THE REPUBLIC OF UGANDA

Digital Government Strategy

Project: THE DEVELOPMENT OF A DIGITAL GOVERNMENT STRATEGY AS AN ADDENDUM TO THE DEVELOPMENT OF A GOVERNMENT ENTERPRISE ARCHITECTURE (GEA) AND E-GOVERNMENT INTEROPERABILITY FRAMEWORK (E-GIF)

Project duration: 10 November 2020 – 08 February 2022

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Glossary

Term	Definition
4IR	The Fourth Industrial Revolution
ADM	Architecture Development Method
AI	Artificial intelligence
CERT/COC	Uganda National Computer Emergency Response Team / Coordination Centre
CIO	Chief Information Officer
CSO	Civil Society Organisation
DUV	Digital Uganda Vision
e-GIF	e-Government Interoperability Framework
eID	Electronic identity
eIDAS	Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market
EU	European Union
GEA	Government Enterprise Architecture
GIRA	e-Government Interoperability Framework Reference Architecture
GoU	Government of Uganda
FDI	Foreign Direct Investment
ICT	Information and Communication Technology
IMSC	The Inter-Ministerial Steering Committee
IS	Information System
IT	Information Technology
JLOS	Justice, Law and Order Sector
LGs	Local Governments
MDAs	Ministries, Departments, Agencies
MOES	Ministry of Education and Sport

MOFPED	The Ministry of Finance, Planning, and Economic Development
MoICT&NG	Ministry of ICT and National Guidance
MOJCA	Ministry of Justice & Constitutional Affairs
MOPS	Ministry of Public Service
NBI/EGI	National Data Transmission Backbone and e-Government Infrastructure Project
NCIP	Northern Corridor Integration Project
NIRA	National Identification and Registration Authority
NITA-U	National Information Technology Authority – Uganda
NISF	National Information Security Framework
NDPIII	Third National Development Plan
PDPO	Personal Data Protection Office
PKI	Public Key Infrastructure
RIC	Regional Information Centre
PCC	The Policy Coordination Committee
POSTA	Uganda Post Limited
SABSA	Sherwood Applied Business Security Architecture
SMS	Short Messaging Service
TOGAF	The Open Group Architecture Framework
UCC	Uganda Communications Commission
UBC	Uganda Broadcasting Corporation
UgHub	Uganda Government Data Integration Platform
UGX	Ugandan Schilling
UMCS	Unified Messaging and Communications System
UNDP	United Nations Development Programme
USAID	U.S. Agency for International Development
WASA	Web Application Security Architecture
WB	World Bank

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1. Introduction

Digital technologies are changing the operation of government, people, and business. **The National Vision 2040**[1] stipulates that ICT has enormous opportunities that Uganda can exploit to transform the economy through building robust and trusted high-speed ICT infrastructure; manufacturing of ICT products; improving availability of digital content and e-products; automation of Government processes and inter-agency connectivity & innovation; development of platforms on which the private sector can co-create with the Government, offering new value-added services to the public; and establishment of incubation centries among others.

The Digital Government Strategy is the follow-up of the project on the development of a Government Enterprise Architecture (GEA) and e-Government Interoperability Framework (e-GIF) for Uganda. The project highlighted that many goals of the e-Government Master Plan[2] have been achieved, there is a need to renew the Ugandan Digital Government approach. As a result, a Digital Government Strategy is now being developed.

Digital Government Strategy uses the following definitions: [3]

- **E-Government** refers to the government's use of information and communication technologies (ICTs), and particularly the Internet, as a tool to achieve better government.
- **Digital Government** refers to the use of digital technologies, as an integrated part of governments' modernisation strategies, to create public value. It relies on a digital government ecosystem comprised of government actors, non-governmental organisations, businesses, citizens' associations, and individuals which supports the production of and access to data, services, and content through interactions with the government.
- **Digital technologies** refer to ICTs, including the Internet, mobile technologies, and devices, as well as data analytics used to improve the generation, collection, exchange, aggregation, combination, analysis, access, searchability, and presentation of digital content, including for the development of services and apps.
- **Public value** refers to various benefits for society that may vary according to the perspective of the actors, including the following:
    1) goods or services that satisfy the desires of citizens and clients;
    2) production choices that meet citizen expectations of justice, fairness, efficiency and effectiveness;
    3) properly ordered and productive public institutions that reflect citizens' desires and preferences;

[1] http://www.npa.go.ug/wp-content/uploads/2020/08/NDPIII-Finale_Compressed.pdf

[2] 2012 Uganda e-Government. Master plan. National IT Industry Promotion Agency of Korea, 276p

[3] https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0406

4) fairness and efficiency of distribution;
5) the legitimate use of resources to accomplish public purposes; and
6) innovation and adaptability to changing preferences and demands.

The strategy represents the vision for the Government of Uganda (GOU) needs to work for Ugandan citizens and businesses during the next five years.

Ambition: **By 2027, Uganda will be one of the top digital governments in Africa.**

Vision: A **digitally empowered society**

Mission: **To Transform Uganda into a digitally enabled society that is innovative, productive and competitive**

To implement the vision, more specific goals have been set and planned in this strategy in **three domains**:

digital government

connectivity

trust and security

Digital Government Strategy presents as an assignment for all Ministries, Departments, and Agencies (MDAs) with the cooperation of the private sector and academia. The Government of Uganda is putting in place the necessary infrastructure and policies to build capabilities and to create an ecosystem for digital government. The private sector, community, and academia make a major contribution to digital innovation through joint development, cross-sectoral interfaces, and turnkey solutions.

The realisation of the vision of the digital government depends on many other areas and policies that are covered by other development plans. The current strategy is covering only the general aims and strategic goals of sectoral strategies of the Government. More precise sectorial (health, education, agriculture, etc.) strategies will be developed and aligned with this strategy.

The Ministry of ICT and National Guidance (MoICT&NG) d is responsible for the development policies and legal framework for digital government. The National Information Technology Authority (NITA-U) is responsible for the implementation of concrete activities is on Ugandan

MDAs/LGs. NITA-U hosts interoperability enablers: eID and PKI ecosystem, secure data exchange ecosystem, data centuries, government cloud, etc.

Over the next five years GoU will work together with the private sector and community to deliver on the following strategic actions (not in order of importance):

We will fit legislative processes to the digital age

We will re-engineer ICT legislation

We will coordinate the digital transformation process

We will re-engineer public services

We will perceive data and information as a public asset

We will implement digital government enablers

We will make Uganda digitally skilled

We will implement emerging technologies

We will ensure connectivity for all

We will ensure broadband coverage

We will protect personal and business data

We will defend cyberspace from cyber-attacks

2. Current situation

2.1. Background

The digital strategy takes into account Uganda's previous policy documents:

The Digital Uganda Vision (DUV).[4] MoICT&NG, 2020. DUV is an overarching 20-year ICT development framework that is aligned to the Uganda Vision 2040. It aims to harmonise Uganda's transformative policies, strategies, initiatives, and other governance frameworks for the expedient realisation of national development aspirations.

NITA-U Strategic Plan 2018/19 – 2022/23[5]. NITA-U, 2018. The Plan transitions NITA-U from an IT infrastructure-based model to an IT service delivery model.

The Third National Development Plan (NDPIII) 2020/21 – 2024/25.[6] National Planning Authority, 2020. The Plan defines a broad direction for the country and sets key objectives, interventions, and targets for the sustainable socio-economic transformation of Uganda.

NDPIII Digital Transformation Programme Implementation Action Plan. Programme 10: Digital Transformation.[7] National Planning Authority, 2020. The overall goal of the programme is to increase ICT penetration and use of ICT services for social and economic development. The Action Plan defines the goal and results of the Programme.

The e-Government Master Plan (2012 - 2016). National Planning Authority, 2020. The Master Plan sets clear goals, concrete strategic topics and highlights priority projects for the Ugandan e-Government. The project period is set for five years, from 2012 to 2016.

These policies were mostly focused on the implementation projects. The digital strategy is oriented to the strategic objectives or direction Uganda should take to achieve an effective digital government.

The current situation is assessed by the above-listed policy documents and also by several projects:

- Uganda Digital Economy Assessment. WB, 2020[8]

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[4] https://ict.go.ug/initiatives/digital-uganda-vision/

[5] NITA-U Strategic Plan 2018/19 – 2022/23. NITA-U, 74p. https://www.nita.go.ug/publication/nita-u-strategic-plan-201819-%E2%80%93-202223

[6] http://www.npa.go.ug/wp-content/uploads/2020/08/NDPIII-Finale_Compressed.pdf

[7] NDPIII Digital Transformation Programme Implementation Action Plan. Programme 10: Digital Transformation. National Planning Authority, 2020

[8] https://openknowledge.worldbank.org/handle/10986/36239

- Uganda, e-Services Assessment Report. EU, 2020
- The Digital Economy Regulatory Framework of Uganda. Assessment Report. EU, 2020
- An Assessment Report of Digital Connectivity in Uganda. EU, 2020
- Assessment report of digital Skills, Entrepreneurship & Innovation in Uganda. EU, 2020
- National Information Technology Survey. NITA Uganda, 2018

The Government Enterprise Architecture (GEA) and E-Government Interoperability Framework (e-GIF) provide the necessary policy and technical requirements for sustainable and systematic implementation of Government Enterprise Architecture (GEA). GEA and e-GIF related documents are:

- Inception report
- Regulatory and Policy environment review
- Uganda e-Government Interoperability Framework (e-GIF)
- e-Government Interoperability Framework Reference Architecture (GIRA)
- GoU eGovernment Web Application Security Architecture Framework
- Government Enterprise Architecture: Implementation and Transition Plan
- Change Management and Awareness

2.2. Digital government maturity assessment

The digital government readiness assessment study in twelve e-Government focus areas showed the weaknesses and strengths of GoU. The summary of the current digital maturity of the public sector of Uganda in 12 e-Government focus areas is depicted in Figure 1.[9]

[9] Inception Report. Project: THE REPUBLIC OF UGANDA CONSULTANCY SERVICES FOR THE DEVELOPMENT OF A GOVERNMENT ENTERPRISE ARCHITECTURE (GEA) AND E-GOVERNMENT INTEROPERABILITY FRAMEWORK (E-GIF). E-Governance Academy, 2021, 74p

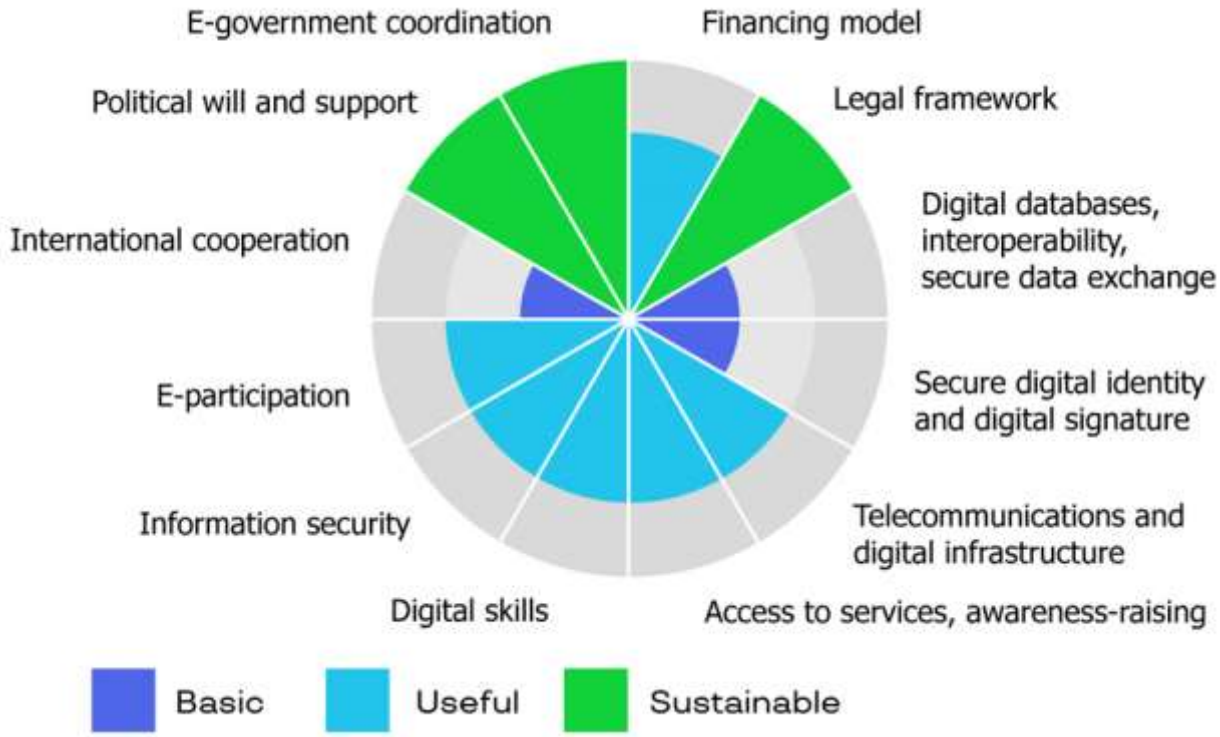

Figure 1 Current e-government maturity of the public sector of the State of Uganda

Political will and support. High-level political leadership paves the way to the adoption and implementation of relevant policies and agendas. The introduction of e-Governance should be a political priority and an agreement between all political forces. Political will must be declared at the highest possible level. The NITA-U Strategic Plan 2018-2023 says: "The relative political stability at national and regional levels has been a key booster to remarkable economic growth registered in Uganda and EAC region in the past decade. For example, political stability has made Uganda an attractive destination for Foreign Direct Investment (FDI) more so in the area of ICT." Conclusion: political will and support reach the sustainable level in Uganda.

Coordination. The overall responsibility for the coordination of e-government topics in the state lies with the NITA-U under the supervision of the Ministry of Information and Communications Technology. Each ministry has its own IT unit that oversees its system and services, whereas NITA-U provides consultancy and support. Conclusion: the coordination component is near the sustainable level, however, loose coordination between CIOs was indicated.

Financing. All financing requests go through the process of the Ministry of Finance, Planning, and Economic Development (MOFPED/. Approval from the parliament/ cabinet and Line Ministry is needed. Each ministry and authority oversee the planning and executing of their annual ICT budget. The development of e-government is supported by international donor funding. The main donor organisations supporting digital transformation in Uganda include UNDP, World Bank, and USAID. The financing component is on a useful level.

Legal Framework. Uganda has a legal framework for e-Governance in place. This is positive and provides Uganda with an advantage over many countries and a good basis for the increase

and improvement of e-Governance in the country. Uganda has a designated authority with competence for e-Governance in the form of NITA-U, with adequate competence for further development in the area. The implementation of the legislation is in a very early phase. The legal component is on a sustainable level.

Digital databases, interoperability, secure data exchange. A significant number of registries, databases, and services are digitized. According to the NITA register, 80 MDAs have set up 336 information systems. A technical solution, UgHub for secure data exchange is deployed and a governance organization is established. Interoperability Framework (e-GIF) and Government Interoperability Reference Architecture have been developed.

Secure digital identity, digital signatures. National Identification and Registration Authority (NIRA) is responsible for personal identification. The Electronic Signature Act 2011 together with other relevant regulations provide a framework for the provisions and use of electronic signatures. The Act regulates the use of advanced electronic signatures, digital signatures, and the use third-party certification systems, such as public key infrastructure (PKI), to secure information conveyed over the internet and authenticate or certify electronic signatures. The Government of Uganda through NITA-U is implementing the UgPass pilot project, new digital authentication and electronic signatures solution for Uganda which will activate the use of PKI services. Uganda will establish national digital ID platforms that serve the whole nation, including enterprises

Digital skills. For seamless adoption of changes, it is necessary to raise the awareness and understanding of non-IT staff and the general population. IT staff has sufficient digital skills. The management has sufficient digital skills to guide IT developments based on business needs and a long-term IT strategy. Awareness-raising training on interoperability and enterprise architecture should be continued.

Access to services, awareness-raising. Ugandan MDAs offer a considerable number of e-services. Ministries have websites where information about the ministry, its functions, contacts, and the public services it offers are published online. The citizen portal is systematically structured to offer seamless navigation and quick access to all 86 online services. Services can be accessed through an online search, by subject, by topic, or through a given MDA link. The portal allows to access services such as eTax, Business registration, trading license registration, and social security statements among others. Civil society supports the development of e-services and helps in requirements gathering by participating in meetings and workshops. Annual e-government excellence award is established.

E-participation, e-democracy. The civil society participates in preparing the Ugandan Budgeting System and the e-procurement regulations. There are online public feedback and grievance mechanisms in place to report unethical behavior, report violations of law, file complaints about access to public services and justice. It is arranged by the inspectorate of the government of Uganda in the Justice, Law, and Order Sector.

Cybersecurity. The country has made significant strides in national cyber security enhancement which includes: the development and implementation of the National Information Security Framework (NISF); establishment of the Uganda National Computer Emergency Response Team and Coordination Centre; and development of twelve information security standards, among others. The Global Cybersecurity Index score in 2020 was 69.98,

position 72, position in Africa 9. Uganda still needs to enhance the protection of essential services, protection of personal data and cyber crisis management.

Personal data protection and privacy-related regulations are in force. The Personal Data Protection Office (PDPO) is established (www.pdpo.go.ug)

Telecommunications and digital infrastructure. Telecommunication network infrastructure is developed by licensed companies. Regulation of ICT is enforced (incl. competition, regulation, regulatory authorities). The Government has a data centre that serves 132 MDA/LGs. Government cloud is in place and used for storing and disseminating government data services. PKI ecosystem and secure data ecosystem are in a planning stage.

International cooperation. An example of international cooperation is the NCIP project, which aims to establish consistent principles and practices to govern any access to personal data and non-personal information taking place between the Partner States across the Northern Corridor Integration Projects (NCIP). The partners are Uganda, Rwanda, Kenya and South Sudan.

2.3. United Nations e-Government survey

According to the United Nations e-Government study[10] Uganda's performance has steadily improved over the years but has not been able to rise significantly overall. Uganda's performance indicators since 2003 are shown in Figure 2 based on the United Nations e-Government study.

Uganda (UN study)	2020	2018	2016	2014	2012	2010	2008	2005	2004	2003
E-Government Development Index rank	137	135	128	156	143	142	133	125	114	119
E-Government Development Index value	0.44990	0.40550	0.35992	0.25926	0.31854	0.28123	0.31330	0.30814	0.32903	0.29562
E-Participation Index rank	95	87	91	152	109	117	98	90	97	102
E-Participation Index value	0.57140	0.62360	0.49153	0.13725	0.07890	0.07142	0.09090	0.04761	0.03278	0.03450
Online Service Index value	0.58240	0.56940	0.50000	0.14960	0.29411	0.10158	0.26755	0.21538	0.28957	0.27947
Telecommunication Infrastructure Index value	0.22780	0.15660	0.11293	0.10108	0.07322	0.04790	0.01835	0.00904	0.00752	0.00741
Human Capital Index value	0.53950	0.49060	0.46684	0.52710	0.58829	0.69966	0.65525	0.70000	0.69000	0.60000

Figure 2 Uganda's performance indicators 2003-2020

[10] https://publicadministration.un.org/egovkb/en-us/

2.4. Existing Architecture Building Blocks

2.4.1. Legal Architecture

Uganda has a legal framework for e-government in place. This is positive and provides Uganda with an advantage over many countries and a good basis for the increase and improvement of e-government in the country. Follows a list of core ICT related legal acts:

- Data Protection and Privacy Regulations 2021 (Act and guidelines)
- Certification of Providers of IT Products and Services. (NITA-U Regulation)
- Computer Misuse Act 2011 (Act No. 2 of 2011)
- Data Protection and Privacy Act 2019
- Electronic Signatures Act 2011 (Act No. 7 of 2011)
- Electronic Signatures Regulations 2013 - SI 43 of 2013
- Electronic Transactions Act 2011 (Act No. 8 of 2011)
- Electronic Transactions Regulations 2013 - SI 42 of 2013
- NITA-U (Authentication of IT Training) Regulations 2016 - SI No. 70 of 2016
- NITA-U (Certification of IT Providers and Services) Regulations 2016 - SI No. 69 of 2016
- NITA-U (E-Government Regulations) 2015 - SI No. 27 of 2015
- NITA-U (National Databank) Regulations 2019 No 109

2.4.2. Organisational Architecture

The NITA-U Strategic Plan 2018-2023[11] assesses political will as follows: "The Government of Uganda has also expressed political will in the promotion of IT infrastructure and services as depicted by direct investment in ICT infrastructures such as the NBI as well as provision of conducive policy institution and legal environment. The government policy framework towards communication has been focused on liberalization and competition."

There is a National Information Technology Authority-Uganda (NITA-U), which is an autonomous statutory body with the task to coordinate and regulate Information Technology services in Uganda. NITA-U is under the general supervision of the Ministry of ICT and National Guidance. It is set up by law with specific duties and responsibilities according to regulations. NITA-U has the mandate to coordinate, promote, monitor, and support IT use and plan and implement e-Governance infrastructure. Uganda has a National Data Transmission Backbone (NBI) managed by NITA-U.

Organisational architecture is supported by policy documents and Frameworks:

- **e-Government Interoperability Framework (e-GIF).** The GoU Interoperability Framework (e-GIF) is the agreed approach to the delivery of GoU public services in an interoperable manner. It defines basic interoperability guidelines in the form of common principles, models, and recommendations.

[11] https://www.nita.go.ug/publication/nita-u-strategic-plan-201819-%E2%80%93-202223

- **e-Government Interoperability Reference Architecture (GIRA).** The GIRA is an architecture content metamodel defining the most salient architectural building blocks needed to build interoperable e-Government systems. The GIRA provides a common terminology that can be used by people working for public administrations in various architecture and system development tasks.
- **Cybersecurity Strategy.** The Cybersecurity Strategy 2021 is a strategic planning tool that reflects Uganda's plans to achieve the objectives of modern economies. The strategy contributes to existing policies that seek to implement Uganda's socio-economic development from a cybersecurity perspective and aspires to support building a digital environment that citizens and businesses can trust.
- **GoU eGovernment Web Application Security Architecture Framework**. Web Application Security Architecture (WASA) Framework is an approach to protect the information processed by Uganda eGovernment e-services by securing the underlying web applications. Designing security deeply into the technical solutions, the WASA helps to counter fight cyber threats such as system compromise and data leakage.

2.4.3. Data architecture

Semantic (data) interoperability ensures that the precise format and meaning of exchanged data and information is preserved and understood throughout exchanges between parties, in other words 'what is sent is what is understood'. Semantic interoperability covers both semantic and syntactic aspects.

- The **semantic** aspect refers to the meaning of data elements and the relationship between them. It includes developing vocabularies and schemata to describe data exchanges and ensures that data elements are understood in the same way by all communicating parties.
- The **syntactic** aspect refers to describing the exact format of the information to be exchanged in terms of grammar and format.

The main characteristics of baseline data architecture:

1. A significant number of Government registries and services are digitised.
2. Semantic interoperability requirements formulated in the e-GIF await implementation.
3. A catalogue of registries does not exist.
4. A catalogue of public services exists only as a list of services.
5. A catalogue of data services does not exist.
6. Data sharing is organised in ad hoc manner.
7. Data policy, base registry policy, reference data policy formulated in the e-GIF awaits implementation

2.4.4. Application and Technical Architecture

MDAs of GoU offer a considerable number of e-services. MDAs have websites where information about the ministry, its functions, contacts, and the public services it offers are published online.

A significant number of registries and business processes are digitalised by the MDAs. MDAs are engaged in the development of e-Government. The implementation and management staff have a high level of expertise. The management of MDAs has digital skills to guide IT developments based on business needs and long-term IT strategy.

IT solutions of GoU are mainly realised in a standalone manner. Data exchange between MDAs is implemented in an ad hoc manner. No PKI infrastructure has been implemented.

The developed Web Application Security Architecture (WASA) Framework protects the information processed by GoU e-services by securing the underlying web applications. Designing security deeply into the technical solutions, the WASA helps to counter fight cyber threats such as system compromise and data leakage.

The existing infrastructure components in Uganda are:

- Citizen portal
- e-Payment
- Unified Messaging and Communications System (UMCS)
- Catalogue of standards
- Open data ecosystem (National Statistics)
- Data exchange/delivery platform (in development: UgHub)
- PKI ecosystem (eID, certification authority, authentication service, signing services, timestamp services, validation services) (in development)
- Service orchestration (in development: UgHub)
- Data Centre and Disaster Recovery Sites
- National Backbone Infrastructure and E-Government Infrastructure (NBI/EGI) network (Connecting over 1390 sites)

2.5. Summary

Although with poorly developed infrastructure, GoU online services provision is well developed in comparison with most other countries in Africa.[12] Uganda has comprehensive digital government strategies supported by forward-looking digital government plans aligned with their national policies and the Sustainable Development Goals. Uganda has a robust legal framework for digital government, e-government coordination, and political support on a sustainable level.

[12] https://publicadministration.un.org/egovkb/en-us/

3. Vision: Digitally Empowered Society

A digitally empowered society means:

- easy life
- secure life
- the digital and data-driven economy

Easy life. It is easy to be a Ugandan citizen, business, and official and do the things we want or need:

- The services work exactly for my needs and reach me when I need them and in the way I want them to.
- Unnecessary paperwork is a thing of the past in both the private and public sectors, so I have more time to do more valuable work or enjoy a more enjoyable daily life. The complexity of the functioning of the government is invisible to individuals and entrepreneurs.
- The economy makes transactions, pays invoices, etc. fully digitally, automatically, and instantly.
- I can access the services when I need and where I need them.

Secure life. Our digital life is safe:

- My data is securely stored, but open for creating smart solutions
- It is safe for me to act in a digital space without fear of misinformation, or crime. I am protected invisibly in the background
- Ugandan society and digital services are always protected.

Digital and data-driven economy. Digital solutions are the engine of the whole economy

- Core Ugandan companies have re-engineered their business processes and offer digital products and services. With the help of digital solutions, we have also made the economy more environmentally friendly.
- Thanks to convenient administration, it is easy for people and companies from elsewhere to do business in Uganda.

4. Strategic actions

The building of digital government requires cooperation between the public sector, private sector, non-government organisations, academia and citizen. Over the next years, GoU will work together with stakeholders to deliver on the following strategic actions (not in order of importance):

1. We will fit legislative processes to the digital age
2. We will reengineer ICT legislation
3. We will coordinate the digital transformation process
4. We will re-engineer public services
5. We will perceive data and information
6. We will implement digital government enablers
7. We will make Uganda digitally skilled
8. We will implement emerging technologies
9. We will ensure the connectivity for all
10. We will ensure broadband coverage
11. We will protect personal and business data
12. We will defend cyberspace from cyber-attacks

Chapters 6, 7, 8, and 9 describe the activities needed to realise these strategic actions.

5. Principles

Working towards the provided vision requires all participants to follow some general principles that would define the nature of working and values endorsed during the implementation of the strategy. The principles are briefly described below – these should be explained in more detail and be available to all MDA/LGs to follow. The principles presented below should observe by all MDA/LGs

Digital by design. Digital technologies must be fully embedded in policymaking and service design processes. Rather than digitising analogue methods, digital governments exploit new opportunities introduced by the digital transformation.

Data-driven public sector. A data-driven public sector recognises and takes steps to govern data as a key strategic asset in generating public value through its application in the planning, delivering, and monitoring of public policies.

Interoperability by design. Holistic digital government enterprise architecture provides a functioning lifecycle of the digital government ecosystem. A government acts as a platform (guidelines, tools, data, and software) for delivering user-driven, consistent, seamless, integrated, proactive, and cross-sectoral services.

User-driven. A user-driven approach describes government actions that allow citizens and businesses to indicate and communicate their own needs and, thereby, drive the design of government policies and public services.

Once only. Public administrations should ensure that citizens and businesses supply the same information only once to public administrations.

Multi-channel delivery Different channels for service delivery are planned and implemented – phones, computers, service delivery offices. The aim is to offer access to services for all citizens without the need to use specific service delivery channels and tools.

Avoiding Digital divide. The needs of different social groups of the population will be taken into account when developing digital services – people with limited access, people with disabilities, etc.

Privacy by Design. Privacy by design is an approach to systems engineering that seeks to ensure protection for the privacy of individuals by integrating considerations of privacy issues from the very beginning of the development of products, services, business practices, and physical infrastructures

Trust and Security. Trust and security in the digital economy facilitate electronic transactions for businesses and citizens, making them safer, faster, and cheaper, and contributes to the resilience of critical digital infrastructure in areas such as telecoms, energy, transport, or banking, resulting in a stronger, more dynamic economy and increased consumer trust.

Open innovation. Innovative solutions are created and built openly with government agencies, the private sector, academia, and citizens.

6. Digital Government

6.1. Legal Framework

Uganda has a Legal Framework for e-Governance in place but continuous improvement and amendment of it is needed. The GIRA implementation strategy for achieving legal interoperability is formulated by the e-GIF[13] and GIRA[14]. GoU will follow the general principle of development of legal framework:

- Regulate as minimum as possible to enable innovation and avoid unnecessary restrictions to development
- Avoid regulating technology because of fast changes in the technology field

Although a basic legal framework is in place, there is a continuous need for actions that are presented in the following general framework.

The most important and continuous activities in the field of the legal framework are:

1. **We will fit legislative processes to the digital age:**

1.1. MDAs/LGs ensure that legislation is screened through 'interoperability checks', to identify any barriers to interoperability[15].
1.2. NITA-U introduces a checklist and helps MDAs/LGs implement it to revise existing legislation and align it with the digital government strategy and other digital society aspects.

2. **We will reengineer ICT legislation**
2.1. Implementation and, if needed, adjustment of legislation on public information taking into account free access and use of digital public data, principles of data reuse

2.2. Implementation and adjustments of legislation on electronic identification (eID) and trust services.

2.3. Implementation and adjustment of regulations about digital registries (databases) – (ownership, data exchange process, rules for management, metadata management, catalogue of information systems and services, etc.)
2.4. Development and implementation of Secure data exchange related regulation

[13] https://www.nita.go.ug/sites/default/files/2022-01/e-GIF%281%29.pdf

[14] https://www.nita.go.ug/sites/default/files/2022-01/GIRA-Final%281%29.pdf

[15] Interoperability barriers are restrictions in the use and storage of data, different data license models, over-restrictive obligations to use specific digital technologies or delivery modes to provide public services, contradictory requirements for the same or similar business processes, outdated security and data protection needs, etc.

2.5. Continual implementation of data protection and privacy-related regulations (regulations are in force)

2.6 Continual implementation of the regulation and policies about information security and cyber-security

6.2. Organisational architecture

Uganda has a basic organisational framework for e-Governance in place. The survey[16] showed that the coordination component exists on a sustainable level. Improving organisational interoperability is a continuous process. Capacity in terms of the number of employees and education/skills of experts in the digital transformation field in Government need permanent attention. It is critical regarding good cross-government cooperation and better decisions about the development and use of technology in government.

A user-driven approach describes government actions that allow citizens, businesses, and officials to indicate and communicate their own needs and, thereby, drive the design of government policies and public services.

Our activities include:

1. **We will coordinate the digital transformation process:**
   1.1. Improving digital transformation-related communication between political and government level, IT managers of MDA-s, academia and civil society institutions.
   1.2. Strengthening role and position managers of digital government departments (CIO-s) of MDAs including motivation and engagement of highly skilled experts of the field.
   1.3. Planning and supervising development and implementation of public services in compliance with the frameworks, agreements, policies and standards.
2. **We will re-engineer public services:**
   2.1. Optimizing and re-engineering e-service processes. Re-engineering is done in a step-by-step manner focusing on needs and priorities. MDAs/LGs are having a leading role. NITA-U is providing methodology and technology support
   2.2. MDAs/LGs are developing and expanding flagship e-services and rollout of e-services across all NDPIII programs
   2.3. The share of event-based and proactive services will be increased

6.3. Data

A starting point for improving semantic interoperability is to perceive data and information as valuable public assets. Improving semantic interoperability is a continuous process. The

[16] Inception report. January 2021, 74 p

implementation strategy for achieving semantic interoperability is formulated by the e-Government Interoperability Framework.

Key prerequisites for achieving semantic interoperability are agreements on reference data, in the form of taxonomies, controlled vocabularies, thesauri, code lists, and reusable data structures/models. Approaches like **data-driven design**, coupled with **linked data** technologies, are innovative ways of substantially improving semantic interoperability.

Catalogues. Data about data (metadata) will be properly managed and made publicly available. Catalogues help others to find reusable resources (e.g., services, data, software, data models). Various types of catalogues exist, e.g., directories of services, libraries of software components, open data portals, registries of base registries, metadata catalogues, catalogues of standards, specifications, and guidelines.

Catalogues will provide trustworthy assistance and tool for the developers, administrators, and users of the Ugandan information systems. Catalogues are the supplementary instrument for coordination of Ugandan information systems. All objects of catalogues MUST be reviewed and approved by NITA-U.

The single identifier of objects. Information about some objects like persons, addresses, land properties is used in many services. For interoperability, it is important to use the same identifiers for these objects in all information systems of Uganda.

Classifications. To understand the process and categorise data in information systems in a standardised way, data need to be classified and tagged. Government agencies cannot communicate and exchange data properly without using the same names/codes (e.g., codes of cities, countries, banks, currencies, goods declared for example for customs, etc.) The use of classifications facilitates the standardisation of data, enables information exchange between information systems (data providers and data receivers), and allows the comparison and analysis of the published data. All classifications will be published in the catalogue of semantic assets.

Uniform addresses. Every administrative unit, infrastructure object, building, and a certain part of those will have a uniform and unambiguous digital address[17] in all information systems

Base registries[18]. According to the once-only principle, data are collected by base registries only once. Base registries will establish a syntax and semantic of data and describe them in the catalogue of information systems. Secondary registries and information systems are using the same syntax and semantics.

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[17] https://ict.go.ug/wp-content/uploads/2019/05/National-Postcode-and-Addressing-System-Policy.pdf

[18] A base registry is a trusted and authoritative source of information, which CAN and SHOULD be digitally reused by others, where one organisation is responsible and accountable for the collection, use, updating and preservation of information.

Robust, coherent, and universally applicable information standards and specifications are needed to enable meaningful information exchange among public organisations.

The main activities:

1. **We will perceive data and information:**
   1.1. MDAs/LGs perceive data and information as a public asset that will be appropriately generated, collected, managed, shared, protected, and preserved. Metadata of data will be published in catalogues of interoperable solutions and passed through the approval process by the coordination body.
   1.2. MDAs/LGs digitize all registries, business processes, and services following the requirements of e-GIF and GIRA.
   1.3. For all objects in the government information systems a specified single identifier will be set and used in all information systems.
   1.4. Data in all information systems are coded by standard classifications published in the catalogue of semantic assets.
   1.5. Address objects in information systems are described by a uniform and unambiguous set of data. Establishment of address data framework
   1.6. Data will be established and maintained by owners of base registries and open for reuse in compliance with the law

6.4. Digital government enablers/platforms

One of the cornerstones and success factors of the digital government is the development of central infrastructure components and services. It will accelerate the development and deployment of digital services throughout the country and society. The platforms created so far need to be constantly adapted and further developed to meet technological and user needs. Several new enablers needed to create.

Activities:

1. **We will implement digital government enablers:**
   1.1. We develop and implement Electronic Identity and PKI ecosystem UgPass.
   1.2. We connect service providers and service consumers are connected to the secure data exchange platform UgHub and expand the use of its service aggregation/integration component
   1.3. We review the existing government portal and connect it to the catalogue of public services, UgHub and UgPass.
   1.4. We review the existing open data portal
   1.5. We develop and implement Catalogues of Institutions, information systems, public services, data services.
   1.6. We expand e-Payment capability in all appropriate services
   1.7. We expand the use of Unified Messaging and Communications System (UMCS)
   1.8. We develop data warehouse systems, including the use for statistics
   1.9. We continuously improve the hosting and storage services for Government applications and Data

6.5. Human capital

Successful implementation of this strategy will require addressing the following human resource gaps: DevOps specialists, Graphic Designing specialists, Software Engineering specialists, Software Developers, Software Quality Testing (SQT) Automation specialists, Web Programming specialists, System auditors, Information Technology managers, Enterprise architecture specialists, among others. From the perspective of public service ownership, the following competencies must be built into the public sector: business and process analysts, business service owners and user-experience experts.

For seamless adoption of changes, it is necessary to raise the awareness and understanding of non-IT staff and the general population. This must be achieved through a dedicated awareness-raising programme that helps people to become good users of internet services including public e-services.

1. **We will make Uganda digitally skilled:**
   1.1. Improve ICT, Internet and digital government education across primary, secondary and tertiary levels
   1.2. Integrate digital government courses in all computer science and IT programs in higher education, including teaching computer security and forensics as a subject or field of expertise.
   1.3. Support Research and Development programs in universities and the private sector and establish collaborations with the ICT industry to develop digital government solutions
   1.4. Improve awareness for grownups and elderly people to introduce them to ICT-related skills.

6.6. Research and Innovation

One of the distinguishing features of recent years has been the exponential growth in the aggregation of machine-readable information, or digital data, over the Internet. This has been accompanied by an expansion of big data analytics, artificial intelligence (AI), cloud computing and new business models (digital platforms). With more devices accessing the Internet, an ever-increasing number of people using digital services and more value chains being digitally connected, the role of digital data and technologies is[19] set to expand further.

In all activities, GoU will take into account these emerging technologies. Government bodies contribute with the private sector and academia in piloting and implementing emerging technologies.

1. **We will implement emerging technologies**:
   1.1. We support cooperation in the adoption of emerging technologies (Artificial intelligence, Internet of things, Data analytics, Automation & Robotics, Cloud computing, etc).
   1.2. The Fourth Industrial Revolution (4IR) objectives will be fulfilled.

[19] https://unctad.org/system/files/official-document/der2019_en.pdf

7. Connectivity

Digital connectivity is at the heart of the digital economy. Good broadband connectivity infrastructure should deliver high-quality and fast broadband speeds capable of powering digital and telecommunications services in a reliable and secure environment. Nearly 70% of households own mobile phones: 62 percent in rural and 86 percent in urban areas[20]. Yet the use of smartphones in Uganda remains quite low, mainly due to the high cost. Mobile internet subscriptions in Uganda reached 15.2 million, while the number of internet users reached 23 million in the fourth quarter of 2019.

The Broadband policy[21] was developed in 2018 by MoICT&NG. The policy not only aspires to address the issue of duplication of infrastructure but also guides on optimizing usage and increasing the efficiency of broadband infrastructure utilization, ensuring that not only urban areas but also all parts of the country are connected. In aspirational terms, the Broadband Policy 2018 has three objectives, each with several strategies. Those strategies that are specific to improving broadband connectivity are as follows:

- Connectivity for all
- Affordability and Digital Inclusion through the adoption of alternative broadband infrastructure technologies
- Increased broadband rollout and quality of service improvement through Telecom licensing reform

Activities:

1. **We will ensure the connectivity for all:**
   1.2. Increase Internet penetration
   1.3. Establish information and service centers and digital kiosks
   1.4. Create e-service delivery points
   1.5. Digital Terrestrial Television signal coverage
   1.6. We reduce the cost of ICT devices and services

[20] Uganda National Household Survey 2016-17

[21] https://www.ict.go.ug/wp-content/uploads/2018/10/NATIONAL-BROADBAND-POLICY-2018.pdf

2. **We will ensure broadband coverage:**
   2.1. We ensure secure, reliable and high-quality broadband ICT infrastructure coverage countrywide in partnership with the private sector and all Government entities
   2.2. We are continuously developing and maintaining National Backbone Infrastructure and E-Government Infrastructure (NBI/EGI) network
   2.3. We implement last-mile connectivity to key areas: districts, sub-counties, schools, hospitals, post offices, tourism sites, police, LGs, etc.
   2.4. We increase countrywide mobile penetration and signal coverage. Implementation 5G technologies.
   2.5. We participate Telecom market and cooperate with Telecom operators in improving services for residents, businesses and the public sector.

8. Trust and Security

Trust is the belief in the competence of a machine or sensor to act dependably, securely and reliably within a specified context. Trust is commonly accomplished using cryptography, digital signatures, and electronic certificates. Information security covers the tools and processes that organizations use to protect information. This includes policy settings that prevent unauthorized people from accessing business or personal information. Cybersecurity is the ability to protect or defend the use of cyberspace from cyber-attacks. Cybersecurity Strategy[22] points out the following strategic goals:

- Safe and trusted digital economy
- Threat preparedness and response
- Robust cybersecurity ecosystem
- Cyber skilled Uganda
- Active and reliable partner of the international community
- Provide enabling governance framework

1. **We will protect personal and business and data**
   1.1. Developing and implementation of Web Application Security Architecture Framework
   1.2. Assessment of Institutions on NISF implementation and handhold MDAs in the implementation of the Framework
2. **We will defend cyberspace from cyber-attacks**
   2.1. Develop National cyber security strategy and implementation guidelines
   2.3. Strengthening Cyber Security activities, including CERT/SOC

[22] Cybersecurity Strategy. Draft, 2022. Internal report

9. Implementation Guide

9.1. Institutional Framework

The President, Cabinet of Ministers are responsible for providing political leadership in support of all digital government-related policy interventions. This is important in driving the cross-sectoral implementation of the Digital Government Strategy. Cabinet can secure the support for changes at the highest possible level with strategic decisions and monitor the implementation progress.

The Parliament is responsible for enacting appropriate and effective legislations that create a conducive legal and regulatory environment for the success of the Digital Government Strategy. In addition, Parliament has a role in guiding the financial resource allocation for the implementation of the Digital Government Strategy. The Parliament is also the place where info-political concepts and decisions are discussed and passed. This is not about technology but important conceptual decisions of the society – privacy and protection of personal data, avoiding digital divide, public-private cooperation and engagement of the academia, civil society organisations (CSOO), etc.

The Policy Coordination Committee (PCC) chaired by the Prime Minister is responsible for coordinating policy and monitoring the progress of the implementation of the Digital Government Strategy. The PCC is legally a government committee advised by the Prime Minister and the Ministry of Information and Communication Technology and National Guidance in their decision-making process.

The Inter-Ministerial Steering Committee (IMSC) is responsible for the Strategic Direction and Oversight of the Digital Government Strategy. including ensuring effective implementation of decisions made by the Cabinet and the PCC.

The Inter-Agency Digital Technical Implementation Committee is responsible for promoting cross-cutting priorities and policies on a program-based approach. It advises on issues for central coordination of programs; promotes intra-sectoral and program linkages. It will also address any identified challenges and (or) constraints requiring higher levels of action and attention. This Committee shall also have representation from the private sector and development partners who will articulate issues arising from their different forums.

The Ministry of Information and Communications Technology and National Guidance (MoICT&NG) provides supervisory oversight and policy guidance to MDA/LGs, Local Governments, and other stakeholders in the implementation of the Digital Government Strategy.

The National Information Technology Authority (NITA-U) is an autonomous statutory body to coordinate, implement and regulate Information Technology services in Uganda. NITA-U is responsible for technical operational support, standards as well as building and maintaining the Government enablers, like the PKI ecosystem, Secure Data Exchange ecosystem, citizen portal, metadata management and other cross-government systems and services.

Ministries, departments, other agencies and public institutions (MDA/LGs) are responsible for their business processes. They may choose to implement technologies by themselves, concerning commonly agreed principles.

Working Groups. For coordination of technical implementation, the working groups of Digital Transformation Progrmme will be used. The Digital Transformation Programme Working Group shall be the highest technical organ for the implementation of Digital Government Strategy. Technical Working Groups of the Digital Transformation Programme are responsible for the technical implementation of Digital Government Strategy:

- Infrastructure Working Group
- E-services Working Group
- Research, innovation and ICT skills development Working Group

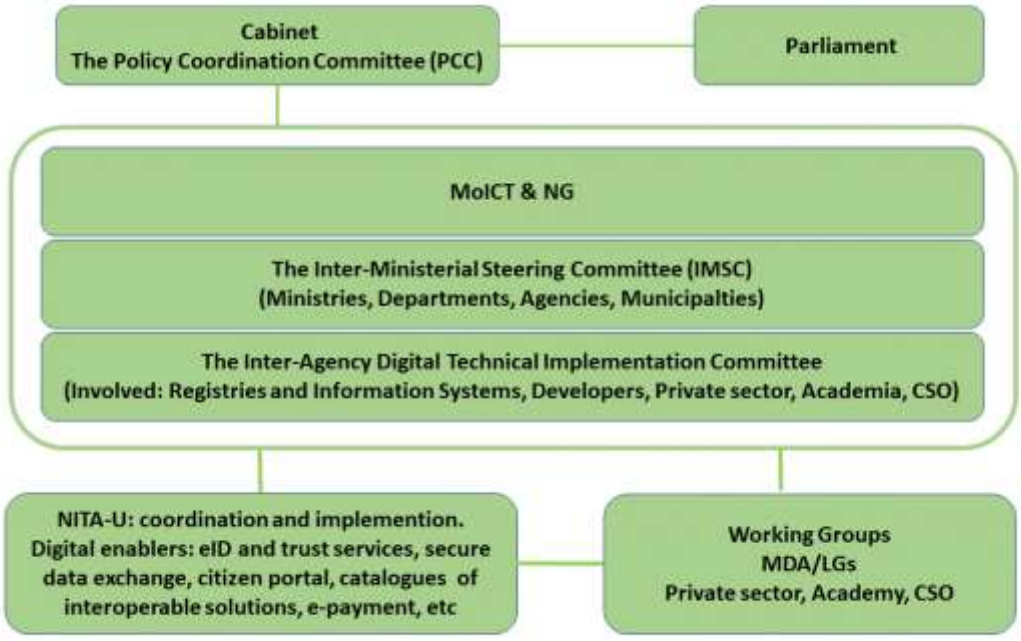

Figure 3. Institutional Framework. The levels of decision, coordination and implementation are working together.

Other important stakeholders:

- Universities and other research and development institutions
- ICT industry associations
- Software and hardware companies
- Banks and telecom companies
- Digital identity and trust services providers
- Open data communities

- Open-source software communities
- Civil Society Organisations

9.2. Monitoring and Evaluation

The Ministry of ICT and National Guidance coordinates the initiatives relating to the activities of Digital Government Strategy. Activities of Digital Government Strategy technically will be implemented by Digital Transformation Programme.

Monitoring and Evaluation activities shall be carried out using existing processes used for Monitoring and Evaluation Digital Transformation Programme. [23] To minimise duplication these processes are aligned to the annual budget process.

The implementation plan is planned to be thoroughly reviewed and updated at least twice during the period to take into account the rapidly changing environment (eg technological developments) and the effectiveness of the implementation of activities. This is preceded by an evaluation of the implementation of the development plan, which is one of the bases for the review. The renewal is planned for the third year and in the last year.

[23] Ibid 8

10. Implementation plan

The implementation plan itself does not include specific goals or activities to promote the use of ICT in different (sectorial) areas of life and business, as these plans must be included in all development plans in their field.

In this chapter, we list actions, activities, outputs/KPI, responsible bodies, indicative amount of money in billion UGX or other resources, proposed time. If the amount is not applicable N/A is shown

10.1. Legislation Framework

Strategic Action	Activity	Output/KPI	Responsible	Resources	Years of Implementation				
					1	2	3	4	5
We will fit legislative processes to the digital age	MDAs/LGs ensure that legislation is screened through 'interoperability checks', to identify any barriers to interoperability	All new legal acts and policy documents are aligned with e-GIF and GIRA	MoJCA, MoICT&NG, NITA-U	N/A	x	x	X	x	x
	NITA-U introduces a checklist and helps MDAs/LGs implement it to revise existing legislation and align it with the digital government strategy and other digital society aspects.	All new ICT related regulations are checked	MoJCA, MoICT&NG, NITA-U, MoPS, MDAs/LGs	N/A	x	x	X	x	x
We will reengineer ICT legislation	Implementation and if the needed adjustment of legislation on public information taking into account free access and use of digital public data, principles of data reuse	Reviewed legislation	MoJCA, MoICT&NG, NITA-U	N/A	x	x	X		
	Implemetation and adjustments of legislation on electronic identification (eID) and trust services (based on public key infrastructure) using eIDAS as a model	Digital signature act will be expanded	MoJCA, NITA-U MoICT&NG,	N/A	x	x	x	x	

	Implementation and adjustment of regulations about digital registries (databases) - (ownership, data exchange process, rules for management, metadata management, catalogue of information systems and services, etc.)	Reviewed legislation	MoJCA, MoICT&NG, NITA-U	N/A	x	x	X		
	Development and implementation of Secure data exchange related regulation	Regulation in force	MoJCA, MoNITA-U	N/A	x	x	X		
	Continual implementation of data protection and privacy-related regulations	Implementation of legislation	PDPO	N/A	x	x	X		
	Continual implementation of the regulation and policies about information security and cyber-security	Legislation in force	MOPS, NITA-U	N/A	x	x	X		

10.2. Organisational Architecture

Strategic Action	Activity	Output/KPI	Responsible	Resources	Years of Implementation				
					1	2	3	4	5
We will coordinate the digital transformation process	Improving digital transformation-related communication between political and government level, IT managers of MDA-s, academia and civil	Improved communication	NITA-U, MDAs	N/A	x	x	x	x	x

	society institutions.								
	Strengthening role and position of managers digital government departments (CIO-s) of MDAs including motivation and engagement of highly skilled experts of the field.	CIOs are motivated	NITA-U	N/A	x	x	x	x	x
	Planning and supervising development and implementation of public services in compliance with the frameworks, agreements, policies and standards.	Public service standards developed and implemented	NITA-U	6	x	x	x	x	x
We will re-engineer public services	Optimizing and re-engineering e-service processes. Re-engineering is done in a step-by-step manner focusing on needs and priorities. MDAs/LGs are having a leading role. NITA-U is providing methodology and technology support	50% of public services are reengineered	MDAs NITA-U	35	x	x	x	x	x
	MDAs/LGs are developing and expanding flagship e-services and rollout of e-services across all NDPIII programs	100% of flagship e-services are implemented	MDAs/LGs	38	x	x	x	x	x
	The share of event-based and proactive services will be increased	20 proactive services are implemented	MDAs	6	x	x	x	x	x

10.3. Data

Strategic Action	Activity	Output/KPI	Responsible	Resources	Year of Inplementation				
					1	2	3	4	5
We will perceive data and information	MDAs/LGs perceive data and information as a public asset that will be appropriately generated, collected, managed, shared, protected, and preserved. Metadata of data will be published in catalogues of interoperable solutions and passed through the approval process by NITA-U.	Metadata are published in catalogue of interoperability resources	MDAs/LGs, NITA-U	N/A	x	x	x	x	x
	MDAs/LGs digitalise all registries, business processes, and services.	80% of public services are online	MDAs	N/A	x	x	x	x	x
	For all objects in the government information systems a specified single identifier will be set and used in all information systems	50% of IS	MDAs NITA-U		x	x	x	x	x
	Data in all information systems will be coded by standard classifications published in the catalogue of semantic assets.	50% of IS	MDAs NITA-u		x	x	x	x	x
	Address objects in information systems are described by a uniform and unambiguous set of data. Establishment of address data	50%	MoICT&NG POSTA	92	x	x	x	x	x

	framework.								
	Data will be established and maintained by owners of base registries and open for reuse in compliance with the law	50%	MDAs, NITA-U		x	x	x	x	x

10.4. Digital government enablers/platforms

Strategic Action	Activity	Output/KPI	Responsible	Resources	Years of Implementation				
					1	2	3	4	5
We will implement digital government enablers	We develop and implement Electronic Identity and PKI ecosystem UgPass.	10% of residents have eID 30% of officials have eID	NITA-U, MDAs/LGs	35	x	x	x	x	x
	We connect service providers and service consumers are connected to the secure data exchange platform UgHub and expand the use of its service aggregation/integration component	60% providers 40% consumers	NITA-U, MDAs/LGs	11	x	x	x	x	x
	We review the existing government portal and connect it to the catalogue of public services, UgHub and UgPass	Reviewed portal	NITA-U	0.35	x	x	x	x	x
	We review the existing open data portal	Reviewed portal	NITA-U	0.25	x	x	x	x	x
	We develop and implement Catalogues of Institutions, information systems, public services, data services.	50% MDAs/LGs resources are registered	NITA-U	12	x	x	x	x	x

	We expand e-Payment capability in all appropriate services	70% services	NITA-U	15	x	x	x	x	x
	We expand the use of Unified Messaging and Communications System (UMCS)	50% MDAs can use	NITA-U, MDAs/LGs	50	x	x	x	x	x
	We develop data warehouse systems, including the use for statistics	Implemented statistics system	MoICT&NG	2.50	x	x	x	x	x
	We continuously improve the hosting and storage services for Government applications and Data (cloud solution)	60% of applications are running in Datacentre as cloud services	NITA-U	110	x	x	x	x	x

10.5. Human capital

Strategic Action	Activity	Output/KPI	Responsible	Resources	Years of Implementation				
					1	2	3	4	5
We will make Uganda digitally skilled	Improve ICT, Internet and digital government in education across primary, secondary and tertiary levels	80% of residents have basic ICT skills	MOES, MoICT&NG, NITA-U	N/A	x	x	x	x	x
	Integrate digital government courses in all computer science and IT programs in higher education, including teaching computer security and forensics as a	30 000 ICT specialists are trained within the ICT sector	MOES, MoICT&NG, NITA-U	N/A	x	x	x	x	x

	subject or field of expertise								
	Support Research and Development programs in universities and the private sector and establish collaborations with the ICT industry to develop digital government solutions	Mechanisms for support are established	MOES, MoICT&NG, Academia, NITA-U	N/A	x	x	x	x	x
	Improve awareness for grownups and elderly people to introduce them to ICT-related skills.	Awareness rising programme is established	MOES, MoICT&NG, NITA-U	N/A					

10.6. Emerging technologies

Strategic Action	Activity	Output/KPI	Responsible	Resources	Years of Implementation				
					1	2	3	4	5
We will implement emerging technologies	We support cooperation in the adoption of emerging technologies (for example Artificial intelligence, Internet of things, Data analytics, Automation & Robotics, Cloud computing, etc)	Emerging technologies are taken account in all activities	NITA-U	N/A	x	x	x	x	x
	The Fourth Industrial Revolution (4IR) objectives will be fulfilled.	According to the 4IR strategy	NITA-U	N/A	x	x	x	x	x

10.7. Connectivity

Strategic Action	Activity	Output/KPI	Responsible	Resources	Years of Implementation				
					1	2	3	4	5
We will ensure the connectivity for all	Increase Internet penetration	60%	MOICT&NG	N/A	x	x	x	x	x
	Establish information and service centers and digital kiosks (including Regional Information centres (RICS))	In 121 districts	MOPS MOICT&NG NITA-U	10	x	x	x	x	x
	Create e-service delivery points	50% of postals outlets are transformed	POSTA	20	x	x	x	x	x
	Increase Digital Terrestrial Television signal coverage	95%			x	x	x	x	x
	Reduce the cost of ICT services and devices	1MBS connection: from 237 USD to 70 USD mobile: from 100 000 to 60 000 UGX computer: from 1 600 000 to 800 000	MOPS NITA-U MOICT&NG	N/A	x	x	x	x	x
We will ensure broadband coverage	We ensure secure, reliable and high-quality broadband ICT infrastructure coverage countrywide in partnership with the private sector and all Government entities		Public Private Partnership	N/A	x	x	x	x	x
	We are continuously developing and	100% MDAs/LGs coverage	UCC	1400	x	x	x	x	xx

	maintaining National Backbone Infrastructure and E-Government Infrastructure (NBI/EGI) network		NITA-U MOICT&NG SIGNET						
	We implement last-mile connectivity to key areas: districts, sub-counties, schools, hospitals, post offices, tourism sites, police, LGs etc.		Public Private Partnership	N/A	x	x	x	x	x
	We increase countrywide mobile penetration and signal coverage. Implementation 5G technologies		Public Private Partnership	N/A	x	x	x	x	x
	We participate Telecom market and cooperate with Telecom operators in improving services for residents, businesses and the public sector.		UCC	N/A	x	x	x	x	x

10.8. Trust and security

Strategic Action	Activity	Output/KPI	Responsible	Resources	Years of Implementation				
					1	2	3	4	5
We will protect personal and business data	Continual implementation of data protection, supervision	Regular assessments and audits of data collectors, data controllers and data processors	PDPO	N/A					
	Developing and implementation of Web Application Security Architecture	Functioning Framework	NITA-U	0.8	x	x	x	x	x

	Framework								
	Assessment of Institutions on NISF implementation and handhold MDAs in the implementation of the Framework	NISF is implemented by MDAs	NITA-U	2.5	x	x	x	x	x
	Administrative and state supervision over the WASA Framework and the connection to the data exchange layer of information systems.		NITA-U	N/A	x	x	x	x	x
We will defend cyberspace from cyber-attack	Develop national cyber security strategy and implementation guidelines	Functioning Strategy	NITA-U	0.8	x	x	x	x	x
	Strengthening Cyber Security activities, including CERT/SOC		NITA-U	21	x	x	x	x	x