					
Vessel Monitoring System (VMS)	MoBEF					
Synthetic Aperture Radar Imaging System (SAPIS)	MoBEF					
Zanzibar Blue Digital Hub Lab	MoBEF					
Zanzibar Land Administration System (ZLAS)	MLHSD					

III. Legacy Systems Upgrading Report

Upgrading institutional service delivery platforms falls under the Strategic KPIs. Legacy systems integration is key to achieving interoperability among institutional service delivery platforms to coordinate and automate business proc

DIGITAL PLATFORMS	RESPONSI BILITY	NO. OF SYSTEMS UPGRADED		
		SYSTE MS UPGRADED	SCHEDULE VARIANCE	BUDGET VARIANCE
ZanMalipo Revenue Collection System	ZRA			
eProZ Procurement System	ZPPDA			
Huduma Pamoja Service Integration Platform	EGAZ/ZIC TIA			
Huduma Pamoja Payment Gateway	EGAZ			
Government Contact Center	EGAZ			

Government Services Directory	EGAZ			
Civil Registration System	CRVS			
NIDA Registration System	NIDA			
ZanID Registration System	ZAID			
Government USSD - SMS Gateway	EGAZ			
Petroleum and Gas Information System	ZURA			
Integrated Vessel Monitoring System	MoBEF			
District Health Information System	MOHZ			
Electronic Logistics Management Information System	MOHZ			
Health Management Information (HMIS)	MOHZ			
Education Management Information System (EMIS)	MOEZ			
Zanzibar Blue Digital Hub Lab	MoBEF/SU ZA			
Zanzibar Land Administration System	MLHSD			

IV. Digital Platform Integration Progress Report

The integration and connectivity progress report is intended to provide insight into the year-to-year progress in integrating institutional service delivery systems as a measure and indication of the progress made to automate the delivery of services. Integration of platforms promotes interoperability to eliminate operational silos among Government departments and agencies and improve employee productivity.

	RESPONSIBILITY	2023	2024	2025	2026	2020272
No. of Platforms Integrated via Zanzibar GOVNET	e-GAZ					
No. of Systems Connected to Zanzibar Submarine Cable System	e-GAZ					

No. of Systems Connected to Government USSD-SMS Gateway	e-GAZ					
No. of Institutions Connected to the One-Stop Payment Gateway	e-GAZ					

V. Digital Skills Capacity Development Reports

Digital transformation in the public sector must be complemented by attracting the digital talent and skills that enable public servants to drive digital Government. The Government of Zanzibar must invest in professional and management skills to support digital government: Human resources in the public sector need proactive recruitment strategies to attract and retain employees and develop career paths, thus promoting professionalism in the digital workplace. The following skills metrics outlined below provide senior management insight into the progress made in developing digital skills to support Zanzibar Digital Government Strategy. A critical metric to be monitored in support of digital skills development in various government departments and agencies is the scarcity or shortage of essential skills as determined by each institution.

DIGITAL SKILLS	RESPONSIBILITY	DIGITAL SKILLS SHORTA				
		2023	2024	2025	2026	2027
Number of API Integration professionals	e-GAZ					
Number of Big Data Analytics professionals	e-GAZ					
Number of Business Intelligence professionals	e-GAZ					
Number of Cloud Computing professionals	e-GAZ					
Number of Mobile USSD-SMS Gateway professionals	e-GAZ					
Number of Certified Data Center Professionals	e-GAZ					
Number of Broadband Fiber-Optic Systems professionals	e-GAZ					



Number of Cybersecurity professionals recruited	e-GAZ					
Number of AI and ML professionals	e-GAZ					
Number of Autonomous Drone professionals	e-GAZ					
Number of Blockchain professionals Recruited	e-GAZ					
Number of Robotics Process Automation Professionals	e-GAZ					
Number of 5G Wireless professionals	e-GAZ					
Number of Process Automation professionals	e-GAZ					
Number of Blockchain professionals	e-GAZ					

Blue Economy Digital Infrastructure

Digital transformation in the Blue Economy promotes the adoption of cutting-edge, disruptive digital technologies for sustainable ocean activities. It includes the introduction of digital systems such as Automatic Identification Systems (AIS), Vessel Monitoring Systems (VMS), and (SAR) Satellite Imaging Systems to monitor illegal fishing in Zanzibar's Exclusive Economic Zone. Associated enabling digital skills and technologies include Artificial Intelligence, Machine Learning, Deep Learning, the Internet of Things, Big Data, Blockchain, and Robotics Process Automation.

GOVERNANCE FRAMEWORK COMPONENT	RESPONSIBILITY	DATE COMPLETED
Preparation of a Digital System Implementation Pan to supportthe Growth of the Blue Economy	MoBEF	
Deployment of Drones to Monitor and Track Illegal, Unreported, and Unregulated Fishing Activities	MoBEF	
Establish a terrestrial Automatic Identification System (AIS) for ship-to-shore communications.	MoBEF	

Establish a Vessel Monitoring System (VMS) to track and monitor the activities of fishing vessels in the territorial waters of Zanzibar.	MoBEF	
Establish a Synthetic Aperture Radar (SAR) Satellite Imaging System to monitor vessels in Zanzibar's Exclusive Economic Zone.	MoBEF	

VI. Digital Governance Framework

Digital governance is a significant driver in successfully assisting the RGoZ in implementing its Digital Government Strategy. This requires establishing a policy and an institutional and legislative framework supporting the digital government. The framework specifies who has decision-making authority and who provides input for digital strategy, digital policies, digital processes, and digital standards.

GOVERNANCE FRAMEWORK COMPONENT	RESPONSIBILITY	DATE COMPLETED
Preparation of Digital Governance Policy Framework	PO-PSMGG	
Preparation of Digital Governance Institutional Framework	PO-PSMGG	
Preparation of Digital Governance Legislative Regulatory Framework	PO-PSMGG	
Establishment of Digital Governance Innovation Office	EGAZ	
Establishment of eGovernment Authority	PO-PSMGG	

ANNEXURE B: OPERATIONAL IMPACT PERFORMANCE INDICATORS

1. Services Offered Online

Digitization of public services can lead to significant gains in revenue collection. Government revenues are expected to increase due to making it more straightforward for citizens and businesses without having to make several trips to different government buildings. This KPI is intended to measure the increase in clients served after critical services are integrated into the backend.

SERVICES	OWNER INSTITUTION	CLIENTS SERVED				
		2023	2024	2025	2026	2027
National ID	NIDA					
Zan ID	ZCSR A					
Business Registration	BPRA					
Land Registration	MLHS D					
Property Registration	BPRA					
Citizenship and Passport	MOH A					
Birth Registration	CRVS					
Death Registration	CRVS					
Marriage Registration	CRVS					
Online TIN Registration	ZRA					
Online VRN Registration	ZRA					
Online tax Filing Registration	ZRA					
Travel and Tourism Visas	MOH A					
Zanzibar Universal Pension Scheme	MOHZ					
Zanzibar Universal Health Insurance	MOHZ					

Illegal, Unregulated, and Unreported fishing	MoBE F					
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Service Processing Time Improvement Reports

Digitization of public services is expected to increase the processing time for various public services offered. This is due to service automation through the integration of digital platforms. This KPI is intended to measure the year-to-year processing time improvement for essential government services.

SERVICES	RESPONSIBILITY	SERVICE PROCESSING TIME (Days)				
		2023	2024	2025	2026	2027
National ID	NIDA					
ZanID	ZAID					
Business License	BPRA					
Land Registration	MLHS D					
Property Registration	BPRA					
Passport	MOHA					
Birth Certificate	CRVS					
Death Certificate	CRVS					
Marriage Certificate	CRVS					
TIN Certificate	ZRA					
VRN Certificate	ZRA					

II. Government Revenue Collection Reports

Digitization of public services is expected to increase the number of clients served as a result of making it more straightforward for citizens and businesses to receive Government services without having to make several trips to different government buildings. This KPI is intended to measure revenues from integrated digital services.

CORE SERVICES	RESPONSIBILITY	PERCENTAGE INCREASE IN ANNUAL REVENUES				
		2023	2024	2025	2026	2027
Business Licensing	BPRA					
Land and Property Taxes	MLHSD					
Passport	MOHA					
Birth Certificate	CRVS					
Death Certificate	CRVS					
Marriage Certificate	CRVS					
Tax Revenues	ZRA					
Electricity Payment	ZURA					
Water Payments	ZURA					
Tourism Visas	MTH					
Local Government Levies	LGAs					

III. Fiber Backbone and Last-Mile Performance Characterization

A detailed assessment of the Zanzibar fiber-optic backbone infrastructure and last-mile connectivity is necessary to determine the adequacy of bandwidth provisioned vis-a-vis the current bandwidth requirements.

DIGITAL INFRASTRUCTURE	BANDWIDTH PROVISIONING			
	Equipment	Current	Upgraded Type of Bandwidth and Location Provisioned	RESPONSIBILITY
Last Mile Fiber-Optic Infrastructure Assessment				EGAZ
National Fiber Backbone Infrastructure Assessment				EGAZ

IV. Infrastructure Incidents Reports

Implementing a well-thought-out incident management system is the key to customer satisfaction in a digitally transformed government. When public service provider institutions can react to and resolve incidents as they arise quickly, the system becomes more reliable and trusted by its users. If left unattended, incidents can lead to extended and unplanned service disruption and, ultimately, loss of client and government revenues. The metrics used to capture Incident Reporting for the digital infrastructure is the number of incidents per year.

DIGITAL INFRASTRUCTURE	RESPONSIBILITY	NUMBER OF INFRASTRUCTURE INCIDENTS				
		2023	2024	2025	2026	2027
Zanzibar GOVNET	EGAZ/ZICTIA					
Zanzibar National Broadband Backbone	EGAZ/ZICTIA					
Government Mobile Service Gateway	EGAZ/ZICTIA					
One-Stop Payment Gateway	EGAZ/ZICTIA					
Zanzibar Submarine Cable System	EGAZ/ZICTIA					
ZanMalipo Payment Gateway	EGAZ/ZRA					

V. Digital Platforms Incidents Reports

The key to customer satisfaction in a digitally transformed government is implementing well-thought- out incident management reporting for key digital government platforms. If such incidents are left unattended, they can lead to service disruption and, ultimately, loss of government revenues. Metrics used to capture Incident Reporting for the digital platforms is the number of incidents per year.

DIGITAL PLATFORMS	INSTITUTION	APPLICATION INCIDENTS REPORTING				
		2023	2024	2025	2026	2027
Zan ID	ZCSRA					
Business Registration	BPRA					
Land Registration	MLHSD					
Property Registration	BPRA					
Citizenship and Passport	MOHA					
Birth Registration	CRVS					
Death Registration	CRVS					
Marriage Registration	CRVS					
Online TIN Registration	ZRA					
Online VRN Registration	ZRA					
Online tax Filing Registration	ZRA					
Travel and Tourism Visas	MOHA					
Zanzibar Universal Pension Scheme	MOHZ					
Zanzibar Universal Health Insurance	MOHZ					
Illegal, Unregulated, and Unreported fishing	MoBEF					

VI. Infrastructure Outage Resolution Time Reports

When an infrastructure incident leads to an outage, the outage incident must be resolved as soon as possible. The aim is to ensure the infrastructure is reliable and the downtime is kept to a minimum to protect Government services and revenues. Metrics used to capture infrastructure outage: Incident resolution is the average resolution time for the digital infrastructure.

SYSTEM	RESPONSIBILITY	AVERAGE OUTAGE INCIDENT RESOLUTION TIME (hours)				
		2023	2024	2025	2026	2027
Zanzibar GOVNET	EGAZ/ZICTIA					
Zanzibar National Broadband Backbone	EGAZ/ZICTIA					
Government Mobile Service Gateway	EGAZ/ZICTIA					
One-Stop Payment Gateway	EGAZ/ZICTIA					
Zanzibar Submarine Cable System	EGAZ/ZICTIA					
ZanMalipo Payment Gateway	EGAZ/ZRA					

VII. Application Outage Resolution Time Reports

The event must be resolved immediately when an application incident leads to an outage. The aim is to ensure that service is continuously available to the client by providing minimal downtime to protect Government services and customer satisfaction. Metrics used to capture application outage event resolution for the digital infrastructure is the average outage resolution time.

DIGITAL PLATFORMS	INSTITUTION	APPLICATION INCIDENTS REPORTED				2027
		2023	2024	2025	2026	
National ID	NIDA					
Zan ID	ZCSRA					



Business Registration	BPRA					
Land Registration	MLHSD					
Property Registration	BPRA					
Citizenship and Passport	MOHA					
Birth Registration	CRVS					
Death Registration	CRVS					
Marriage Registration	CRVS					
Online TIN Registration	ZRA					
Online VRN Registration	ZRA					
Online tax Filing Registration	ZRA					
Travel and Tourism Visas	MOHA					
Zanzibar Universal Pension Scheme	MOHZ					
Zanzibar Universal Health Insurance	MOHZ					
Illegal, Unregulated, and Unreported fishing	MoBEF					

VIII. Reporting On the Existing Number of Digital Professionals

Another critical metric to be monitored in support of digital skills development monitoring in various government departments and agencies is the number of professionals with the requisite digital skills in each department or agency.

DIGITAL SKILLS	RESPONSIBILITY	EXISTING NUMBER OF DIGITAL PROFESSIONALS				
		2023	2024	2025	2026	2027
Number of Existing API Integration professionals	EGAZ					
Number of Existing Big Data Analytics	EGAZ					



professionals						
Number of Existing Business Intelligence professionals	EGAZ					
Number of Existing Cloud Computing professionals	EGAZ					
Number of Existing Mobile USSD-SMS Gateway professionals	EGAZ					
Number of Existing Certified Data Center professionals	EGAZ					
Number of Existing Broadband Fiber Systems professionals	EGAZ					
Number of Existing Cybersecurity professionals	EGAZ					
Number of Existing AI and ML professionals	EGAZ					
Number of Existing Autonomous Drone professionals	EGAZ					
Number of Existing Blockchain professionals	EGAZ					
Number of Existing Robotics Process Automation professionals	EGAZ					
Number of Existing 5G Wireless professionals	EGAZ					
Number of Existing Process Automation professionals	EGAZ					
Number of Existing Blockchain professionals	EGAZ					

IX. Number of Trained Digital Professionals Reports

Professional training in digital skills is an essential new function that the HR departments of each department or agency must place at the top of the digital transformation priority list. The metric to be monitored in support of digital skills training progress in various government departments and agencies is the number of professionals that have undergone digital training each year.

DIGITAL SKILLS	RESPONSIBILITY	NUMBER OF TRAINED DIGITAL PROFESSIONALS				
		2023	2024	2025	2026	2027
Number of API Integration professionals Trained	EGAZ					
Number of Big Data Analytics professionals Trained	EGAZ					
Number of Business Intelligence professionals Trained	EGAZ					
Number of Cloud Computing professionals Trained	EGAZ					
Number of Mobile USSD-SMS Gateway professionals Trained	EGAZ					
Number of Certified Data Center professionals Trained	EGAZ					
Number of Broadband Fiber Systems professionals Trained	EGAZ					
Number of Cybersecurity professionals trained	EGAZ					
Number of AI and ML professionals trained	EGAZ					
Number of Autonomous Drone professionals trained	EGAZ					
Number of Blockchain professionals Trained	EGAZ					
Number of Robotics Process Automation Professionals Trained	EGAZ					
Number of 5G Wireless professionals Trained	EGAZ					
Number of Process Automation professionals Trained	EGAZ					
Number of Blockchain professionals Trained	EGAZ					

X. Number of Recruited Digital Professionals Reports

The digital skills capacity gap in the Government of Zanzibar can be filled through training, but more is needed. The HR department must identify potential candidates for recruitment to fill the existing digital skills gap.

DIGITAL SKILLS	RESPONSIBILITY	NUMBER OF RECRUITED DIGITAL PROFESSIONAL				
		2023	2024	2025	2026	2027
Number of API Integration professionals Recruited	EGAZ					
Number of Big Data Analytics professionals Recruited	EGAZ					
Number of Business Intelligence professionals Recruited	EGAZ					
Number of Cloud Computing professionals Recruited	EGAZ					
Number of Mobile USSD-SMS Gateway professionals Recruited	EGAZ					
Number of Certified Data Center Professionals Recruited	EGAZ					
Number of Broadband Fiber Systems professionals Recruited	EGAZ					
Number of Cybersecurity professionals recruited	EGAZ					
Number of AI and ML professionals recruited	EGAZ					
Number of Autonomous Drone professionals Recruited	EGAZ					
Number of Blockchain professionals Recruited	EGAZ					
Number of Robotics Process Automation Professionals Recruited	EGAZ					
Number of 5G Wireless professionals Recruited	EGAZ					
Number of Process Automation professionals Recruited	EGAZ					
Number of Blockchain professionals Recruited	EGAZ					



THE REVOLUTIONARY GOVERNMENT OF ZANZIBAR

**PRESIDENT'S OFFICE, CONSTITUTION, LEGAL
AFFAIRS, PUBLIC SERVICE, AND GOOD GOVERNANCE**

**ZANZIBAR DIGITAL GOVERNMENT
STRATEGY 2023 - 2027**