Department of E-Government

Ministry of Information

Republic of Malawi

Digital Government Strategy

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Glossary of Terms

Abbreviation	Expansion
BCP/DR	Business Continuity Planning / Disaster Recovery
BPR	Business Process Re-engineering
CERT	Computer Emergency Response Team
CIO	Chief Information Officer
CMMI	Capability Maturity Model Integration
COBIT	Control Objectives for Information and Related Technologies
CoE	Centre of Excellence
CSC	Civil Service Commission
CSIRT	Computer Security Incident Response Team
DGS	DGS
DHIS	District Health Information System
DHRMD	Department of Human Resource Management and Development
DOI	Department of Information
e-Govt.	e-Government
EGP	Electronic Government Procurement
EMIS	Education Management Information System
ERP	Enterprise Architecture
ESCOM	Electricity Supply Cooperation of Malawi
G2G	Government to Government
GoM	Government of Malawi
GWAN	Government Wide Area Network
HISP	Health Information System Program
HQ	Head Quarters
HRMIS	Human Resource Management Information System
JD	Job Description
KPIs	Key Performance Indicators
ICT	Information and Communication Technologies

Abbreviation	Expansion
IFMIS	Integrated Financial Management Information System
ISO	International Standards Organization
IT	Information Technology
ITIL	Information Technology Infrastructure Library
ITSM	Information Technology Service Management
ITU MISR	International Trade Union-Measuring Information Society Report
IXP	Internet Exchange Point
LAN	Local Area Network
MACRA	Malawi Communications Regulatory Authority
MALTIS	Malawi Traffic Information System
Mbps	Megabits per second
MDA	Ministry, Department or Agency
MDM	Master Data Management
M&E	Monitoring and Evaluation
MGDS	Malawi Growth and Development Strategy
MoI	Ministry of Information
MIDAS	Malawi Integrated Digital Agenda for e-Services
MoU	Memorandum of Understanding
MSME	Micro, Small & Medium Enterprises
MS	Microsoft
NACIT	National College of Information Technology
NCHE	National Council for Higher Education
NIA	National Information society Agency
NIAT	National Institute of Advanced Technology
NICTWG	National ICT Working Group
NOC	Network Operations Center
NRB	National Registration Bureau
OPC	Office of the President and Cabinet
OS	Operating System

Abbreviation	Expansion
PPP	Public Private Partnerships
PPDA	Public Procurement and Disposal of Assets Authority
PPPC	Pubic Private Partnership Commission
QA	Quality Assurance
SDG	Sustainable Development Goals
SLA	Service Level Agreement
SME	Subject Matter Expert
TOGAF	The Open Group Architecture Framework
UN EGDI	United Nations E-Government Development Index
WEF	World Economic Forum

FOREWORD

Malawi Growth and Development Strategy III recognizes the fundamental importance of ICT as a crosscutting enabler in the delivery of services and a proven accelerator to growth and development in all sectors. Therefore, it is core to develop a roadmap that will mainstream the adoption and usage of ICT in all the spheres of the economy.

The policy comes at a time Government of Malawi has shown a political will by prioritizing the ICT sector in its Medium-term plan thus MGDS III. ICT has the potential to bring about a paradigm shift from the usual and manual way of conducting business to a digital way that can bring about efficiency and effectiveness in the service delivery.

The Strategy will help in addressing the challenges that incumbers the use of ICTs when conducting day to day operations of Government to Government, Government to business as well as Government to citizens. The Strategy will also assist the Ministry of Information (MoI) in the implementation of the targets in the National ICT Policy. It is my sincere hope that this strategy will go a long way to assist the Department of E-Government in systematic ICT development, implementation, Enforcement of ICT Standards as well as Monitoring & Evaluation of all ICT projects and initiatives in Government Ministries, Departments and Agencies.

It is therefore crucial for all stakeholders to take part in the implementation of this strategy geared to divulge the Digital Government Transformation Agenda that embarks at achieving full and sustainable digitization.

Honorable Gospel Kazako

Minister for Information

Signature…….

Date……..

PREFACE

The Ministry of Information (MoI) recognizes that ICT is pivotal in transforming the way people, businesses, and governments communicate, transact, and access information and services. It is in view of the foregoing that the strategy has been developed to iron out bottlenecks that hinder the afore-highlighted potentials of ICT.

The Strategy has been developed based on the following thematic areas; Infrastructure and Access, Capacity building, Policy & Planning as well as ICT Systems and Processes. Additionally, guidance has also been rendered on ICT project and Portfolio Management as well as Monitoring and Evaluation.

These thematic areas have been formed by challenges not limited to Poor ICT Infrastructure, Lack of legal mandate by the Department of E-Government, rising cases of corruption and fraud due to many un-automated processes, poor data management, in adequate ICT staffing coupled with capacity building in specialized areas.

Through the strategy, the adoption of various technological innovations aimed at improving public service delivery will be expedited. The ICT Strategy outlines the Government of Malawi`s commitment to build the capacity for the IT sector and subsequently overcome the continued dependency on outside experts as well as other institutions for development and implementation of complex ICT initiatives.

Francis Bisika

Principal Secretary for Ministry of Information

Signature……

Date……

Executive Summary

The Digital Government Strategy (DGS) presents the first comprehensive forward-looking national strategy for development of Digital Government agenda in Malawi which will enable Ministries, Departments and Government Agencies (MDAs) to provide customer-centric and results driven services to the citizens of Malawi. The Strategy acts as a guideline for implementing the required interventions, regulatory reform and institutional frameworks and lays down the implementation roadmap. It is aligned to the National priorities and the country vision enlisted in MGDS III and the Sustainable Development Goals (SDGs). Digital Government will contribute to Malawi's socio-economic development and catalyze the transformation of Malawi into a competitive, innovative knowledge society.

The Vision of Digital Government in Malawi is "*A highly efficient and accountable public service delivery system riding on digital dividends".* The Mission statement is "*To support provision of seamless public services that are convenient and accessible through institutional strengthening, capacity building and leveraging integrated digital systems and platforms.*

DGS crystallizes this vision and mission into strategic goals based on the guiding principles and recommends interventions with defined execution timeframe and primary owners. The Strategy clearly identifies priority initiatives, projects and facilitates monitoring and evaluation to ensure accountability and transparency.

The strategic interventions recommended are based on an inclusive framework with five strategic pillars (Policy & Planning, Capacity Building, Infrastructure & Access, Systems & Processes and Institutional Frameworks) and four cross-cutting enablers (Financial Management, Procurement, Project & Portfolio Management, Planning & Monitoring) with Communications, Awareness and Change Management as an all-encompassing theme.

The DGS stresses on digital inclusion, sharing of public ICT resources and infrastructure, adoption of common standards, systems and frameworks and capacity development as the key success factors for implementing the Digital Foundations and National Fibre Backbone Projects over the next five years for improving public-service delivery through modernization of Government ICT Applications/Systems such as IFMIS, HRMIS, MALTIS, etc.

1.0 FORMULATION OF DGS

The DGS is based on the Malawi Integrated Digital Agenda for e-Services (MIDAS) framework. This framework has been developed by incorporating best practices from various international assessment tools, research articles, reports and handbooks on e-Government. The common areas have been retained and some fresh themes have been added to suit Malawi's context. The country's economic and technical maturity have been taken into consideration while customizing the framework. The MIDAS framework has five verticals as pillars and four horizontals as foundations. Further, the top cone lays down the vision, in alignment to Malawi's country goals.

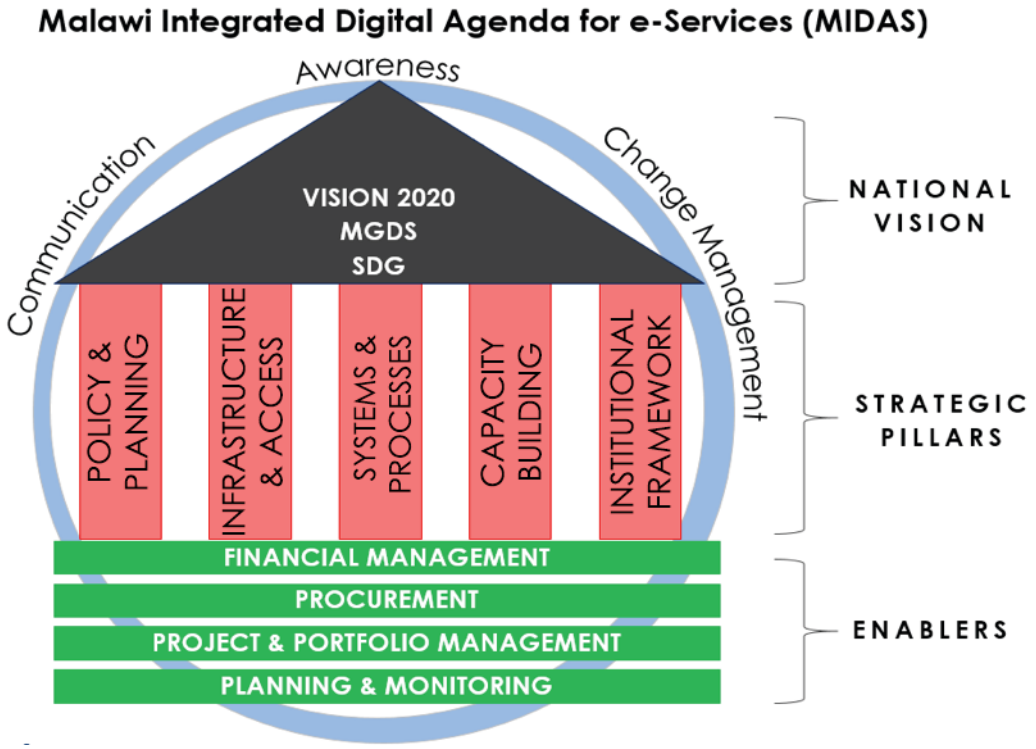


Figure 1: MIDAS Framework

National Vision refers to the strategic Vision at country level in Malawi such as MGDS III and UN's Sustainable Development Goal No.9. The alignment of DGS to the National Vision has been elaborated in previous section.

Strategic Pillars are the foundational elements of the Digital Government concept, adopted across leading countries in Digital Government. In the current context, these elements form the key themes of the Digital Government Framework in Malawi. This Strategy has been conceptualized, validated and developed in-line with these themes and key recommendations have been made in each of these thematic areas.

These pillars are supported by cross-cutting **Enablers,** which are the cross-cutting themes that provide the necessary structural elements for implementation of the DGS. Specific recommendations have been made on each of the cross-cutting thematic areas.

2.0 GUIDING PRINCIPLES FOR DGS

1.1. Vision, Mission, Guiding Principles, Goals & Strategic Objectives

Vision Statement - *A Transformed Government with efficient and accountable administration, which provides seamless Governance by making Public Services convenient and accessible, resulting in social-economic growth of Malawi.*

Mission Statement - *To strengthen Government's ability to deliver public services by institutional strengthening, capacity building and leveraging integrated digital systems and platforms.*

Guiding Principles

The MIDAS framework used to develop the DGS has been inspired by the Guiding Principles of e-Governance and is aimed to achieve the Goals

i. Streamlining of Government Processes
ii. Impact & Visibility
iii. Consolidation & Sharing of State ICT resources
iv. Consistency and standardization
v. Public Participation
vi. Foundational Support
vii. Coherent International Participation
viii. Investment in human capital

Goals

i. Transformed Government through efficient integrated e-services for social economic development
ii. Enhanced citizen participation through Government online presence
iii. Enhanced resource mobilization for digital ecosystem

Strategic Objectives

i. To strengthen the institutional structure and authority of the e-Government/IT function within Government essential for delivering digital public services
ii. To improve the Government's capacity for implementing sustainable initiatives for delivering high-quality public services digitally
iii. To develop and implement forward looking policies, acts, regulations and guidelines for enabling efficient, secure and reliable digital public services
iv. To ensure standardization of Government processes and implementation of modern integrated systems and platforms
v. To build shared IT infrastructure across Government to speed up the deployment of digital public services
vi. To establish financial management principles and funding mechanisms for ensuring sustainability of Digital Government initiatives
vii. To set up program, portfolio and project management skills and principles for ensuring implementation of Digital Government initiatives

viii. To strengthen Government's ability for efficient procurement of information systems, infrastructure and resources
ix. To carry out planning, monitoring and evaluation of all Digital Government initiatives for measuring performance of digital public services
x. To establish communication strategies and channels for improving adoption of e-Services

1.2. Alignment to Country`s Medium Term Plan (MGDS III)

Malawi has created national level plans for medium term social and economic progress which is the MGDS III. The Plan is the successor to the MGDS II which covered the years 2011 to 2016 and expired in June 2016. The MGDS III is intended to cover the period from 2017 to 2022 and therefore is the guiding national strategy for the final three years of Vision 2020 and the start of the next vision. The main aim of the MGDS was to create wealth through sustainable economic growth and infrastructure development as a means of achieving poverty reduction. It presented a policy framework that balanced issues related to both economic growth and social development.

The DGS, by its very nature, aims to transform every sector of Malawi. In many countries, Digital Government has revolutionized the way Government provides services to citizens and businesses and interacts internally. It has promoted productivity, transparency and accountability.

Given this overlapping agenda of Digital Government, it becomes critical that the strategy for the same is in sync with the national objectives of Malawi. Malawi being a developing country, needs to allocate its resources prudently for national priorities. In this perspective, Digital Government is a best-fit, as it lays a platform leveraging which, Government can reduce its costs of service delivery and redeploy the savings in including more citizens under its programs. It also paves way for resource sharing within the Government MDAs and puts in place a framework for capacity building of the public sector. These are some of the examples of how Digital Government perfectly aligns with Malawi's National Goals.

The specific details of the DGS alignment with the National Strategic Plans and United Nation's Sustainable Development Goals have been presented in Annexure – D.

3.0 STRATEGIC INTERVENTIONS

The Strategic interventions are themed around the five pillars of the MIDAS framework in addressing the strategic goals and pillars. Specific actions have been recommended in each of the thematic areas, structured as sub-sections. The actions in each of the sub-sections have further been grouped logically and supporting arguments have been presented wherever necessary. Alpha-numeric codes have been assigned to each recommendation to facilitate activity based cost estimation and monitoring. Primary Owner(s) have been mapped to each of the recommendations, who would be responsible for driving the initiative to a logical conclusion, with the help of other stakeholders. Every

recommendation has been assigned a timeframe for execution. The definition is presented below:

Table 1: Timeframe for Execution

Execution Timeframe	Quick Win	Short Term	Medium Term	Long Term
Range	0 – 6 Months	6 – 12 Months	1 – 3 Years	3 – 5 Years

3.1 Policy & Planning

The Department of e-Government is required to harmonize all ICT Planning as indicated in the Public ICT Standards, Guidelines and Regulations. This mandate can be executed by ensuring that institutional based ICT policies, strategies and standards are underlined to the e-Government overarching guiding principles. The efficient Policy and Planning is attainable with a well-coordinated efforts backed up by a legal empowerment.

3.1.1 New Acts/Regulations

The DGS and agenda needs to be enforced in Malawi through appropriate legal mandates and regulations. The Department of E-Government should have authority and adequate resources to carry out its mandate. Additionally, it should be recognized as the *'Go-To Agency'* in matters of ICT for all Government entities in Malawi. The Department should also have the flexibility to generate revenue, such as cloud hosting of systems.

On similar lines, new enabling legislations in the form of Acts or Regulations are required in the areas not limited to Technology Transfer, Data Protection, Data sharing among Government Agencies and Capacity Building.

Table 2: Recommendation on enabling legislations

#	Recommended Actions	Primary Owner(s)	Execution
P1	Draft the Digital Government Act to empower the Department of E-Government to effectively execute its mandate	MoI, Department of E-Government	Short Term
P2	Introduce a provision as part of the Digital Government Act to mandate technology transfer and skills transfer as part of ICT contracts to the respective Government clients	MoI, Department of E-Government	Short Term
P3	Develop regulations as part of the Digital Government Act to mandate training across all Govt. entities not limited to the areas of ICT,	MoI, Department of E-Government	Short Term

#	Recommended Actions	Primary Owner(s)	Execution
	Project & Vendor Mgmt., Enterprise Architecture, ITIL, and COBIT.		

3.1.2 Supporting Regulations/By-Laws to existing Acts

Malawi has recently introduced a few forward-looking legislations in the area of Digital Government and ICT, such as Communications Act, Electronic Transactions and Cyber Security Act, etc. However, this needs to be followed up by framing detailed regulations or by-laws for providing implementation level guidance and for enforcing the legislations. The subject of add-on regulations has been often mentioned in the recent Acts named above. These regulations would create a conducive environment for enabling Public Service Delivery.

Table 3: Reccomendations on supporting regulations

#	Recommended Actions	Primary Owner(s)	Execution
P4	Develop a data protection act to enhance provisions for Data Protection and Privacy in the Electronic Transactions & Cyber Security Act	MoI	Medium Term
P5	Introduce supporting regulations to the Electronic Transactions & Cyber Security Act – 2016, in the areas governing Public Service Delivery through electronic and self-service channels and e-commerce*(e.g. – consumer rights, payment, wallets, taxation, shipping, returns)*	MoI	Quick Win
P6	Introduce supporting regulations to the National Registration Act – 2010, in the areas of acquisition, sharing, processing and disposition of citizen data by Public and Private entities	MoI/NRB/ Department of E-Government	Short Term
P7	Provide for implementation of a Government Cloud, to be adhered by all Government entities in the Digital Government Act	Department of E-Government	Long Term

3.1.3 Progressive Policies

A competitive and thriving private sector is an asset to any country. Developing Malawi's domestic ICT industry would go a long way in increasing quality, lowering costs and enhancing overall skill-set of the talent pool. Moreover, it will catalyze ground level entrepreneurship and will have positive consequences for other sectors. The following Policy Updates are required for developing the local ICT Industry in Malawi.

Table 4: Recommendation on Progressive Policies

#	Recommended Actions	Primary Owner(s)	Execution
P8	Introduce a comprehensive Start-up Policy to encourage innovation and to promote MSMEs through policy Incentives and other support mechanisms	MoI, Department of E-Government	Short Term

3.1.4 ICT Planning

GoM has developed ICT Policy, National ICT Master and Strategic Plans, ICT Standards and also conducted ICT Sector Review during 2013 – 2017, however most MDAs have followed an un-structured approach to ICT and e-Government planning. The MDAs have undertaken initiatives in isolation in the absence of a coherent and synchronized strategic plan for ICT which takes into cognizance integration with other ICT applications/systems and leverages potential synergies.

It is essential that all MDAs must have their own ICT strategic plans that is aligned to the strategic objectives and associated priorities of the MDA. It is also imperative that the ICT investments contribute towards the quantifiable or qualitative achievement of GoM and MDA strategic objectives and goals. The Department of E-Government should take the lead in coordinating the development of individual strategies and ensuring that they align with country level ICT/e-Government Strategy.

Table 5: Recommendations on ICT Planning

#	Recommended Actions	Primary Owner(s)	Execution
P9	Update the National ICT Policy for the country, which covers ICT Development and Management by various Government Organizations at all levels	MoI, Department of E-Government	Short Term
P10	Support the Line Ministries in mainstreaming ICT Strategies in their sector strategies.	Department of E-Government	Medium Term
P11	Develop a framework for ICT management of Government machinery at all levels	MoI, Department of E-Government	Short Term
P12	Draft an Information Security Policy, security program and implementation framework	Department of E-Government	Short Term

3.2 Infrastructure & Access

3.2.1 Government Network Infrastructure

The overall ICT infrastructure of Government of Malawi is lacking on several fronts. Most of the MDAs do not have adequate BCP/DR capabilities. In many cases, the backup servers sit alongside the main servers under the same roof. Critical applications such as IFMIS and HRMIS are deployed on old servers, without proper backup and are connected though non-reliable networks. Therefore, they are at a high risk of failure. Many MDAs do not use the file storage server, even for backup of critical documents. Users store files on local machines. There have been instances of theft, where computers and laptops were stolen with all critical data, and there were no copies of the files on their file server.

While the challenges are numerous, a few strategic interventions can help the Government of Malawi in reinvigorating its ICT infrastructure.

Data Center with its Recovery Center and Network Operation Centers (NOC) should be constructed across the country in North, Central, Eastern and Southern regions. The Department of E-Government should coordinate expansion and management of networks for the region HQs and districts. Dedicated technicians should be staff in the Regional Offices to facilitate network expansion & management in their region. A team of specialized Systems and Network Administrators must be constituted and trained to manage the GWAN Data Centre and Network Operations Centre (NOC).

Table 6: Recommendations on Government Network Infrastructure

#	Recommended Actions	Primary Owner(s)	Execution
A1	Establish four Network Operating Centers in Lilongwe, Blantyre, Zomba and Mzuzu for optimizing Network Operations for all Government entities across the country	Department of E-Government	Medium Term
A2	Establish National Data Center which should act as a central repository of Government systems and data. A mirror Data Center with backup facilities should be established in another location	Department of E-Government	Short Term

Some MDAs procure desktops and laptops independently without following any guideline. Every user/MDA seems to be independently responsible for the operating systems on their machines.

The Department of E-Government must define minimum standards for laptops, computers and printers packaged with licensed OS, Antivirus, Office Suite, etc. The Department of E-Government should enter fixed-price contracts through open bids. MDAs can procure independently from vendors based on these negotiated Government rates.

An information security function must be established within the MoI to create an ICT assets inventory and classify the assets. All ICT staff of MDAs must undergo mandatory trainings on information security.

A database of all Government applications and their requirements needs to be developed by the Department of E-Government. The system should have functionalities for reporting aggregate current and future projections of requirements of applications.

The Department of E-Government should take lead in establishing a functional service help desk, Incident Management team, Business Continuity Plan, Backup and Recovery Infrastructure.

Table 7: Recommendations on Harmonizing IT services systems and Infrastructure

#	Recommended Actions	Primary Owner(s)	Execution
A3	Establish shared IT Services such as common service help desks, Technical Support and Incident management	Department of E-Government	Quick Win
A4	Enforce and adhere to minimum standards and common configuration for end-user computing devices such laptops, computers and printers packaged with licensed OS, Antivirus, Office Suite.	Department of E-Government	Quick Win
A5	Consolidate the system requirements *(bandwidth, computing power, storage,)* for planning purposes for the various ICT applications, hosted on common Government infrastructure	Department of E-Government	Quick Win
A6	Establish a Government Security Operations Center with associated CSIRT to enhance Information Security.	Department of E-Government	Medium Term

3.2.2 Connectivity

Challenges of last mile connectivity prohibit adoption of e-Government applications by MDA offices in district/regional offices. This prevents an organization wide roll-out of existing applications. To compound the situation, internet connectivity is intermittent and unreliable outside large cities. This compels the regional/district offices to follow paper based workflows, even when the same has been digitized in the form of IT applications.

MDAs, Hospitals, Universities and other Public Institutions outside Lilongwe are compelled to purchase bandwidth from different ISPs at market rates, which are much higher than the rates negotiated with SimbaNet. Lack of last mile connectivity is also leading to drain on public resources for purpose of connectivity.

Table 8: Recommendations on Connectivity

#	Recommended Actions	Primary Owner(s)	Execution
A7	Map all Govt. buildings in regional & district centers for network access	Department of E-Government	Quick Win
A8	Implement last mile connectivity by leveraging both fiber and wireless networks	Department of E-Government	Medium Term
A9	Expedite connectivity to national backbone across the country	Department of E-Government	Medium Term

Poor quality of broadband at MDA HQs has also hampered the ICT adoption and introduction of new e-Government application. Most of the MDA staff interviewed has lost confidence on performance of GWAN, as a transformational tool.

The GWAN has insufficient international gateways providing insufficient bandwidth to the Government of Malawi. The observed aggregate download bandwidth for all Government MDAs in Capitol Hill & City Center was approx. 290 Mbps. This is highly inadequate given the high number computer terminals connected to SimbaNet across cities and districts.

The Department of E-Government should work to instill the essential network traffic management tools (firewall, network segmentation, etc.) to enable prioritization of core government services and communications needs.

Table 9: Recommendations on Network Traffic Management

#	Recommended Actions	Primary Owner(s)	Execution
A10	Enforce network contract by effective monitoring and routine audits to ensure committed bandwidth & continuous availability of the redundant gateway	Department of E-Government	Quick Win

The internet charges are quite high and consume a large part of MDAs' IT budget. This leaves them with lesser amount to spend on critical equipment and applications. MDAs based in Lilongwe are actively considering alternate internet service, given the saturation and intermittency of GWAN internet that is severely impacting their Business as Usual (BAU). This would entail duplication of investment on ISPs.

Table 10: Recommendations on Reducing Potential Cost of Alternative Connectivity Arrangements

#	Recommended Actions	Primary Owner(s)	Execution
A11	Negotiate with Service Providers to secure special rates for broadband and wireless internet for Government entities by	Department of E-Government	Quick Win

#	Recommended Actions	Primary Owner(s)	Execution
	consolidating their bandwidth needs to achieve economies of scale		
A12	Consolidate various Public Services to be delivered through unified access channels such as *'One Stop Public Services Delivery Centers and Tele Centers* to increase the coverage across the country.	Department of E-Government	Medium Term
A13	Upgrade LANS in all MDAs	Department of E-Government	Short Term

3.3 Systems & Processes

3.3.1 Business Process Re-engineering

Process streamlining is extremely important before commencing automation of any public services. Currently, few MDAs are attempting to automate services without process re-engineering. This results in scenarios where the process to avail the public services is still long and tedious. Despite digitization, the consumer of services is burdened with long list of information requirements as it is linked to archaic guidelines and outdated policies.

Therefore, it becomes essential that all MDAs include Business Process Re-engineering (BPR) as a preliminary step to application development for any Digital Government Service. For major Digital Government Projects, the Department of E-Government should guide the MDAs through the complete process of development of Digital Government projects and subsequent maintenance and upgradation. This includes major stages of Gap Analysis, Requirement Gathering, Design, Procurement, Development, Testing, Quality Assurance and Maintenance.

Table 11: Business Process Re-engineering

#	Recommended Actions	Primary Owner(s)	Execution
S1	Review the system development standard to guide all MDAs through the life cycle of ICT Applications acquisition ensuring that BPR is a pre-requisite.	Department of E-Government	Medium Term

3.3.2 Common Architecture and Standards

The Department of E-Government must develop and publish a common Enterprise Architecture that would host the future Digital Government applications. This would lead to enhanced interoperability between different systems and promote sharing of infrastructure and resources. Adherence to common Enterprise Architecture would also lead to interface for data sharing.

The Department of E-Government will also be responsible for enforcement of the ICT Common Standards in Government of Malawi. This will lead to quality improvement and standardization in the long run.

Websites serve as a critical platform to provide information and engage with citizens. A robust and easy to browse website demonstrates the digital maturity of a country. It has been observed that websites of Malawi Government are slow and non-responsive to load even from local networks. Further there have been instances of hacking and defacing. Apart from the websites, the Department of E-Government should also enforce the use of official emails when conducting day to day operations.

The Department of E-Government should take a lead in developing a common framework for developing websites for MDAs and Local Government authorities. This framework can be based on an open-source platform, but must have adequate security provisions. The concerned Government entity would just need to add content and customize the user interface. For enhancing the responsiveness of GoM websites, the GWAN must connect to the Malawi Internet Exchange Point (IXP) that will allow local websites to be accessed using internal routers in Malawi. GWAN must allocate some dedicated bandwidth and increase priority for website traffic. Regional web servers should be installed in the four regional server rooms for load balancing clustered web servers.

Table 12: Recommenndations on Common Architecture and Standards

#	Recommended Actions	Primary Owner(s)	Execution
S2	Enforce compliance to common technical standards by all MDAs and Public Institutions	Department of E-Government	Quick win
S3	Review Public Service ICT standards of 2014	Department of E-Government	Quick win
S4	Development of segment architectures	Department of E-Government	Short Term
S5	Lay down common framework for Enterprise Architecture following TOGAF principles for Digital Government in Malawi, to be followed by all MDAs	Department of E-Government	Short Term
S6	Operationalize the Government Enterprise Architecture	Department of Government	Quick Win
S7	Support the MDAs for alignment of existing applications to common standards and subsequent integration to ensure interoperability & information security	Department of E-Government	Medium Term
S8	Develop common websites frameworks that can be adopted by MDAs and District/City Councils easily. These website frameworks would come with packaged services such as	Department of E-Government	Medium Term

#	Recommended Actions	Primary Owner(s)	Execution
	web-hosting, security features and payment gateways.		
S9	Enforce the use of official emails by blocking access to sharing information through personal emails	Department of E-Government	Quick Win

3.3.3 Information Security

The information security management for GoM ICT resources is weak. Valuable data/information assets are easily lost or acquired by people that should not have access to them. Today, there are minimal security provisions for GoM's data and applications. The websites and the email server do not have any additional protection. Many features of GWAN firewalls (Cisco Asa Firewall & Cyberoam) are not being used due to lack of technical skills to configure the firewalls. Faulty configuration sometimes leads to filtering out of emails.

The Department of E-Government also needs to take a lead in developing a framework and supporting guidelines for all Government entities on methods to properly manage the disposal of e-Waste.

Table 13: Recommendations on Information Security

#	Recommended Actions	Primary Owner(s)	Execution
S9	Develop Security manual and train ICT personnel on ICT assets inventory and classification	Department of Government	Medium Term
S10	Review the framework and supporting guidelines for all Government entities on methods to properly manage the disposal of e-Waste	Department of E-Government/Department Environmental Affairs	Quick Win

3.3.4 ICT Governance and Service Level Management

The current pack of Digital Government applications that are currently operational in Malawi are not governed efficiently. Best practices recommend that all ICT software application should be governed by following globally accepted standards such as COBIT.

Further, the Digital Government applications need to be operational and serviceable to a very high extent. Therefore, it is required that they have high levels of up-time and availability. These can only be ensured through adequate Service Level management and monitoring. Currently the e-Government applications in Malawi are not managed adequately irrespective of the fact that they are outsourced or developed in-house.

COBIT and ITIL have been used by information technology professionals in the (ITSM) space for many years. Used together, COBIT and ITIL provide guidance for the governance

and management of IT-related services by enterprises, whether those services are provided in-house or obtained from third parties such as service providers or business partners. It is essential that the Digital Government applications are governed adequately and managed efficiently using globally accepted norms such as COBIT & ITIL, respectively. The Department of E-Government can take a lead in championing these standards and guiding the MDAs in adaptation.

Table 14: ICT Governance and Service Level Management

#	Recommended Actions	Primary Owner(s)	Execution
S11	Establish a Governance Framework, based on COBIT, to align IT goals to Business goals across GoM. It should cover Audit, Assurance, Risk Management, Information Security & Regulatory Compliance	Department of E-Government	Short Term
S12	Put in place an ICT management practice based on ITIL to ensure excellence in ICT Service Management across all Government entities,	Department of E-Government	Short Term

3.3.5 Systems and Applications

The Department of E-Government will be entrusted with the task of fast-tracking development of digital government services and completion of some of the delayed Digital Government projects. On similar lines, it will also have a mandate of integrating the existing Digital Government applications and enhancing interoperability. The following recommendations articulate the interventions required in these areas.

Currently the government of Malawi is delivering its services using traditional paper files and storage. This affects efficiency in access to information and increases the risk of losing information, security, pollution and information disposal.

GoM also lacks a registry of current and upcoming MDA applications that would document the associated system requirements (e.g. – bandwidth, user-base, throughput, response time, database, file storage, security, backup, load balancing, etc.)

A database of all Government applications and their system specifications needs to be developed by the Department of E-Government. The system should have functionalities for reporting aggregate current and future projections of requirements of applications.

Table 15: Systems and Applications

#	Recommended Actions	Primary Owner(s)	Execution
S13	Implement EGP	Department of E-Government /PPDA	Quick Win

#	Recommended Actions	Primary Owner(s)	Execution
S14	Develop common standards for ICT procurement	Department of E-Government /PPDA	Quick Win
S15	Conduct an assessment of all existing government systems and draw a roadmap for integration of the systems with futuristic architecture	Department of E-Government	Short Term
S16	Digitize key registries to enable digital migration of services and access to critical data	Department of E-Government	Short Term
S17	Implement Electronic Document & Records Management System	Department of E-Government	Short term
S18	Digitalize Government Services	Department of E-Government	Short Term
S19	Implement Malawi Digital Services Portal—a single point of entry ('one-stop shop') for access to government information and digital services on any device	Department of E-Government	Medium Term
S20	Implement common digital service enablers such as user authentication, electronic identification (ID) integration, mobile delivery platform, SMS notification platform, electronic payment module, interoperability, and data-sharing platform;	Department of E-Government	Short Term
S21	Implement e-participation initiatives such as consultation forums on draft bills, regulations	Department of E-Government	Medium Term
S22	Develop a centralized database of ICT applications used by all MDAs	Department of E-Government	Quick Win
S23	Conduct an exercise for portfolio rationalization for the existing and upcoming systems of various Government entities on a periodic basis	Department of E-Government	Short Term

Most computers of MDAs and Public Institutions use outdated and non-licensed software which pose high legal and security risks for the Government of Malawi. In some other cases, licenses and hardware are procured separately and the software licenses remain under-utilized since the licenses undergo regular updates that cost the MDAs precious bandwidth.

All computers should use licensed and updated versions of EMS Office. Antivirus software must be procured centrally, distributed to MDAs and managed by the Department of E-Government. Similar approach should be followed for Operating Systems and Office Suite. ICT assets need to be adequately protected commensurate with their classification status. GWAN should have a local Windows Server Update Services (WSUS) to provide local updates to Microsoft Windows & Office and save on internet bandwidth.

Table 16: Recommendations on Procuring Licecnces

#	Recommended Actions	Primary Owner(s)	Execution
S24	Establish a process for periodic optimization of all software licenses available with various Government entities	Department of E-Government	Medium Term
S25	Procure all the required licenses including antivirus, MS Office, windows server, SSL Certificates	Department of E-Government	Quick win

The Department of E-Government should take lead in establishing a functional service help desk, Incident Management team, Business Continuity Plan, Backup and Recovery Infrastructure. Security management (firewalls, privileges, etc.) and bandwidth allocation must also be handled by the department.

Table 17: Recommendations on GWAN Enhancement

#	Recommended Actions	Primary Owner(s)	Execution
S26	Upgrade GWAN section into a department of network and Systems administration in the MoI to carter for and not limited to Firewalls, privileges and bandwidth allocation to all MDAs	MoI	Quick Win
S27	Assess, develop and implement business continuity and disaster recovery plans for MDAs	Department of E-Government	Quick Win

3.3.6 Service and Channel Integration

Public Services are delivered through multiple channels globally which include internet (computer & mobile platforms), call center, self-service kiosks, one-stop centers, etc. It is essential that the consumer of services gets the same experience across all the channels. To develop these channels for existing and futuristic Public Services, it is necessary to have a common structured framework that provides the platform for Omni-channel integration.

Table 18: Recommendation to develop a common structured framework for Omni-Channel Integration

#	Recommended Actions	Primary Owner(s)	Execution
S28	Establish frameworks for developing Omni-channel presence for all e-Government applications, with a focus on Mobile and Self-service Kiosks	Department of E-Government	Medium Term

Secure Payment gateways are essential to facilitate e-Services in any country. As the transactions for e-Services would be made across channels (mobile, one-stop centers, etc.), it is necessary to have a robust yet lean payment system. This payment system should link with major banks and mobile wallets. Additionally, this system needs to follow all guidelines of the Central Bank. Therefore, a common payment system needs to be developed in conjunction with the various stakeholders.

Table 19: Recommendation on developing a common payment system

#	Recommended Actions	Primary Owner(s)	Execution
S29	Collaborate with the relevant regulatory authorities to develop and establish common payment system for financial transactions for e-Services.	Department of E-Government	Medium Term

Malawi needs to focus on improving usage of mobile as a channel for delivery of Government services. This will enable reach of Public Services to a larger citizen base. Mobile Applications will also go a long way in addressing issues of access, bandwidth and electricity in Malawi.

Table 20: Recommendation on improving usage of mobile as a channel for deliverly of Government services

#	Recommended Actions	Primary Owner(s)	Execution
S30	Introduce a common mobile platform for MDAs on which they can offer Public Services. Develop a framework to support MDAs in launching mobile platforms for existing Digital Government applications	Department of Government	Medium Term

One-stop shops have been highly effective as channels for Public Service Delivery. Integration of e-Services of different MDAs into a single platform enables efficient resource sharing and lowers cost of service delivery for all participating organizations. In many geographies, the introduction of One Stop Shops has led to integration of e-Services on other channels such as Web, Mobile & Self Services. The Nodal Agency needs to highlight the global success stories of One stop shops and get MDAs on board to offer their e-Services though the common platform.

Table 21: Recommendation on the use of One Stop Shops

#	Recommended Actions	Primary Owner(s)	Execution
S31	Leverage the shared platform to Integrate e-Services of various MDAs and offer the e-services through One-Stop Shops	Department of Government	Medium Term

In addition to the recommended actions listed above, a list of common e-Services has been developed for priority implementation in Malawi. These e-Services have been selected based on the following approach:

i. Primary e-Services offered in the first wave of digitization in benchmarked countries
ii. Public Services having high visibility, which would demonstrate successful implementation, once digitized
iii. e-Services covering the entire spectrum of G2C, G2B and G2G
iv. Public Services that can be digitized with relative ease given the improving technical maturity in Malawi
v. e-Services that with relative ease of adoption given the ICT skills of the population base
vi. e Services having large user base and or high transactional frequency, that will make them ideal candidates for PPP implementation (due to high transaction volume)
vii. Public Services have been selected keeping in mind uniform sectoral distribution. Once digitized, these would serve as anchor examples of e-Services for the respective Ministries

The list of candidate Public Services for digitization have been presented in Annexure C

Table 22: Recommendation on the need to build on shared platforms

#	Recommended Actions	Primary Owner(s)	Execution
S32	Guide the MDAs in developing e-Services for respective sectors based on common frameworks and built on shared platforms	Department of Government	Quick Win

Based on the performance review of existing Sectoral Applications, a multi-pronged approach is proposed to accelerate the execution and implementation of e-Services.

a) Implementation of anchor applications in various sectors: This approach is recommended for new e-Services to be developed in greenfield mode

b) Enhancement & Integration of existing sectoral applications: This approach would cover the small-medium sized applications that have mostly been developed by MDAs with self-funding. Some of the modules been developed in-house by the ICT personnel, while others have been outsourced to MSME vendors. These applications do not follow common standards or frameworks. Secondly, the

security provisions are of varying maturity. Thirdly, these applications have not been designed to interface with one another. Further, they may not have the flexibility to inter-operate with the shared infrastructure such as centralized databases, payment gateways and middleware platforms. Therefore, there is a need to standardize these small-medium sized applications. Since these changes warrant expertise of common systems & processes, they should be implemented by the Nodal Agency in collaboration with the respective MDAs.

c) Support for Integration and Enhancement of Large ICT Applications: As most of the existing large applications have been funded by Multilateral and Donor institutions, they are not integrated with one another with no avenues of interface for data exchange. Therefore, an assessment for integration needs to be conducted under the supervision of the Nodal Agency and suitable changes have to be made to ensure interoperability. These changes should be implemented by the respective vendors as part of ongoing functionality enhancements.

Table 23: Recommendation on the need to assess integration needs

#	Recommended Actions	Primary Owner(s)	Execution
S33	Collaborate with MDAs to implement changes to existing applications to align with common standards, enhance security and ensure interoperability	Department of Government	Medium Term

3.4 Capacity Building

Malawi's current talent pool of ICT professionals in Government is small and needs more specialization. There are challenges in Capacity Development both at the supply side (Universities, etc.) and at the demand side (Government entities).

The employees in ICT Section of MDAs are hired as generalists and lack specialized skills. In most cases, they have not received adequate practical training. After joining the Government, they are not provided with adequate training and orientation. Further, they are deputed to various Government entities, which do not invest in up-skilling of these personnel.

3.4.1 Empowerment of National College of Information Technology (NACIT) into the center of excellence

Centralized Training by the Department of E-Government for ICT personnel of MDAs is an effective way of addressing the skill-gap to accelerate Digital Government readiness. A HR Unit in the Department of E-Government should develop annual training plans based on a comprehensive skills gap and needs assessment and prioritizing/ranking the gaps to be filled in order of importance.

The enhancement of NACIT would plug the knowledge gaps in common areas, for which personnel had to be sent for foreign trainings. It would accelerate in-country trainings in order to reduce costs and maximize the coverage of knowledge dissemination.

As part of its new role, NACIT should source training modules from external private trainers, in areas where it lacks capabilities. The skill-sets that emerge from the Needs Assessment exercise, should be given prominence while structuring the training. It should have Annual Action Plans and host training programs for various levels of Government personnel perennially.

Following are some of the interventions that should be championed by the Department of E-Government as it is centrally positioned to deliver the Training mandate.

Table 24: Recommendation Empowermering NACIT into the center of excellence

#	Recommended Actions	Primary Owner(s)	Execution
C1	Empower NACIT to function as a training center for Public Sector personnel.	MoI	Short Term
C2	Conduct a skill gap analysis and training needs assessment in collaboration with MDAs. Develop courses suited to the role, designation and skill requirement of the ICT personnel of MDAs.	MoI, Department of E-Government	Quick Win

The NACIT, which is currently under the control of the Department of E-Government can be leveraged to support Capacity Building for Digital Government. NACIT can play a dual role in building the foundation for Digital Government.

NACIT can be developed as a Center of Excellence in ICT, offering specialized degrees in graduate as well as post-graduate levels for specialization in ICT. This will address the challenges in quality and specialization of graduates at the entry level.

NACIT can be leveraged to kick-start training packages or specialized courses for Government staff. The training center can be housed within NACIT and share physical infrastructure, since it is already placed under the e-Government Dept. This will enable quick implementation with minimum additional investments.

Table 25: Recommendation on developing internal capacity of NACIT and updating its Curriculum

#	Recommended Actions	Primary Owner(s)	Execution
C3	Develop internal capacity of NACIT through Train-the-Trainer Programs for instructors, modern training tools and by developing essential facilities	MoI, Department of E-Government	Short Term
C4	Institute systems within NACIT for regular curriculum updating and for developing specialization alignment with industry demands	MoI, Department of E-Government	Short Term

3.4.2 Capacity Building of MDAs in Digital Government

The above-mentioned centralized interventions need to be complemented with capacity building at the respective organization level for the Government employees. Further, training programs conducted by the MDAs will have a larger audience and will not be limited to personnel of ICT sections. Following sub-section presents the recommendations in this area.

Implementation of electronic Public Services requires capacity building of complete Government machinery, not just limited to the Government ICT personnel. Therefore, a broad category of training programs would need to be conducted for the Public-Sector personnel across all MDAs. These would include Capacity Building at three levels, as specified below:

a) Trainings for sensitizing all Government personnel on the rationale for shift to e-Services/self-Services and the corresponding benefits to the Government and consumers of Public Service.

b) Basic ICT training and training of common platforms for large proportion of Government personnel, who would use the ICT tools and platforms *(e.g. email, ERP, IFMIS, HRMIS)* for discharging their daily responsibilities.

c) Technical training on IT technologies (e.g. Networking, Database, etc.) and end-user training on specific applications. These training programs would be imparted to the customer facing staff of Government MDAs.

d) Public support towards innovative ICT research programs in institutions of higher learning

The training programs should cover a diverse set of personnel and should not be limited to the top management. This will enable expanding the target groups for training, amidst budget constraints.

For longer term, in depth trainings and certification programs, government should consider bonding of participants to ensure commitment to continue to serve within government in areas related to the training for a set amount of time.

The above capacity building interventions would have to be carried out by all Government entities for their respective human resources.

Table 26: Recommendation on Capacity Building Intervetions

#	Recommended Actions	Primary Owner(s)	Execution
C5	Develop training plan for public servants at all levels across Government on technical subjects such as basic ICT skills, process re-engineering, common e-Government platforms.	Department for E-Government	Short term

#	Recommended Actions	Primary Owner(s)	Execution
C6	Conduct Awareness Programs, for all ICT Common Service Personnel in MDAs, Public Organizations *(Utilities, Hospitals, Regulators, Universities)* and other Government personnel on digital government agenda.	Department of E-Government	Quick Win
C7	Conduct Technical training for all ICT Common Personnel in MDAs, Public Organizations *(Utilities, Hospitals, Regulators, Universities)* and other Government personnel	Department of E-Government	Medium Term
C8	Conduct change management for all MDAs, Public Organizations *(Utilities, Hospitals, Regulators, Universities)* and other Government personnel	Department of E-Government/MoI	Medium Term
C9	Conduct induction trainings for all employees who have not been inducted.	Department of E-Government	Short Term
C10	Explore alternate models of funding for Training Public Sector staff such as PPP, Partnerships with Donor Agencies, Bilateral Assistance from foreign countries	Department of E-Government/DHRMD	Long Term

Many of the Institutions in Public Sector do not have adequate mechanisms in place for Governance of contracts with vendors of ICT Products & Services. Their internal ICT staff lack the capabilities for Quality Assurance and technical contract enforcement. Due to inadequate contract management, the Public-Sector entities are often short-changed by the vendors. This results in challenges with quality, timelines and scope of work. Additionally, lack of specialized skills, often prevents the ICT staff from getting complete knowledge transfer on software applications from ICT Service Providers.

The above set of challenges can be addressed by building capabilities within the MDAs at various levels for the purpose of managing sourcing of ICT systems/services. The Department of E-Government would support all Government entities in developing requisite skills such as Vendor & Contract Management, Quality Assurance, Service Level Management, etc. This can be done through structured training programs and workshops. Additionally, the Department of E-Government would provide tool-kits that would act as a template to guide the MDAs through the entire life-cycle of sourcing systems/services.

Table 27: Recommendations on guiding of sourcing systems/services

#	Recommended Actions	Primary Owner(s)	Execution
C11	Support the MDAs by building capacity of ICT Personnel within ICT Section of MDAs in areas such as Contract Management, Vendor Management and Service Level management	Nodal Agency	Medium Term
C12	provide tool-kits that would act as a template to guide the MDAs through the entire life-cycle of sourcing systems/services	Nodal Agency	Quick win

Often, the roles and responsibilities of the personnel in ICT Section are not well-defined. They are often perceived as support staff engaged for data entry or troubleshooting.

The absence of such clarity, also results in non-involvement of the ICT personnel in planning and design of e-Government projects. Since the ICT Section in many MDAs is not adequately headed, there is no representation in meetings where such decisions are made.

The above listed gaps can be filled by relaying clear communication to all MDAs regarding the roles and responsibilities of the ICT Common Service staff in respective ICT Units. ICT staff of MDAs should be engaged in design, development, testing and management of systems. They should acquire requisite skill-set for managing the vendors who implement and operate the ICT systems. Additionally, employees of ICT section should be perceived as specialists who champion ICT initiatives and are the brains behind system design and development. The following recommendations would be necessary in this direction.

Table 28: Recommendations on identifying laws and responsibilities of the ICT common service staff

#	Recommended Actions	Primary Owner(s)	Execution
C13	Engage authorities in the MDAs to ensure that personnel of ICT sections are involved in core functions of planning, designing, procurement, vendor management and monitoring. Utilize sourcing for non-core functions such as centralized service desk support	Department of E-Government	Quick Win
C14	Develop Terms of Reference / functions of the ICT units in MDAs	Nodal Agency	Quick Win

3.4.3 Capacity Building through Institutional Strengthening

This strategy is cognizant of the ongoing reforms to Civil Services, such as the ICT Common Services. Therefore, the recommendations on building capacity of personnel of ICT Sections of MDAs, are aligned to the broader objectives of the Civil Services Reforms.

Some of the interventions are proposed to address the issue of limitations in career progression of ICT staff members in MDAs. The Department of E-Government would have to work in close collaboration with DHRMD, OPC for streamlining the process of ICT recruitment in Malawi. Additionally, the Department of E-Government should take a lead in consolidating the vacancies in various MDAs, particularly for Specialist roles. The following focused recommendations are required in this area.

The Department of E-Government should also specify the Job Description (JD) of ICT staff in MDAs in conjunction with DHRMD. Meaningful responsibilities such as design & development of applications and vendor management should be included in the JD.

Table 29: Recommendations on Capacity Building through Institutional Strengthening

#	Recommended Actions	Primary Owner(s)	Execution
C15	Based on functional review, define career progression roadmap including specialist positions and Job Descriptions for ICT Common Services personnel who are on deputation to various Government entities	DHRMD, OPC and Department of E-Government	Quick Win
C16	Develop guidelines for recruitment of ICT personnel in assessing competencies	Department of E-Government / Civil Service Commission	Quick Win

3.4.4 Capacity Building of Private Sector in Digital Government

Entrepreneurs should be encouraged to work along-with Government in addressing the ground level problems in Public Service Delivery by leveraging ICT solution. To promote social entrepreneurship, it is proposed to develop an Innovation Center of Excellence within the Department of E-Government that would act as a platform to connect the Government entities with the entrepreneurs. This Innovation COE would also collaborate with other Innovation hubs in Malawi and the region to source talent, ideas and solutions and be part of major campaigns and initiatives. The Innovation COE would establish tie-ups and alliances with tech leaders like MS, Google for new projects and national level initiatives which will lead to technical knowledge transfer. The COE would also solicit solutions on behalf of different MDAs by organizing boot-camps.

Table 30: Recommendations Capacity Building of Private Sector in Digital Government

#	Recommended Actions	Primary Owner(s)	Execution
C17	Establish an Innovation Centre within the Department of E-Government to promote social entrepreneurship for addressing	Department of E-Government	Medium Term

#	Recommended Actions	Primary Owner(s)	Execution
	Government needs through local innovators.		
C18	Provide Support for the Integration of basic ICT training and skill development across all levels of education starting from primary school to University colleges	Department of E-Government	Long term

The Department of E-Government should also act to strengthen the ICT Industry in Malawi. Capacity Development of the private sector would improve the quality and performance of the entire ecosystem of Digital Government. One of the strategic ways to developing the capacity is by prescribing quality standards such as ISO, CMMI and nudging the local industry to comply with them. The following recommendation would set the ball rolling in this direction.

Table 31: Recommendatiuons on strengthening the ICT section in Malawi

#	Recommended Actions	Primary Owner(s)	Execution
C19	Develop the Quality and Capabilities of the ICT Sector in Malawi by enforcing compliance to common standards	Department of Government	Medium Term
C20	Institute an ICT Board to regulate ICT training in the country	Department of Government/NCHE	Long term

3.4.5 Capacity Building of the internal staff after sustainability of the Project

The Digital Foundations Project is geared to recruit additional staff that will assist in executing functions that will be instituted when executing various project components. The emerging of Digital Government CERT, EGP, ERP among others will trigger the need for additional expertise as well as numbers to handle related volume of work. It is therefore imperative that the Department of E-Government retains such expertise after the elapsing of the project.

Table 32: Recommendations on Capacity Building of the internal staff after sustainability of the Project

#	Recommended Actions	Primary Owner(s)	Execution
C21	Institute internal permanent staff for skills transfer in case of the non-extension of contract and permanent absorption of the additional project team members in the system	Department of E-Government	Medium Term

3.5 Institutional Framework

3.5.1 Institutional Structure of Department of E-Government

Currently the country is undergoing ICT revolution through various Government interventions such as the implementation of Digital Foundations, National Fiber Backbone, National Data Centre and Last Mile Rural Connectivity projects and various other ICT initiatives in MDAs. To effectively manage, coordinate and sustain these initiatives the GoM requires an ICT institution that is well structured with adequate legal mandate backed by progressive policies and strategies with highly skilled personnel. However, the Department of E-Government faces the following challenges:

i. The Department of E-Government does not have a legal mandate backed by an Act of Parliament.

ii. Most of the employees in the ICT sections of MDAs do not have visibility and decision-making authority.

iii. There is lack of collaboration between MDAs with Department of E-Government on matters of Digital Governance, ICT Networks and Capacity Building.

iv. There is lack of adequate mechanisms in place for Governance of contracts with vendors of ICT Systems/Services in MDAs.

v. ICT staff in MDAs have limited career progression opportunities.

vi. The current ICT structure in Government does not cover specialist ICT functions

In order to address these challenges, the Department of E-Government should be vested with adequate authority by an Act of Parliament. It should be recognized by all Government bodies as the "*go-to*" organization for anything related to Digital Government.

Global Best Practices suggest that the proposed institutional structure for Digital Government in Malawi should be collaborative, adaptive and synergetic.

Table 33: Recommendation on Institutional Restructuring of Department of E-Government

#	Recommended Actions	Primary Owner(s)	Execution
I1	Empower the Department of E-Government with a new organization structure	MoI, E-Government, DHRMD, OPC	Quick Win
I2	Strengthen the ICT Common Service by elevating headship of ICT section to the directorship level and restructure ICT Unit in MDAs	MoI, DHRMD, OPC	Quick Win
I3	Establish and operationalize an ICT Steering committee, Technical Committees,	MoI	Short Term

#	Recommended Actions	Primary Owner(s)	Execution
	District ICT Committees to drive the National Digital Government Agenda		
I4	Revitalize National ICT Working Group for horizontal collaboration on ICT initiatives with Private Sector, Academia Development Partners	Department of E-Government	Quick Win

3.5.2 Institutional Structure of ICT Sections of MDAs

3.5.2.1 Cross Cutting Areas

The Cross-Cutting areas are mirrored to the key enablers (horizontals) of the MIDAS framework. Each of the cross-cutting themes have been elaborated in dedicated sub-sections. Additionally, one sub-section has been allocated to the all-encompassing theme of *'Communications, Awareness and Change Management'*. See the key enablers in figure 1.

3.6 Mainstreaming and Public Outreach Strategy

3.6.1 Citizen Awareness

The most critical element in Digital Government mainstreaming is mass awareness. Awareness building needs to follow a multi-pronged approach which includes information dissemination by the government, promotion of e-Services, and citizen encouragement for adoption of electronic & self-service channels, among others.

Table 34: Recommendations on spreading citizen awareness

#	Recommended Actions	Primary Owner(s)	Execution
CM1	Develop and Implement a Communications Strategy for creating awareness and educating the masses about Digital Government and associated e-services	DOI/ Department of E Government	Quick Win
CM2	Set up a centralized multi-lingual Help Desk to help citizens facing problems in the use of the Government Portal, e-services and m-services	Department of E-Government	Medium Term

3.6.2 Change Management

Change Management of Public Sector executives is critical to the success of Digital Government in any country.

Table 35: Recommendations on change of management

#	Recommended Actions	Primary Owner(s)	Execution
CM3	Develop and Implement change management strategy	Department of E - Government	Short Term

3.6.3 ICT Skills Enhancement

Developing general level of ICT Literacy in any country must go hand in hand with promotion and adoption of e-Services. In fact, ICT literacy is a pre-requisite for mass adoption of electronic Public Services. The following table lists the recommendations in this area.

Table 36: Recommendations on ICT skills enhancement

#	Recommended Actions	Primary Owner(s)	Execution
CM4	Develop learning tutorials for citizens and business operators to help them in inculcating basic ICT skills and sensitizing the communities about the benefits of ICT through both electronic and non-electronic media	Department of E-Government	long Term
CM5	Establish partnerships with existing innovation hubs, Tele Centres, Technical Community Colleges in training the citizens on Digital Public Services	Department of E-Government	Medium Term

3.7 Financial Management

3.7.1 Revenue Generation

Malawi being a nascent player in the field of Digital Government, needs to build a foundation for Digital Government from scratch. The Department of E-Government therefore requires adequate resources to implement the same. Although the specific applications by various MDAs would be funded through their Line Ministries, many core projects would be required to support these sectoral Digital Government applications.

Several core projects such as *Data Center, NOC, Disaster Recovery capabilities, middleware, payment gateway, etc.*, need to be put in place, so that the same can be shared across all Digital Government Applications. Essentially, a shared platform needs to be built, along-with corresponding systems and processes, so that any MDA can develop e-Services and host it on the common platform. Some of these projects are slated to be funded through the broader Digital Foundations Project, while others would need internal funding. The MoI, being the champion of ICT within Government of Malawi, would be well poised to execute these projects. Therefore, the Ministry would require substantial funds to implement these projects within the stipulated timelines of Digital Malawi.

A portion of the generated funds can also be used to increase the ICT literacy of masses and to raise awareness about e-services. This would cumulatively help in accelerating ICT adoption by citizens. These funds can also be used for specific initiatives of the Department of E-Government.

Taking into cognizance Malawi's economic scenario and heavy reliance on Government budget by various sectors, it is proposed that the Department of E-Government should be given the authority to charge its services that are offered to the general public. The following are the proposed charges for the services.

Table 37: Proposed charges for the services offered by the Department of E-Government

SERVICES RENDERED	REQUIREMENTS	CHARGES	TIME TO ACCESS SERVICE
Development of Computer Systems	• Written request specifying scope of work • Client to meet logistical costs	MK 25,000,000.00 per system.	Time varies from system to system.
Development of Websites for public institutions	Written Request Duly Completed Website Solicitation Form Client to meet logistical costs	MK8,000,000.00 per website.	• 2 weeks for a basic website • 4-6 weeks for a complex website
Hosting of websites and web-based applications for public institutions	• Written request • Registered .mw domain with SDNP100 USD initial two-year subscription with SDNP. 50 USD per year for subsequent years. (Cost determined and payable to SDNP)	MK1,200,00.00 per annum.	48 Hours after receipt of request and fulfillment of requirements
Maintenance and Support of Computer Equipment	• Written Request • Client to meet logistical costs	MK50,000.00 per equipment.	Within 48 hours after receipt of request and fulfillment of requirements

Maintenance and Support of Computer Systems	• Written Request • Request through helpdesk line • Client to meet logistical costs	MK15,000,000. Per annum.	Within 24hours after receipt of request and fulfillment of requirements
Technical Assistance in Drafting Institutional based Policies, Strategies and Standards	• Written Request	40,000,000.00 per document	Feedback on the request Within 1 week
Provision of Network Services	• Written Request • Client to cater for Cost of network infrastructure, equipment and logistics	Minimum Charge of Mk5,500,00.00 depending on the distance of the building.	Within 24hours after receipt of request and fulfillment of requirements
Provision of Internet Services	• Written Request • Network Infrastructure available and Connected to GWAN	1mbps= Mk250,000.00	Within seven (7) working days after receipt of request and fulfillment of requirements
Provision of Official Government E-Mail Service and reset of access passwords	• Written Request • Client to cater for Cost of logistics • Request through helpdesk line	Email creation & Password reset = Mk25,000.00 per user Domain registration= Mk150,000.00	Within 2 working days after fulfillment of requirements
Degree Course	• Application for enrollment • Advanced Diploma (NCC/IMIS/ACP)	• Registration form cost: K2500 • Tuition fee for Degree: Non-residential K950,000, residential K1.2500,000	Within a month after notification of results of enrolment (Degree and Advanced programmes)

		• Registration for degree: £1,400 Pounds	
Advanced Diploma Course	• Application for enrollment • Diploma (NCC)	• Registration form cost: K2500 • Tuition Advanced Diploma Fee: Non – residential K750,000 per year, residential K1,050,000 • Registration fee advanced diploma: £ 380 pounds	Within a month after notification of results of enrolment (Degree and Advanced programmes)
Diploma Course	• MSCE with Credit in Mathematics and English • Application for enrollment • Pass aptitude Test	• Registration form cost: K2500 • Aptitude test cost: K 3000 • Tuition Diploma Fee: Non – residential K650,000 per year,	Within 2-3 weeks after writing aptitude test (diploma)

		residential K950,000 per year • Registration fee for diploma: £300 pounds	
User request for Training (Short courses)	• Written request for training; • Training needs identification	• 1 Week course: K50,000 per participant • 2 weeks course: K80,000 per participant • 3 weeks course: K150,000 per participant	Within 2 weeks from the time of receipt of the request

3.7.2 Financial Discipline

The recommendations in this section are based on the assumption that the Department of E-Government would lead, coordinate and manage ICT development at all levels, including the delivery of innovative and efficient e-government solutions and services.

It is envisaged that a large number of Digital Government projects would be undertaken by various Government entities in Malawi. Hence it becomes important that every Government entity demonstrates high level of prudence, probity and discipline while implementing these projects. Budget approvals for all projects in this realm should be based on prioritization and linkage to DGS & ICT Strategy in general as well as performance of current ongoing initiatives.

Table 38: Recommendations on Financial Discipline

#	Recommended Actions	Primary Owner(s)	Execution
FM5	Develop a standard to guide procurement of Digital Government Services that can be followed by MDAs	Department of E-Government,	Quick Win

#	Recommended Actions	Primary Owner(s)	Execution
		Ministry of Finance PPDA	
FM6	Establish and maintain a repository of all e-Government initiatives in Malawi along-with respective funding details	Department of E-Government, Ministry of Finance	Medium Term
FM7	Constitute an Observer committee that has representatives of all Donor Agencies & Philanthropic Organizations to act as a watchdog over the process of implementation	MoI, Ministry of Finance	Medium Term

3.7.3 Funding Models

The level of digital transactions in Malawi is among the lowest globally. This can be attributable to several reasons, some of the primary ones are listed below:

a) High cost of transactions through digital channels (POS machines, Credit Cards, Net-Banking, etc.)
b) Trust deficit on Digital Banking services
c) Inadequate focus on digital banking products by banks
d) High cost of internet and computing devices preventing mass adoption
e) Core infrastructure challenges such as wide-spread power-cuts
f) Inadequate promotion of digital transactions by stakeholders in banking and telecom
g) Low levels of ICT literacy
h) Low levels of financial inclusion – Small percentage of citizens covered in formal banking system

In view of the above challenges, it is necessary to incentivize the citizens to switch to digital transactions for various services, including electronic Public Services. This should be done in a collaborative manner by involving all stakeholders in the value chain.

Table 39: Recommendations to incentivize citizens to switch to the digital transactions for various services

#	Recommended Actions	Primary Owner(s)	Execution
FM8	Develop a mechanism for incentivizing digital transactions and for reducing the cost of transactions in conjunction with Reserve Bank, Banks and Telecom Companies	MoI	Medium Term

Huge investments would be required to execute the spectrum of Digital Government projects in Malawi. Given the inadequacy of Government funding and limitations of raising

funds via loans, the Private Sector needs to be engaged to fund some of these initiatives. Different types of PPP models need to be explored by the Department of E-Government. Project implementation via PPP model should be carried out jointly in collaboration with PPPC and Ministry of Finance along-with concerned MDA leading the project. Government can collect revenue per transaction on e-Services and use this to finance the running of the projects and service providers in all sectors using appropriate PPP models.

Table 40: Recommendations to engage the private sector in resource mobilization

#	Recommended Actions	Primary Owner(s)	Execution
FM9	Provide support to Government MDAs to develop ICT projects on PPP models	Department of E-Government, EP&D	Medium Term

3.8 Project and Portfolio Management

3.8.1 Project Management

The Department of E-Government would be mandated to provide technical assistance to various MDAs in implementation of major ICT projects. As some of the implementation work for Digital Government would be undertaken by the concerned Public-Sector entity, the Department of E-Government is better placed to empower them with toolkits for efficient project management. This would ensure timely completion of projects, maintaining high quality and adherence to common standards and frameworks.

Additionally, the Department of E-Government must take a lead in project management of key Digital Government initiatives and portfolio management for entire spectrum of Government ICT initiatives. The Department of E-Government would leverage ICT tools for continuous monitoring of the various projects in the area of Digital Government. The following interventions would help the MDAs in avoiding time and cost over-runs during design and implementation phases.

Table 41: Recommendations on Project Management

#	Recommended Actions	Primary Owner(s)	Execution
PM1	Lead and support Public institutions with e-Government consultancy, advisory and technical support services	Department of E-Government	Short Term
PM2	Develop a Project Management Section on the website of MoI to capture and display data on progress of major ICT projects being implemented by MDAs	Department of E-Government	Quick Win
PM3	Develop a model template for Feasibility Studies and DPR (Detailed Project Report) for planned e-Government projects	Department of E-Government	Quick Win

3.8.2 Project Governance

Several Institutions in Public Sector do not have adequate mechanisms in place for Governance of ICT projects, either in-house or outsourced. Due to insufficient technical expertise in ICT, the MDAs are often short-changed by the vendors. This results in challenges with quality, timelines, scope of works and knowledge transfer.

Given this context, it is proposed to establish the following:

a) Steering Committee for Governance,
b) Technical Committee for driving design & development
c) Project Management Unit for monitoring progress
d) Quality Assurance Unit to ensure adherence to quality and deadlines

Table 42: Recommendations on Project Governance

#	Recommended Actions	Primary Owner(s)	Execution
PM4	Establish a Steering Committee, to oversee implementation for all G2C, G2B and G2G projects, that are being implemented by various MDAs	Department of E-Government	Medium Term
PM5	Establish Technical Committee for driving design & development of an ICT Project	Department of E-Government	Short term
PM6	Establish Project Management Unit for monitoring progress	Department of E-Government	Medium Term
PM7	Establish Quality Assurance Unit to ens adherence to quality and deadlines	Department of E-Government	Medium Term

3.8.3 Standard & Quality Control

Although ministries are keen to push ahead with their e-Government initiatives with a view to improving service delivery, most e-Government efforts have been viewed in isolation and primarily driven on a ministry-by ministry and project-by-project basis.

This is resulting in a fragmented and uncoordinated e- Government program at the National level. Lack of consistent approaches, standards and policies; coupled with inadequate program governance and integration of the various e-Government initiatives are increasingly causing confusion, delays and overruns, duplication of effort, and unnecessary costs. Therefore, the Department of E-Government would be required to enforce compliance to common standards and interoperability frameworks. This would also lead to overall improvement of quality of processes, software and hardware, ultimately resulting in better Public Service Delivery.

It is also essential that all MDAs include BPR as a preliminary step to application development for any Digital Government Service. For all Digital Government Projects, the

Department of E-Government should guide the MDAs through the complete process of development of Digital Government projects and subsequent maintenance and upgradation.

Table 43: Standards & Quality Control

#	Recommended Actions	Primary Owner(s)	Execution
PM8	Mandate the Technical Committee to ensure compliance to common standards, interoperability framework and mandatory guidelines for Information Security	Department of E-Government	Medium Term
PM9	Establish a Quality Control Unit within the MoI that acts as a watchdog for the Systems Design & Development (outsourced & in-house) and certifies completion milestones	Department of E-Government	Medium Term
PM10	Establish a BPR Unit within the MoI that would help the MDAs on streamlining the operational procedures before implementing digital services	Department of E-Government	Medium Term

3.9 Planning & Monitoring

3.9.1 Monitoring & Evaluation

In the context of Digital Government, M&E becomes critical for a program of national importance and having such broad mandate and touching almost all sectors. The below recommendations lay down the best practices in this area.

Table 44: Recommendations on Monitoring & Evaluation

#	Recommended Actions	Primary Owner(s)	Execution
ME1	Develop Tools and Templates for Monitoring and Evaluation of e-Government Projects	Department of E-Government	Quick win
ME2	Define sector specific KPIs to measure both effectiveness of e-Government implementation and adaptation at regular intervals	Department of E-Government	Long Term

4.0 KEY PROJECTS AND COST ESTIMATES

It is necessary to accomplish the objectives within the stipulated time for the Digital Government agenda to succeed. Given the sequential nature of activities, timely completion is of paramount importance. Therefore, implementation through project mode

assumes importance. In this context, the activities under different categories have been logically grouped to create projects. These projects have been complemented by some others, already envisaged under Digital Malawi.

4.1 Approach to project formulation

I. Project formulation based on
   a. Logical grouping
   b. Common implementing agency
   c. Common stakeholder ownership & accountability
   d. Modular approach for budgeting
   e. Alignment to Digital Malawi, wherever possible
II. Project formulation to allow for sequential implementation and prioritization
III. Critical projects have been earmarked to address the following foundational areas
   a. To instill the institutional & regulatory framework for Digital Government
   b. To enhance e-readiness and creating an enabling environment
   c. To establish the technology infrastructure needed for integration of e-Services
   d. To set-up the shared services platforms for e-Services
IV. Projects implemented in the first wave of digitization in other benchmarked countries

4.2 Assumptions made for Cost Estimation

Costs have been estimated for each of the demarcated projects. The following assumptions has been made for the cost estimation exercise.

I. Majority costs are for establishing a foundation and towards creating an enabling environment for Digital Government
   a. Technical Consultancies for capability development within the Nodal Agency
   b. Skilling and capacity development of ICT personnel in all MDAs
   c. Capital Expenditure such as computing equipment
   d. Initial Establishment Costs such as hiring costs
   e. Logistics & meetings cost for collaborative functioning
   f. Training & Change Management Costs such as content Development and Train the Trainer workshops
II. Need for appropriate consultancy assignments to facilitate Nodal Agency for executing the recommendations has been assumed
III. No costs have been assigned to activities that can be executed in-house
IV. Once Institutional setup is complete, only those recommendations have been budgeted where the Nodal Agency does not have capabilities
V. Focus on enabling the Nodal Agency to carry out maximum activities in-house
VI. For project specific activities (e.g.: Training, M&E, Project Mgmt., BPR), no costs are assumed, since these would be included in the budget allocation
VII. Reasonable costs allocated for logistics to facilitate multi-departmental collaboration
VIII. Redundancy in cost allocation has been avoided by grouping of costs

IX. Connectivity Costs have been computed separately. These have not been included as part of analysis as cost of network infrastructure cannot be solely attributed to e-Government services.

The projects and accompanying cost estimates are presented in the table below:

4.3 Policy & Planning

Table 45: Cost Estimates on Policy & Planning

#	Actions	Projects	Sub-projects	Budget
1.1	P1, P2, P3, P5, P6, P7, FM1, FM2, FM3, FM4	Legal Framework - Drafting of Digital Government Act	Consultancy to draft legislation paving way for Digital Government reforms. • Provide for implementation of a Government Cloud, to be adhered by all Government entities in the Digital Government Act • Introduce a provision as part of the Digital Government Act to mandate technology transfer and skills transfer as part of ICT contracts to the respective Government clients	$ 250,000
			• Department of E-Government should be able to generate resources through various initiatives.	
1.2		Drafting of Enabling Regulations		$ 290,000
			Techno-Legal Consultancy to draft supporting regulations for governing Public Service Delivery though electronic and self-service channels	
			Introduce supporting regulations to the Electronic Transactions & Cyber Security Act – 2016, in the areas governing Public Service Delivery though electronic and self-service channels and e-commerce *(e.g. – consumer rights, payment, wallets, taxation, shipping, returns)*	
			Consultancy to draft regulations for the National Registration Act to enable acquisition, sharing, processing and disposition of citizen data by Public and Private entities	

#	Actions	Projects	Sub-projects	Budget
			Consultancy to draft regulations as part of the Digital Government Act to mandate training across all Govt. entities in areas of ICT, Project & Vendor Mgmt., Enterprise Architecture, ITIL, COBIT, etc.	
1.3	P4	Legal Framework-Drafting of Data Protection Act	Techno-Legal Consultancy to draft the Data Protection Act and its associated regulations.	$ 350,000
1.4	P11, P12, P8,P9,P10	Drafting and reviewing of ICT related policies	Consultancy to develop a comprehensive Start-up Policy to encourage innovation and to promote MSMEs through policy Incentives and other support mechanisms	$ 100,000
			Consultancy to draft regulations to enable preferential procurement for domestic MSMEs through proposed PPDA	
			Develop a mechanism for incentivizing digital transactions and for reducing the cost of transactions in conjunction with Reserve Bank, Banks and Telecom Companies	
			In-house review of the National ICT Policy for the country, which covers ICT Development and Management by various Government Organizations at all levels	
			In house support to the Line Ministries in mainstreaming ICT Strategies in their sector strategies.	
			Develop a framework for ICT management of Government machinery at all levels	
			Consultancy to draft Information Security Policy and implementation framework for Government entities	
			Consultancy to develop District Level ICT Management and Collaboration framework	
1.5	S2,	Enhancement of ICT standards	Enforce compliance to common technical standards by all MDAs and Public Institutions	

#	Actions	Projects	Sub-projects	Budget
	S3, S7, S9 FM5, PM8, C16, C18, C20			
			Review Public Service ICT standards of 2014	
			Support the MDAs for alignment of existing applications to common standards and subsequent integration to ensure interoperability & information security	
			Enforce the use of official emails through restricting access to exchange of Information when using personal emails	
			Develop a standard to guide procurement of Digital Government Services that can be followed by MDAs	
			Institute an ICT Board to regulate ICT training in the country	
			In-house provision of support for the integration of basic ICT training and skills development across all levels of education starting from primary schools to tertiary.	
			In-house development of Guidelines for recruitment of ICT personnel in assessing competencies	
Sub-Total				**$ 1,190,000**

4.4 Institutional Framework

Table 46: Cost Estimates on Institutional Framework

#	Actions	Projects	Sub-projects	Budget
2.1	I1, I2, PM10	Restructure the Department of E-Government	Restructuring the Department of E-Government including the ICT common service and district councils. • Detailed institutional structure, systems, processes and development of annual plans. • Refurbishment of existing infrastructure & Procurement of new equipment, furniture, vehicles, software. • Consultancy for recruitment for specialized positions • Elevating headship of ICT section to the directorship level and restructure ICT Unit in MDAs	$ 1,200,000
	I3,I4, PM4,PM5, PM6, PM7, PM9,	Establishment and enhancement of Governance structures	Establish ICT Steering committee, ICT Technical Management Committees, District ICT Committees, enhance National ICT Working Group (NICTWG) to drive the National Digital Government Agenda, quality assurance	$ 30,000
2.3	I8, I9, I2 C11, C12	Strengthening of ICT Common Services	In-house Technical Assistance to define career progression paths, redraft the roles & responsibilities, streamline processes for recruitment, posting and performance evaluation	$ -

#	Actions	Projects	Sub-projects	Budget
			In-house Technical Assistance to create specialist positions in ICT Sections of MDAs and fast-track personnel allotment for the same	
			In-house Technical Assistance to create specialist positions in ICT Sections of MDAs and fast-track personnel allotment for the same	
				$ 1,230,000

4.5 Capacity Building

Table 47: Cost Estimates on Capacity Building

#	Actions	Projects	Sub-projects	Budget
3.1	C1, C4, C3	Strengthening and refurbishment of NACIT	Consultancy for developing operating model for NACIT and development of operational blueprint with 5 Year operating Plans	$ 800,000
			Consultancy for developing curriculum and course material for specialized technical subjects such as Networking, Database, Enterprise Architecture, ITIL, COBIT, Quality Assurance, Enterprise Security, etc.	
			Consultancy for training of instructors in Technical subjects in Train-the-Trainer format	
			Procurement of goods and services to equip NACIT with modern training tools and develop essential infrastructure & facilities	
3.2	C5, C2, C13,C10, C14,C15,C21	Capacity Development for Department of E-Government	Consultancy to conduct a skill gap analysis and training needs assessment in collaboration with MDAs	$ 200,000
			Conduct workshops with Authorities in the MDAs to ensure that personnel of ICT sections are involved in core functions of planning, designing,	

#	Actions	Projects	Sub-projects	Budget
			procurement, vendor management and monitoring	
			In-house development of Terms of Reference/functions of the ICT department in the MDAs.	
			Institute internal permanent staff for skills transfer in case of the non-extension of contract and permanent absorption of the additional project team members in the system	
			Consultancy to develop course structure and trainee fitment, suited to the role, designation and skill requirement of the ICT personnel of MDAs and its related training plan.	
			Explore alternate models of funding for Training Public Sector staff such as PPP, Partnerships with Donor Agencies, Bilateral Assistance from foreign countries	
			Based on functional review, define career progression roadmap including specialist positions and Job Descriptions for ICT Common Services personnel who are on deputation to various Government entities	
			Consultancy to create processes, handbooks & templates for Contract Management, Vendor Management and Service Level management	
3.3	C6, C7, C8, C9, C11,C12, C15	Capacity Building of ICT Common Services	Consultancy to train ICT personnel in planning, designing, procurement, contract & vendor management, quality assurance and monitoring	$ 800,000
			Local and international Technical trainings for all ICT Common personnel in MDAs, Public Organizations, District Councils	
			Conduct Induction training for ICT employees who have not been inducted	
			Conduct awareness & change management training programs for ICT	

#	Actions	Projects	Sub-projects	Budget
			personnel on the digital government agenda.	
			In house Provision of Tool-kits that would act as template to guide the MDAs through the entire life cycle of sourcing systems/services	
			Based on functional review, define career progression roadmap including specialist positions and Job Descriptions for ICT Common Services personnel who are on deputation to various Government entities	
			Consultancy to establish an Innovation Centre within the e-Government Dept. to promote social entrepreneurship and conduct boot-camps in various sectors	
3.4	C17	Government Innovation Center Establishment	Consultancy to establish an Innovation Centre within the e-Government Dept. to promote social entrepreneurship and conduct boot-camps in various sectors	$ 500,000
				$ 2,500,000

4.6 Systems & Processes

Table 48: Cost Estimates on Systems and Processes

#	Actions	Projects	Sub-projects	Budget
4.1	S8, S30, CM4	Channel Platforms Development	Introduce a common mobile platform for MDAs on which they can offer Public Services. Develop a framework to support MDAs in launching mobile platforms for existing Digital Government applications	$ 200,000
			Contact Center (Citizen Helpline) Platforms	$ 150,000
			Government Shared Service Desk Platform	$ 200,000
			Government Unified Messaging System (GUMS)	$ 50,000

#	Actions	Projects	Sub-projects	Budget
4.2	S31,S19 A13	Shared Service Applications Development	Integrated e-Services Portal, Mobile Platform and technology backbone for One-Stop Shops	$ 300,000
			National Spatial Data Infrastructure (NSDI)	$ 400,000
			Open Data Portal	$ 150,000
4.3	S29,S16,S17,S20 S13	Enterprise Support Applications Development	Collaborate with the relevant regulatory authorities to develop and establish common payment system for financial transactions for e-Services.	$ 500,000
			E-government procurement System	$4,000,000
			Document & Records Management (e-Office) including e-registries/digitization	$ 3,000,000
			Knowledge Management Platform - Pilot	$ 200,000
			GOM Email Services enhancement	$1,000,000
			Integration Middleware/Master Data Management (MDM)	$ 500,000
			Implement common digital service enablers such as user authentication, Electronic Identification (ID) integration, mobile delivery platform, SMS notification platform, Electronic payment module, interoperability and data sharing platform.	$400,000
4.4	S11,S15,S22,S23,S25 ,FM7,S1,S2,S3,S9,S10, S12,S24,S27,S32, S8,S29	Common Frameworks Development	Consultancy to develop a Governance Framework, based on COBIT, to align IT goals to Business goals across all Government entities (Audit, Assurance,	$ 125,000

#	Actions	Projects	Sub-projects	Budget
			Risk Management, Information Security & Regulatory Compliance)	
			Establish frameworks for developing Omni-channel presence for all e-Government applications, with a focus on Mobile and Self-service Kiosks	
			Develop common websites frameworks that can be adopted by MDAs and District/City Councils easily. These website frameworks would come with packaged services such as web-hosting, security features and payment gateways.	
			Consultancy to develop a ICT management practice based on ITIL to ensure excellence in ICT Service Management across all Government entities, including the Nodal Agency	$ 200,000
			Consultancy to conduct an integration readiness assessment of 20 existing Digital Government applications and design roadmap for integration of systems and applications with futuristic architecture	$ 400,000
			Consultancy to develop a centralized database of ICT applications, hosted by of all MDAs and framework for portfolio rationalization for the existing and upcoming systems of all Government entities on a periodic basis	$ 100,000

#	Actions	Projects	Sub-projects	Budget
			Review the Public Service ICT Standards including the system development standard to guide all MDAs through the lifecycle of ICT applications acquisition ensuring that BPR is a pre-requisite.	$200,000
			Develop security manual and train ICT personnel on ICT assets Inventory and classification	$10,000
			Review the framework and supporting guidelines for all government entities on methods to properly manage the disposal of E-waste	$20,000
			Put in place an ICT management practice based on ITIL to ensure excellence in ICT service management across all Government entities	$150,000
			Establish a process for periodic optimization of all software licenses available to various Government entities	
			Assess, develop and implement business continuity and disaster recovery plans for all MDAs	$150,000
			Guide the MDAs in developing e-services for respective sectors based on common frameworks and built on shared platforms(workshops)	$150,000
			Consultancy to develop framework for periodic optimization of all software licenses available with	$ 100,000

#	Actions	Projects	Sub-projects	Budget
			various Government entities. Carry out Pilot optimization for entities	
4.5	S33,S21,S18,S7, FM6, PM2, PM3	Sectoral Applications Development & Enhancement	e-Visa#1	$ 300,000
			e-Investor	$ 300,000
			e-Utilities Common Platform#1	$ 300,000
			e-Post - Consignment Booking & Tracking System	$ 300,000
			Medical Supplies Info. Mgmt. System	$ 300,000
			Education Mgmt. Info. System (EMIS) - Enhancement	$ 300,000
			Traffic Mgmt. Info. System (MalTIS) - Enhancement	$ 300,000
			Food Mgmt. Info System (FMIS) - Enhancement	$ 300,000
			Case Management System - Enhancement	$ 300,000
			Malawi Business Registry System - Enhancement	$ 300,000
			e-participation initiatives such as consultation forums on draft bills regulations	
			Manage ICT projects	
			Establish and maintain a repository of all e-Government initiatives in Malawi along-with respective funding details	
			Digitalize government services	$3,000,000
4.6	S15, S7	Sectoral Applications Enhancement (Large Funded Projects	IFMIS*	$ -
			HRMIS*	$ -
			HISP-II (DHIS)*	$ -
			EMRS*	$ -
			Passport Issuance System*	$ -

[1] #To be developed under PPP mode, wherein the Private Partner would be paid by the MDA based on volume of service delivery. The respective Government entity would provide guaranteed service offtake and a small proportion of set-up costs. In situations where the end-user pays a transaction fee, the same would be apportioned between the Government entity and the Private Partner)

#	Actions	Projects	Sub-projects	Budget
		Undergoing enhancements)2	Border Control System*	$ -
			National Citizen Database*	$ -
4.7	S2, S4, S5, S6	Enterprise Architecture Development	Development of segment architectures	**$500,000**
			Operationalize the Government enterprise Architecture	
			Lay down common framewor for Enterprise Architecture following TOGAF principles for Digital Government in Malawi, to be followed by all MDAs	
Sub-Total				**$ 7,925,000**

4.7 Infrastructure & Access

Table 49: Cost Estimates on Infrastructure & Access

#	Actions	Projects	Sub-projects	Budget
5.1	A1, A2, ,A6	Government Network Infrastructure Development	Procurement of goods & services to establish a National Data Center with mirror backup at another site	$ 2,000,000
			Establish four Network Operating Centers in Lilongwe, Blantyre, Zomba and Mzuzu for optimizing Network Operations for all Government entities across the country	$ 750,000
			Procurement of goods & services to establish a Security Operating Center and a Government CERT	$ 300,000
5.2	C9, A3, CM2,A12	Shared Services Platforms Development	Procurement of Service Provider to establish shared IT Services such as common service help desks, Technical Support and Incident management	
			Consolidate various Public Services to be delivered through unified access channels such as *'One Stop Public Services Delivery Centers and Tele*	$ 400,000

[2] *Cost for the following applications have not been considered as they are large size funded projects and are currently undergoing enhancements

#	Actions	Projects	Sub-projects	Budget
			Centers to increase the coverage across the country.	
			Procurement of goods and services to establish facilities and equipment for a dedicated team of network & system administration across GoM (firewalls, privileges, bandwidth allocation)	
			Procurement of goods, services, software & hardware tools to develop the capacity of the GWAN management team	$ 200,000
			Consultancy to define minimum standards and common configuration for end-user computing devices and licensed software	$ 100,000
5.3	A5, A4,A11	Infrastructure Planning & Standardization	Consultancy to consolidate and project the system requirements of all Government entities for all applications hosted on common infrastructure	$ 100,000
			Negotiate with Service Providers to secure special rates for broadband and wireless internet for Government entities by consolidating their bandwidth needs to achieve economies of scale	$ 100,000
			Enforce and adhere to minimum standards and common configuration for end-user computing devices such laptops, computers and printers packaged with licensed OS, Antivirus, Office Suite.	
			In- house Digital Mapping of all Govt. buildings in regional & district centers for network access^	
5.4	A8, A9, A10,A7, A13	Connectivity Establishment	Procurement of last mile connectivity by leveraging both fiber and wireless networks to all government institutions.	$ 440,000
			Assessment of the LANs and development of its associated requirements in MDAs	$ -
			Upgrade LANS in all MDAs	$100,000

#	Actions	Projects	Sub-projects	Budget
			Procurement of additional alternative international internet gateways through Mozambique and Zambia^	$2,000,000
			Procurement of additional alternative international internet gateways through Mozambique and Zambia^	$ -
				$ 3,950,000

4.8 Mainstreaming and Public Outreach

Table 50: Cost Estimates on Mainstreaming and Public Outreach

#	Actions	Projects	Sub-projects	Budget
6.1	CM1,FM9	Citizen Awareness	Develop communication strategy	$1,240,000
			Implement communication strategy	
			Provide support to Government MDAs to develop ICT projects on PPP models	
6.2	CM3,	Change Management	Develop change management strategy	$ 1,000,000
			Implement change management strategy	
6.3	CM4, CM5	ICT Mass literac	Develop and publish learning materials for citizens and business operators	$ 1000,000
			Deliver courses to the masses	
			Establish partnerships with existing innovation hubs, Tele Centres, Technical Community Colleges in training the citizens on Digital Public Services	
Sub-Total				**$ 3,290,000**

4.9 Cross-Cutting Enablers

Table 51: Cost Estimates on Cross-Cutting Enablers

#	Actions	Projects	Sub-projects	Budget
7.1	FM1, FM2	Financial Management	Consultancy to develop a framework for budgeting and financing of Digital Government projects, that can be followed by MDAs	$ 60,000

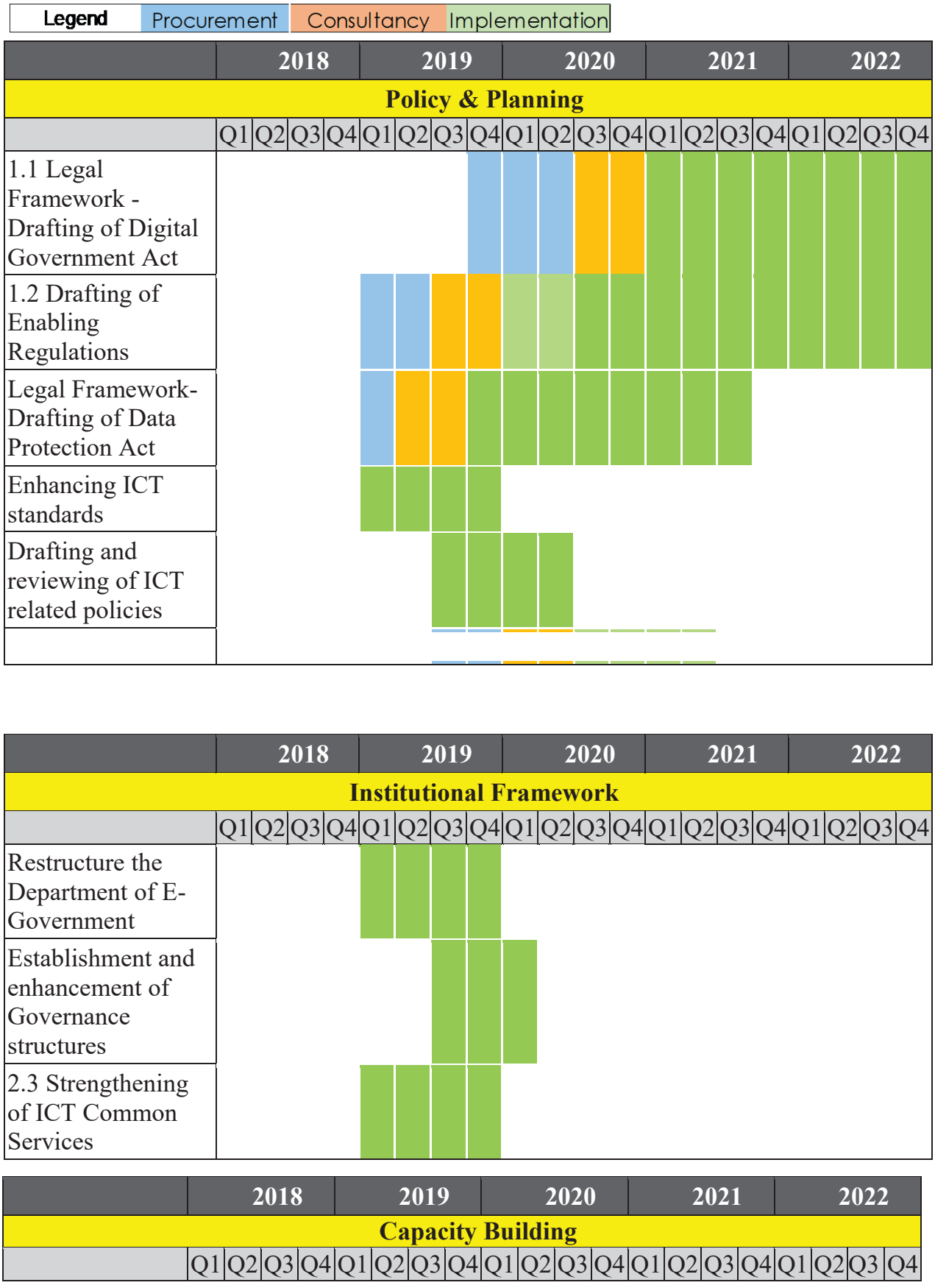
#	Actions	Projects	Sub-projects	Budget
7.3	PM1, PM9, PM10	Project Management	Procurement of Service Providers to build the Project Management section of the portal of Nodal Agency	$ 30,000
			Lead and support Public institutions with e-Government consultancy, advisory and technical support services	
			Consultancy to develop operational blueprint of proposed Quality Control Unit within the Nodal Agency for monitoring, oversight and certifications and running a pilot for 2 ongoing live Digital Government projects	$ 100,000
			Consultancy to develop operational blueprint of proposed BPR Unit within the Nodal Agency for streamlining processes and running a pilot for 2 ongoing live Digital Government projects	$ 100,000
7.4	ME1, ME2	Planning & Monitoring	In-house Development of Tools and Templates for Monitoring and Evaluation of e-Government Projects	
			In-house development of sector specific KPIs to measure both effectiveness of e-Government implementation and adaptation at regular intervals	
Sub-Total				**$ 980,000**

5. IMPLEMENTATION ROADMAP

This section outlines the timelines for execution of the projects that have been carved out in the previous section. These timelines have been developed based on global examples in similar contexts. The overall tenure for execution of the projects and initiatives recommended by this strategy is five years, which is also aligned to the corresponding phases of Digital Malawi. For those projects that are already articulated under Digital Malawi, the updated timelines have been borrowed.

The project roadmap for each of the projects has been further split into three phases, i.e. procurement, consultancy and implementation. For projects that are already under implementation phase, procurement and consultancy have not been marked. Similarly, for projects without implementation phase, the roadmap has been restricted to consultancy. The legend for these three phases is provided below.

Figure 2: Roadmap for Digital Government Strategy Implementation



	2018	2019	2020	2021	2022
3.1 Strengthening and refurbishment of NACIT					
Capacity Development for Department of E-Government					
3.3 Capacity Building of ICT Common Services					
Government Innovation Center Establishment					

	2018				2019				2020				2021				2022			
Systems & Processes																				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
4.1 Channel Platforms Development																				
4.2 Shared Services Applications Development																				
4.3 Enterprise Support Applications Development																				
4.4 Common Frame-works Development																				
4.5 Sectoral Application Dev. and Enhancement																				

	2018	2019	2020	2021	2022
4. Sectoral Applications Enhancement (Large Funded Projects Undergoing enhancements					
Enterprise Architecture Development					

	2018				2019				2020				2021				2022			
Infrastructure & Access																				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
5.1 Government Network Infrastructure Development																				
5.2 Shared Services Platforms Development																				
5.3 Infrastructure Planning & Standardization																				
Connectivity Establishment																				

	2018				2019				2020				2021				2022			
Mainstreaming and Public Outreach																				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
6.1 Citizen Awareness																				
6.2 Change Management																				
6.3 ICT Mass literacy																				

	2018				2019				2020				2021				2022			
Cross-Cutting Enablers																				
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
7.1 Financial Management																				
7.3 Project Management																				
7.4 Planning & Monitoring																				

6. CRITICAL SUCCESS FACTORS, RISK AND MITIGATION STRATEGIES

The critical factors for success of Digital Government in Malawi and listed below:

i. **High priority** accorded to Digital Government by Government and Parliament **across the Political spectrum**

ii. **Synchronization of Visions** of Government, International Donors, Civil Society & Think Tanks

iii. **Efficient Stakeholder Engagement** b/w proposed Nodal Agency, OPC, DHRMD, MACRA, Ministry of Finance, etc.

iv. Acceptance of **changes** ushered by Digital Government by Public Sector employees

v. **Autonomy & authority** to the Nodal Agency by the highest office

vi. Meaningful **Budget allocation** for Digital Government by Government of Malawi

vii. Clear **roles & responsibilities** for all stakeholders leading to accountability

viii. **Recognition of Nodal Agency** by other MDAs as a, approachable authority with technical expertise

ix. **ICT literacy** development of masses and benefits to incentivize them to switch to digital channels

x. Establishing a robust **foundation for Digital Systems** that will allow MDAs to develop systems in a "Plug & Play" mode *(Payment Gateway, Government Data Bus, Mobile Platform, etc.)*

xi. Involvement of **Local Industry** in maintenance and upgrade of this Infrastructure

xii. **Business Process Reengineering** of all processes before automation/digitization of services

xiii. Regulation of ICT programs across the Government to ensure **consistency, resource sharing and inter-operability**

Table 52: Risk and Mitigation strategies

Risks	Impact	Mitigation Strategies
Delay in enactment of Digital Government Bill	High	- To avoid overall delay, the Digital Government Agenda should be championed by the Head of State - In case of technical delay in drafting the bill, seek help of legal experts
Delay in establishment of the Nodal Agency	High	- Do not linger on a lengthy "approvals process". Senior government executives to aggressively push ahead with the program. - Identify the specific recommendations that may be acting as stumbling blocks and workaround them to go ahead with other recommendations
Non-operationalization of the Governance or Collaboration Structure	High	- The Nodal Agency / Department of E-Government should sign MoUs with other Government entities who would then act as partners for implementation, in case of delay in establishment of formal structures
Inability to attract and retain high-end ICT professionals	High	- Spread awareness nationally about Digital Government. Projecting Digital Government as a prestigious program of national importance will attract talent - Make the remuneration structure competitive to attract and retain high-end ICT professionals
Inadequate resource allocation	High	- Revisit priorities and implement projects that provide highest impact within the funds available. - Make efficient use of sourcing, Public Private Partnerships and Government-to-Government arrangements. - Aggressively seek funding from partners and donors
Low technical capacity	High	- Recruit from the market where there are gaps - Develop existing technical staff in critical areas - Outsource in areas where the market has better skills and can more efficiently and effectively deliver services
Acute Electricity shortage	High	- Malawi should look at alternate sources of buying power from nearly countries - Provide more thrust to m-Govt. (Mobile-Govt.) which would lower reliance on electricity
Incomplete alignment with	High	- Invest in good coordination with key stakeholders and initiative owners

Risks	Impact	Mitigation Strategies
other Government entities (OPC, DHRMD, MACRA, Ministry of Finance, etc.)		- Use of inter-agency working groups with clear authority to supervise and enforce e-Govt. policies and stand
Resistance to change	High	- Increase awareness among stakeholders, raise accountability and enhance change management
External constraints, delay timeframe for introduction of services	High	- Continuous planning and implementation timeline revisiting - Identify 'Quick Win' projects/initiatives that can be implemented through interim arrangements

7. MONITORING & EVALUATION FRAMEWORK

Effective monitoring is a necessity for the overall success of any program. An M&E framework has been developed for the implementation of this DGS. The M&E framework is presented below:

Table 53: 7.0Monitoring & Evaluation Framework

#	Performance Indicator	Unit of Measure	Data Source	Responsibilit for Data Collection	Frequency	Baseline	End Target (2022)
Description: This will measure improvement of Malawi's overall adaptation of Digital Government and ICT in general							
1	Malawi's Score in United Nation's EGDI	EGDI Score	UN EGDI	United Nations	Bi-Annual	2016 Score (0.2398)	Increase by 100%
2	Malawi's rank in ITU ICT Development Index	ICT Development Index	ITU	ITU	Bi-Annual	2016 Score (1.62)	Increase by 50%
3	Malawi's rank in WEF Networked	WEF Rank	WEF Network	World Economic Forum	Annual	2016 Score (2.7)	Increase by 60%

#	Performance Indicator	Unit of Measure	Data Source	Responsibilit for Data Collection	Frequency	Baseline	End Target (2022)
	Readiness Index		Readiness Index				
Description: This will measure the adoption of DGS by MDAs							
4	MDAs having individual DGS	Number of MDAs	National Survey on Digital Government for MDAs	National Statistics Office, Nodal Agency	Annual	5	30
Description: This will measure collaborative implementation of Digital Government projects by MDAs							
5	Number of ICT projects implemented by MDAs in collaboration with Department of e - Government	Percentage	National Survey on Digital Government for MDAs	National Statistics Office, Department of e – Government	Annual	3	100
6	Proportion of ICT projects completed with effective Change Management and without time & cost overrun	Percentage	National Survey on Digital Government for MDAs	National Statistics Office, Nodal Agency	Annual	To be established after first survey proposed in 2018	10
Description: Adoption of Open Data policy by Government of Malawi							
7	MDAs making data public on annual budget allocations & spending	Number of MDAs	Malawi's Annual Gover	National Statistics Office, Nodal Agency	Annual	To be established after 2018	20

#	Performance Indicator	Unit of Measure	Data Source	Responsibilit for Data Collection	Frequency	Baseline	End Target (2022)
			nment Budget			budget	
8	MDAs publishing key statistics on common information platform with regular updating	Number of MDAs	National Survey on Digital Government for MDAs	National Statistics Office, Nodal Agency	Annual	0	20
Description: This will measure the level of civic engagement in policy formulation & decision making							
9	Number of Policy papers published online for citizen's consultation	Number of papers	National Survey on Digital Government for MDAs	National Statistics Office, Nodal Agency	Annual	5	50
10	MDAs having active presence on Social Media	Number of MDAs	National Survey on Digital Government for MDAs	National Statistics Office, Nodal Agency	Annual	To be established after first survey proposed in 2019	30
Description: This indicator will measure the extent of usage of ICT tools by Government servants for collaboration & decision making							
11	Public servants using GOM email services and Office tools	Proportion	National Survey on Digital Gover	National Statistics Office, Nodal Agency	Annual	To get from GWAN	85%

#	Performance Indicator	Unit of Measure	Data Source	Responsibilit for Data Collection	Frequency	Baseline	End Target (2022)
	such as Excel/Word		nment for MDAs				
Description: These indicators will measure the extent of e-platform usage for G2G collaboration							
12	MDAs using G2G applications such as IFMIS, HRMIS, etc.	Percentage	Department of E - Government Annual Report	Department of E – Government	Annual	To be established after first survey proposed in 2019	80%
13	MDAs and LGAs using e Procurement System	Percentage	PPDA Annual Report	PPDA	Annual	Zero	30
14	Fully integrated Digital Government systems	Number	Department of E - Government Annual Report	Department of E – Government	Annual	Zero	10
Description: These indicators will measure the efficiency and cost effectiveness of public service delivery							
15	Digital Government applications aligned to the Enterprise Architecture Framework	Proportion	National Survey on Digital Government for MDAs	National Statistics Office, Department of E-Government	Annual	zero	15
16	MDAs utilizing common	Number	National Survey	National Statistics Office,	Annual	To be established	15

#	Performance Indicator	Unit of Measure	Data Source	Responsibilit for Data Collection	Frequency	Baseline	End Target (2022)
	payment gateway for transactions		on Digital Government for MDAs	Department of E-Government		after first survey proposed in 2019	
17	District/City councils utilizing the common web-portal framework for developing district portals	Number	Department of E-Government Annual Report	Department of E-Government	Annual	0	20
18	Digital Government Applications Utilizing the Shared Services Platform	Number	Department of E-Government Annual Report	Department of E-Government	Annual	0	20
Description: These indicators will measure the success of one-stop shops as single point for service delivery							
19	Number of One-Stop shops	Number	Department of E-Government Annual Report	Department of E-Government	Annual	2	29
20	Number of MDAs offering services through One-Stop Shops	Number	National Survey on Digital Government for MDAs	National Statistics Office, Department of E-Government	Annual	2	15

#	Performance Indicator	Unit of Measure	Data Source	Responsibilit for Data Collection	Frequency	Baseline	End Target (2022)
21	MDAs offering e-Services on common platform	Number	National Survey on Digital Government for MDAs	National Statistics Office, Department of E-Government	Annual	0	20
22	e-Services transactions per year utilizing the shared digital services platform	Percentage	Department of E-Government Annual Report	Department of E-Government, RBM, PPPC	Annual	0	45
Description: These indicators will measure the adoption of Web/Mobile/Kiosks as preferred channels of availing Public Services							
23	Total number of user base using web/mobile/One-Stop channels	Number	National Survey on Access to and Usage of ICT Services in Malawi	National Statistics Office	Annual	To be established after first survey proposed in 2019	500000
24	Percentage of public services transactions conducted through web/mobile/One-Stop channels	Percentage	National Survey on Digital Government for MDAs	National Statistics Office, Department of E-Government	Annual	To be established after first survey proposed in 2019	45

#	Performance Indicator	Unit of Measure	Data Source	Responsibilit for Data Collection	Frequency	Baseline	End Target (2022)
25	Total number of unique users transacting through common services platform	Number of unique users	Department of E-Government Annual Report	Department of E-Government	Annual	0	100000
Description: These will measure the success of Government MDAs in offering basic information services							
26	MDAs having updated websites with >99% availability	Number of MDAs	National Survey on Digital Government for MDAs	National Statistics Office, Nodal Agency	Annual	0	50
27	Public service entities offering services on mobile platforms	Number of Mobile Apps on Google Play or i-Store	National Survey on Access to and Usage of ICT Services in Malawi	National Statistics Office	Annual	To be established after first survey proposed in 2019	15
Description: These indicators will measure the quality of e-Services							
28	e-Services having high citizen satisfaction scores	Number of e-Services	National Survey on Access to and Usage of ICT	National Statistics Office	Annual	0	10

#	Performance Indicator	Unit of Measure	Data Source	Responsibilit for Data Collection	Frequency	Baselin	End Target (2022)
			Servic es in Malaw i				
29	Proactive resolution of complaints by Citizen Helpline within 24 hours	Percenta ge of complain ts	Depart ment of E-Gover nment Annual Report	Departmen t of E-Governme nt	Annual	NA	75%
Description: This indicator will measure increase in ICT skills in Malawi							
30	Internet Usage and adoption as channel of choice for Public Services	% of Individua ls using Internet	ITU MISR	ITU	Annual	9.30%	55%
31	Households with Internet	% Househol ds	ITU MISR	ITU	Annual	0.40%	10%
Description: These indicators will measure ICT leadership of Department of E-Government and extent of inter-departmental collaboration							
32	Consultation with Department of E-Government for preparation of annual IT budget	Number of MDAs	Nation al Survey on Digital Gover nment for MDAs	National Statistics Office, Departmen t of E-Governme nt	Annual	zero	30
33	Referring of projects to Department of E-Government for Technical Validation & Approval	Number of Digital Governm ent Projects	Nation al Survey on Digital Gover nment	National Statistics Office, Departmen t of E-Governme nt	Annual	To be establi shed after first surve y propo	20

#	Performance Indicator	Unit of Measure	Data Source	Responsibilit for Data Collection	Frequency	Baseline	End Target (2022)
			for MDAs			sed in 2019	
34	Design of project level M&E framework in consultation with Department of E-Government	Number of Digital Government Projects	National Survey on Digital Government for MDAs	National Statistics Office, Department of E-Government	Annual	To be established after first survey proposed in 2019	10

8. ANNEXURES

8.2 Annexure – A: List of References

The table below lists the references which were studied for developing the DGS:

#	References	Institution
1	National Informatization Assessment Tool (NIAT)	National Information Society Agency, South Korea (NIA)
2	The e-Govt. Handbook for Developing Countries	InfoDev
3	Measuring and Evaluating e-Government in Arab Countries	OECD
4	An evaluation framework for e-Government projects	Fitsilis, Anthopoulos & Gerogiannis
5	Framework for Assessing e-Government Readiness in Egypt	Azab, Kamel & Dafoulas
6	e-Government Toolkit for Developing Countries	UNESCO
7	Guidelines for Evaluating Public e-Services	Estonian Development Corporation
8	e-Government Implementation Toolkit	ITU
9	e-Governance Assessment Frameworks	IIM Ahmedabad

8.3 Annexure – B: List of Documents Reviewed

a) Policies and Legislations:
- Communications Act 2016
- Electronic Transactions & Cyber Security Act 2016
- Payment System Act 2016
- National Registration Act 2010
- ICT Standards Document
- ICT Policy 2013
- Digital Malawi Disclosure Notice 2017
- Resettlement Policy Framework for Digital Malawi 2017
- Public Procurement and Disposal of Assets Act 2017

b) Strategy and Plans:
- Malawi Growth & Development Strategy – I (2006)
- Malawi Growth & Development Strategy – II (2012)
- Draft Malawi Growth & Development Strategy – III (2017)
- Malawi Vision 2020
- Malawi OGP National Action Plan 2016 – 2018

c) ICT and e-Government Reports and Reviews:
- National ICT Master Plan 2014
- Malawi ICT Sector Review – Draft report
- Malawi ICT Services Access and Usage Survey – 2014
- Malawi Department of E-Government Strategic Plan 2012 – 2106
- National eHealth Strategy 2011-2016
- Malawi National e-Post Strategy
- Level of e-Government implementation in Malawi
- Current ICT initiatives and projects in Malawi
- Technical Audit of Government Wide Area Network and Produce User Requirements – April 2017

8.4 Annexure – C: List of Public Services for Digitization

#	MDA	e-Service
1	Malawi Revenue Authority	Registering for Tax
		Getting a Tax Clearance Certificate
		e-Payment on Income Tax/Excise Tax/VAT/FBT
		Duty e-Payment for Export/Import of Goods & Services
		VAT/Sales Tax/Duty Reimbursement
		Tax Collection & Reconciliation
		Tax Compliance Monitoring
		Incentive Computation & Claim
		Tax Calculators
		Exemption Certificate for Export/Import of Goods & Services
2	Department of Immigration, Ministry of Foreign Affairs	Passport Issuance/Payment/Renewal Service
		e-Visa/Residence Permit Service
		Border Control for Persons
		Border Control for Vehicles
3	Ministry of Lands, Housing and Urban Development	Digital Mapping of Villages and Cities
		Geospatial tagging of resources
		Land Registration Service
		Transfer of land rights/title
		Change of land Use
		e-Payment for registration/transfer/certificate
		Land Valuation Service
		Verification of Property Ownership
		Authentication of loan agreement
		Property (Lands & Buildings) Tax Viewing & Payment
		Ownership Certificate Application
4	Ministry of Agriculture, Irrigation and Water Development	Crop Based Information System
		Real Time Market Price for Produce
		Farmers Query Helpline
		Agriculture/Livestock Permit Issuance Service
		Locational Weather Forecast based advisory
		Seeds/Fertilizers/Pesticides Services
		Soil Health Card Services
5	Ministry of Industry, Trade and Tourism	Business Registration/License Service
		e-Payment for Registration/License/Permit
		Special Status Application
		Trade Name Inquiry & Application Services
		Investment Subsidy Application
		Factory License Application
		Single Window Portal for Investors
		Sectoral snapshot & Investment Opportunities

#	MDA	e-Service
		Investor Helpline
		List of Tourist Attractions by region/district
		Information on weather, access, tourism offices
6	Ministry of Education, Science and Technology	Exam Registration / Fees Payment Service
		Certificate / Marksheet Issuance Service
		School Information Reporting & Monitoring Service
		University Management Information System
		eLearning Modules for students
		Open Course Modules for skill development
		Verification of Certificate/Student
7	Ministry of Transport and Public Works	Vehicle Registration/Renewal/Ownership Transfer
		Driving License Issuance/Renewal
		e-Payment of Fines/Parking fees
		Verification of Vehicle Ownership/Insurance
		Border Control System for Vehicles
8	Water Board	Viewing and Payment of Monthly Bills
		Application for New Water Connection
		Consumer Complaints & Fault reporting
9	ESCOM	Viewing and Payment of Monthly Bills
		Application for New Electricity Connection
		Consumer Complaints & Fault reporting
10	ODPP / PPDA	Publishing of Tenders for different Ministries
		Payment of Tender Fees
		Registration of Contractors & Consultants
		Online Tendering (e-Tendering)
11	Malawi Police Service, Ministry of Home Affairs	Criminal Tracking Service
		Non-Criminal certificate
		Police verification of address/premises
12	Department of Registrar General	Birth/Marriage/Divorce/Death Registration
		Birth/Marriage/Residency/Death Certificate
		Certificate of Succession / Legal Heir
13	Ministry of Justice and Constitutional Affairs	Case Management Services
		Court Management Information System
		Hearing Management Services
14	Ministry of Health	Online OPD Appointment Service
		Patient Information Service
		Generic/Alternate Drugs Search & Inquiry
		Blood Donation/Availability Inquiry
		Doctor/Caregiver Registration Service
		Hospital Management Information Service
		Disease & Epidemic Reporting & Monitoring Service
		Planning & Budgeting Service

#	MDA	e-Service
15	Ministry of Finance, Economic Planning and Development	Disbursement and Reconciliation Service
		Procure to Pay Service
		Revenue to Cash Service
		Record to Report Services
		Suppliers Registration Services
16	DHRMD/CSC	Payroll Services
		Human Resource Planning & Recruitment Services
		Learning & Development Services

8.5 Annexure – D: Alignment of DGS to National Strategy and UN SDGs

Digital Government Objectives	MGDS Outcomes	SDGs	Vision 2020 Objectives
Government processes to be streamlined using ICT	• Improved allocation and utilization of resources for effective delivery of social welfare services	• All Goals	• Attaining accountability and a corruption free society • Promoting use of Information Technology
G2G collaboration for policy making and program implementation by leveraging ICT platforms	• Increased Policy and Legislative Measures focusing on population	• GOAL 17: Partnerships to achieve the Goal	• Political Advocacy for proper management of Resources • Promoting use of Information Technology
Productivity of Government Staff to be increased through usage of ICT tools & channels	• Increased stock of ICT skilled and industry ready workforce in public and private sector institutions	• All Goals	• Improving the role and performance of the Public Sector • Human resource management & development • Promoting use of Information Technology
Transparency of Government processes to be raised through automation and digitization	• Improved allocation and utilization of resources for effective delivery of social welfare services	• All Goals	• Attaining accountability and a corruption free society • Promoting use of Information Technology
Decision making to be based on data points & Public finance management	• Effective sector planning at all levels • Effective development planning at all levels	• All Goals	• Attaining accountability and a corruption free society

Digital Government Objectives	MGDS Outcomes	SDGs	Vision 2020 Objectives
to be made transparent	• Improved allocation and utilization of resources for effective delivery of social welfare services • Improved planning, management and coordination of public services		• Promoting use of Information Technology
High public participation in Governance & facilitate civic engagement across levels	• Skilled and empowered youth population • Increased Women & youth representation in all decision structures	• GOAL 10: Reduced Inequality • GOAL 11: Sustainable Cities and Communities	• Enhancing and sustaining Political Participation by general populace • Strengthening self-reliance and community participation
Reduction in the provision of counter services and reduction in unit cost of service delivery	• Improved access to inclusive social and public services	• GOAL 12: Responsible Consumption and Production	• Increasing social services • Improving the role and performance of the Public Sector • Promoting use of Information Technology
Provide greater access to public on citizen data and Government information	• Increased access to information and communications services • Increased awareness on population and development • Improved availability of geospatial information	• GOAL 10: Reduced Inequality	• Increasing awareness of Human Rights and civic responsibilities • Strengthening self-reliance and community participation • Attaining accountability and a corruption free society

Digital Government Objectives	MGDS Outcomes	SDGs	Vision 2020 Objectives
Improve service quality in the delivery systems, facilities, operations and support	• Improved access to inclusive social and public services • Equitable access to social services among the elderly and persons with disabilities	• GOAL 10: Reduced Inequality • GOAL 11: Sustainable Cities and Communities	• Improving the role and performance of the Public Sector • Promoting use of Information Technology
Build digital capacity in Public Institutions and administration	• Increased stock of ICT skilled and industry ready workforce in public and private sector institutions • Improved institutional capacity to coordinate and implement programs	• All Goals	• Improving the role and performance of the Public Sector • Promoting use of Information Technology
Access to high-speed Internet	• A well-developed ICT broadband infrastructure service provision • Improved access to inclusive social and public services • Enhanced access to local and international markets • Increased access to information and communications services	• All Goals	• Improving the role and performance of the Public Sector • Improving communications • Promoting use of Information Technology • Strengthening self-reliance and community participation
Online access to services of Government and Public Corporations	• Improved access to inclusive social and public services • Improved access and equitable service delivery • Increased access to information and communications services	• All Goals	• Increasing social services • Improving the role and performance of the Public Sector • Promoting use of Information Technology

Digital Government Objectives	MGDS Outcomes	SDGs	Vision 2020 Objectives
Modernize public services in terms of quality, efficiency, convenience & affordability	• Improved access to inclusive social and public services	• GOAL 12: Responsible Consumption and Production	• Increasing social services • Improving the role and performance of the Public Sector • Promoting use of Information Technology
Expand Government's presence in unserved areas through One-stop centers	• Improved access to inclusive social and public services • Equitable access to social services among the elderly and persons with disabilities	• All Goals	• Increasing social services • Improving the role and performance of the Public Sector • Promoting use of Information Technology
Consolidation & rationalization of Public Services delivery by various Government agencies	• Improved access to inclusive social and public services	• GOAL 12: Responsible Consumption and Production • GOAL 17: Partnerships to achieve the Goal	• Increasing social services • Improving the role and performance of the Public Sector
Improved business climate through transparency in operations and seamless business incorporation	• Increased access to information and communications services	• GOAL 8: Decent Work and Economic Growth • GOAL 9: Industry, Innovation and Infrastructure	• Accelerating enterprise development • Promoting use of Information Technology
Simplified procedures and business facilitation to reduce turnaround	• Enhanced consumer empowerment and effective financial education	• GOAL 9: Industry, Innovation and Infrastructure	• Developing Business culture • Accelerating enterprise development

Digital Government Objectives	MGDS Outcomes	SDGs	Vision 2020 Objectives
time and increase convenience			• Promoting use of Information Technology
Ease of doing business by leveraging digital channels	• Improved digital payments ecosystem in the financial service provision • Increased access to credit targeting farmers and other MSMEs	• GOAL 9: Industry, Innovation and Infrastructure • GOAL 10: Reduced Inequality	• Developing Business culture • Accelerating enterprise development • Promoting use of Information Technology
Greater opportunities for innovators and local entrepreneurs	• Increased access to credit targeting farmers and other MSMEs • Increased agriculture market development, agro-processing and value Addition	• GOAL 8: Decent Work and Economic Growth • GOAL 9: Industry, Innovation and Infrastructure	• Developing Business culture • Accelerating enterprise development • Reducing disparities between population groups in economic development
Conducive Policy environment to promote entrepreneurship and increase domestic competitiveness	• Enhanced policy and regulatory framework for the financial sector • Increased agricultural diversification • Enhanced policy and regulatory framework for the financial sector • Enhanced agricultural risk management	• GOAL 8: Decent Work and Economic Growth • GOAL 9: Industry, Innovation and Infrastructure • GOAL 11: Sustainable Cities and Communities	• Making Malawi an export-oriented economy • Reducing disparities between population groups in economic development