Republic of Uganda

Ministry of Health

Uganda National eHealth Policy

November 2016

Foreword

The Ugandan healthcare system, through its ongoing health sector reforms, aims to improve health outcomes. As part of these reforms, the Ministry of Health (MOH) developed the Health Sector Development Plan (HSDP) 2015/16 - 2019/20 to address the key challenges facing Uganda's health system, set out priorities and key areas on which to focus health investment in the medium term, for both public and private partners, in order to optimally contribute to the attainment of both the health sector goals and the national goals as outlined in the National Development Plan II. Although implementation of HSSP III promised to produce many positive results, realizing the best outcomes in the face of increasing pressures on the healthcare system requires a fundamental transformation in the way health care is delivered and managed.

The Ministry recognizes the potential of information and communication technology (ICT) in transforming healthcare delivery by enabling information access and supporting healthcare operations, management, and decision making. However, the Ugandan health sector is characterized by a fragmented landscape of ICT pilot projects and numerous data and health information system (HIS) silos with significant barriers to the effective sharing of information between healthcare participants.

Although the government, partners, and private institutions are continuing to invest in various ICT initiatives, without some form of a national plan and coordination, there is a real risk of continued duplication, ineffective expenditure, and the creation of new solutions that cannot be integrated or scaled across the continuum of care.

To form a national plan and communication, the MOH developed a National eHealth Policy (2013), a National eHealth Strategy (2013), and subsequently a draft National eHealth Policy (2016) to guide the use of ICT in supporting health sector transformation. As part of these processes, the Ministry, through an eHealth Technical Working Group (eHealth TWG) supported by United Nations Children's Fund (UNICEF) and World Health Organization (WHO), conducted a series of national consultations that included health sector professionals, partners, faith-based organizations, Government, non-governmental organizations (NGOs), and other stakeholders.

In 2016, the Ministry, through technical and financial support from UNICEF and WHO under the stewardship of the eHealth TWG reviewed the draft eHealth Policy and strategy, seeking areas for improvement. The review process also followed a participatory approach driven by HSDP strategic objectives. The National eHealth Policy and Strategy provide an appropriate basis to guide the development of eHealth in Uganda. It adopts enterprise architecture (EA) - driven development approach to developing eHealth capabilities:

- Leverage what currently exists in the Ugandan eHealth landscape.
- Understand what the new components are and where they fit in existing structures.
- Define information structures to fit current needs and to support anticipated ones.
- Demonstrate how technology and resource constraints dictate both what is feasible and the path forward.

The implementation of this eHealth policy and strategy will accelerate the ongoing reforms and sustain the gains witnessed in the sector since 2015, when the sector started the implementation of

HSDP. In addition, the policy and strategy will address some of the key challenges experienced during HSDP, that include a shortage of qualified healthcare professionals at all levels of the health system; epidemics such as HIV/AIDS, tuberculosis (TB), and malaria; and limited access to health facilities and health professionals due to poor infrastructure, inefficiencies of the healthcare system, poverty, and ignorance.

The National eHealth Policy and Strategy will deliver the eventual benefit of a safer, high-quality, equitable, efficient, and sustainable health system that is equipped to respond to emerging health sector cost and demand pressures. The Ugandan healthcare system enhancements will also drive stronger workforce productivity that is vital to Uganda's long-term economic development.

The National eHealth Policy and Strategy is applauded as a useful guide to the next steps for Uganda in its eHealth journey. The Policy and Strategy are pragmatic, balances different priorities, and will help to lead Uganda toward the delivery of a safer, better connected, and more sustainable healthcare system.

Dr. Jane Ruth Aceng

Minister of Health

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Executive summary

The National eHealth Policy and Strategy are directional documents that describes long-term vision for eHealth, with a strong focus on tangible benefits and deliverables. It also describes the leadership and governance structure, cantered on the National eHealth Technical Working Group that will help ensure the timely implementation of eHealth initiatives.

In order to have a policy and strategy that is holistic and inclusive, the development of the policy and strategy used a participatory process. Therefore the Strategy includes the views of multiple groups and sectors and is the result of many hours of debate and deliberation.

Vision
Effective use of information and communication technology for better health outcomes of the Ugandan population.

Mission
To transform the health of the people of Uganda by promoting effective utilization of information and communication technology.

Objective
To create an enabling environment for the development, deployment and utilization of sustainable, ethically sound and harmonized eHealth initiatives at all levels.

Strategic Areas of Implementation

- Leadership and Governance of eHealth
- eHealth Enterprise Architecture, Interoperability and Standards
- eHealth Services, Information Sharing and Data Management
- Infrastructure
- eHealth Information Assurance
- Ethics
- Human Resources and Capacity Building
- Mainstreaming Special Interest Groups
- Research, Innovation and Development
- eHealth Investment
- Stakeholder Engagement, Collaborations, Advocacy and Smart Partnerships
- Business Process Re-Engineering
- Legal and Regulatory Framework for eHealth

Principles

a) Client focused eHealth agenda
b) Equity
c) User-friendly technology applications
d) Multi Sectoral Approach
e) Human Rights based approach
f) Quality Information generation
g) Generate Quality Information base for strategic planning and policy development

Governance and Management

Successful implementation of the National eHealth Policy and Strategy requires a well-defined governance structure to provide improved visibility, coordination, and control of eHealth activities that are occurring across the country's health sector. The main goal of governance is to assure all stakeholders that operations will go as expected—that the results achieved will be in line with the decisions made.

Implementation

The following pillars represent the four key areas where we must excel in order to achieve our national eHealth vision:

- **eHealth Foundations**: The basic infrastructural building blocks required to enable the effective electronic sharing of information across the Tanzanian health sector
- **eHealth Solutions** : The specific computing systems and tools to address the high-priority needs of consumers, care providers, and healthcare managers that improve efficiency and effectiveness
- **Change and Adoption:** The actual actions that need to be carried out to encourage and enable participants in the healthcare system to adopt eHealth solutions and change their work practices to be able to use these solutions effectively.
- **eHealth Governance:** The appropriate national eHealth governance structures and mechanisms needed provide leadership, coordination, and oversight to ensure successful implementation of the national eHealth program

Acknowledgements

The realization of the policy and strategy has been achieved through tremendous effort and commitment of several individuals, organizations, and partners who have contributed to the development of this strategy document.

This strategy has been developed through a participatory process that was spearheaded by the eHealth Technical Working Group appointed by the Ministry of Health (MOH). They held numerous formal meetings plus informal sessions, technical consultations, extensive input from stakeholders through workshops, discussion groups, interviews, review through the World Health Organization (WHO) eHealth development toolkit, and other surveys

This process produced a draft eHealth Policy and Strategy. To each of the contributors to the draft policy and strategy, as well as to those who assisted and supported them, we send our profound appreciation. Specific appreciation is given to the UNICEF and WHO.

Special thanks to the MOH, particularly Minister of Health for her sincere encouragement and follow-up on eHealth issues, as well as stakeholders who participated in the workshops and contributed ideas that are the frame of the policy and strategy.

MOH staff worked with vigour to make sure that the Ministry finalized the National eHealth Policy and Strategy.

All contributions and efforts are highly appreciated.

Dr. Diana Atwine Kanzira.

Permanent Secretary,

Ministry of Health

List of Acronyms and Abbreviations

AIN	Alien Identification Number
BC	Business Continuity
CIS	Clinical Information Systems
CPD	Continuing Professional Development
CSO	Civil Society Organization
DR	Disaster Recovery
DGHS	Director General of Health Services
EAC	East African Community
EGI	e-Government Infrastructure
eHP	eHealth Policy
EHR	Electronic Health Record
EMR	Electronic Medical Record
eTWG	eHealth Technical Working Group
GOe	Global Observatory for eHealth
HCI	Health Centre 1
HCII	Health Centre 2
HCIII	Health Centre 3
HCIV	Health Centre 4
HDPs	Health Development Partners
HEA-IF	Health Enterprise Architecture and Interoperability Framework
HIS	Health Information System
HMIS	Health Management Information System
HPA	Health Professional Associations
HPAC	Health Policy Advisory Committee
HRHIS	Human Resources for Health Information System
HRIS	Human Resource Information system

HSC	Health Service Commission
HSDP	Health Sector Development Plan
HSSIP	Health Sector Strategic and Investment Plan
ICT	Information and Communication Technology
IFMS	Integrated Financial Management Systems
IHRMS	Integrated Human Resource Management System
IT	Information Technology
LIMS	Land Information Management System
LSMIS	Logistics and Supplies Management Information System
LIS	Library Information system
LOGICS	Local Government Information Communication System
LRC	Law Reform Commission
MDAs	Ministries Departments and Agencies
MDGs	Millennium Development Goals
MoEI	Ministry of Ethics and Integrity
MoES	Ministry of Education & Sports
MoFPED	Ministry of Finance, Planning and Economic Development
MoH	Ministry of Health
MoICT	Ministry of Information Communications and Technology
MoJCA	Ministry of Justice and Constitutional Affairs
MoLG	Ministry of Local Government
MoPS,	Ministry of Public Service
MoSTI	Ministry of Science, Technology and Innovation
NASH	National Authentication Service for Health
NBI	National Backbone Infrastructure
NDC	National Data Centre
NDP	National Development Plan

NeHP	National eHealth Policy
NeHS	National eHealth Strategy
NeHSC	National eHealth Steering Committee
NHP	National Health Policy
NIN	National Identification Number
NISF	National Information Security Framework
NITA-U	National Information Technology Authority - Uganda
NITP	National Information Technology Policy
NRH	National Referral Hospitals
PDA	Personal Digital Assistant
PHR	Personal Health Record
PHI	Personal Health Information
PI	Personal Information
PFP	Private-for-Profit
PNFP	Private-Not-for-Profit
PPP	Public Private Partnership
RC	Resource Centre
RCDF	Rural Communications Development Fund
RRH	Regional Referral Hospitals
SMART	Specific, Measurable, Achievable, Realistic and Time-bound
SOP	Standard Operating Procedure
SIGs	Special Interest Groups
TMC	Top Management Committee
TV	Television
TWG	Technical Working Group
UCC	Uganda Communications Commission
UCMB	Uganda Catholic Medical Bureau

UHI	Unique Healthcare Identifiers
UN	United Nations
UNMHCP	Uganda National Minimum Health Care Package
VHTs	Village Health Teams
WHA	World Health Assembly
WHO	World Health Organization

Definitions of Key Terms

Business Continuity (BC): is defined as the capability of the organization to continue delivery of products or services at acceptable predefined levels following a disruptive incident. (Source: ISO 22301:2012)

Business process reengineering (BPR): The fundamental rethinking and redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance such as cost, quality, service, and speed.

Clinical Information System (CIS): A computer based system that is designed for collecting, storing, manipulating and making available clinical information important to the healthcare delivery process.

Disaster recovery (DR): involves a set of policies and procedures to enable the recovery or continuation of vital technology infrastructure and systems following a natural or human-induced disaster.

Distance learning for health professionals (eLearning): eLearning services comprise education and training in electronic form for health pprofessionals. eLearning improves the quality of education and increase access to learning resources. Examples of use include continuing professional development for doctors and nurses, and training on preventive services at the household level for community health workers. eLearning tools vary widely, and may allow interaction between the learner and instructor, access to digital libraries and online courses, networks to share experiences, or the use of mobile devices to access information to support delivery of care.

eHealth: A cost-effective and secure use of information and communication technology (ICT) in support of health and health-related fields, including healthcare services; health surveillance; health literature; and health education, knowledge, and research.

Electronic Health Record (EHR): An EHR is a digital record built to go beyond standard clinical data collected in a provider's office and inclusive of a broader view of a patient's care. EHRs contain information from all the clinicians involved in a patient's care and all authorized clinicians involved in a patient's care can access the information to provide care to that patient. EHRs also share information with other health care providers, such as laboratories and specialists. EHRs follow patients – to the specialist, the hospital, the nursing home, or even across the country.

Electronic medical records (EMR): An EMR is a digital version of the paper charts in clinician offices, clinics, and hospitals. EMRs contain notes and information collected by and for the clinicians in that office, clinic, or hospital and are mostly used by providers for diagnosis and treatment. EMRs are more valuable than paper records because they enable providers to

track data over time, identify patients for preventive visits and screenings, monitor patients, and improve health care quality.

Emerging Technologies: New technologies that are currently developing or will be developed over the next five to ten years, and which will substantially alter the business and social environment.

Enterprise Architecture (EA): EA is the process of translating business vision and strategy into effective enterprise change by creating, communicating, and improving the key principles and models that describe the enterprise's future state and enable its evolution.

Health Information Systems (HIS): It is a systems that facilitates gathering, aggregating, analysing and synthesizing of data from multiple sources to report on health situation and trends (disease burden, patterns of risk behaviour, health service coverage and health system metrics). Countries may have in place one or more HIS supporting reporting on diseases or programs. They may also have HIS strategies aimed at improving decision-making, policy development, health services management, response to emerging threats and better allocation of health resources

Mature Technologies: This referrers to a technology that has been in use for long enough that most of its initial faults and inherent problems have been removed or reduced by further development. In some contexts, it may also refer to technology that has not seen widespread use, but whose scientific background is well understood.

Mobile health: mHealth or mobile health is defined as medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices.

Examples include the use of mobile devices for:

- Data collection for surveillance and public health (e.g. outbreak investigation)
- Real-time monitoring of an individual's health
- Treatment support, health advice and medication compliance
- Health information to practitioners, researchers and patients
- Health education and awareness programs
- Diagnostic and treatment support, communication for health-care workers.

Patient Registry: A Patient Registry is an organized. system that uses observational study methods to collect uniform data (clinical and other) to evaluate specified outcomes for a population defined by a particular disease, condition, or exposure, and that serves a predetermined scientific, clinical, or policy purpose(s).

Personal health records (PHR): A PHR is a record that contains the same types of information as EHRs—diagnoses, medications, immunizations, family medical histories, and provider contact information—but are designed to be set up, accessed, and managed by

patients. Patients can use PHRs to maintain and manage their health information in a private, secure, and confidential environment. PHRs can include information from a variety of sources including clinicians, home monitoring devices, and patients themselves.

Telemedicine: This is the delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities. Examples of telemedicine services are provided below.

- Store-and-forward services involve acquiring medical data for transmission later by the health-care provider for offline assessment and treatment recommendation.
- Remote monitoring services enable health-care providers to monitor an individual's condition remotely, using information technologies.
- Interactive services enable real-time interaction between health-care provider through means such as telephone, web conference, video conference and other forms of online and remote communication.

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Policy Declaration

All Medical Practitioners, Users and Stakeholders SHALL be lawful, efficient, economical and ethical in their use of the e-Health resources, which are provided to create, preserve and execute the mission of the Health Sector.

1. Introduction

1.1 eHealth Background

eHealth refers to the use of Information and Communication Technologies (ICT) in health care. The World Health Organization (WHO) has defined e-Health as "the cost-effective and secure use of ICT in support of health and health-related fields, including health care services, health surveillance, health literature, health education, knowledge and research[1]"

Government of Uganda recognized the use of information and communication technology (ICT) in the National Development Plan II 2015/16 - 2019/20 as an enabler to improve the delivery of services to its citizens across its sectors. The Ministry of Health too has recognized eHealth in the Health Sector Development Plan 2015/16 - 2019/20 as a key enabler for supporting the health system in order to deliver good health to the population. The National eHealth Policy provides guidance on how to use ICT to facilitate improvement in the flow of information, through electronic means, to support the delivery of health services and the management of the health system in a bid to facilitate universal access to care, health sector efficiency, and social transformation.

The National eHealth Policy has been developed through a participatory and consultative process of engagement with multisectoral stakeholders. Stakeholder identification was based on their influence, knowledge, expertise and interest in eHealth. This was to ensure an informed national eHealth policy that is relevant to, and supported by stakeholders from; the health and ICT sectors and other relevant government ministries, Health Development Partners (HDPs), UN Agencies, the Private sector, Civil Society, Service consumers, Research Organisations, Local governments and Academia. Health managers and administrators from urban and rural areas were also consulted.
The success of eHealth is hinged to proper policy, planning, implementation and regulation. Harmonization of the initiatives to-date requires a holistic approach based on international best practice and relevance to the local environment.

1.2 eHealth Services

The applications of e-Health have been classified as use of eHealth in the provision of health services at a distance (telehealth), management of clinical and administrative information (health informatics), and sharing information and knowledge with health care providers, patients, and communities (e-learning).

[1] World Health Organization, Eastern Mediterranean Region. About E Health. 2007; Available from: http://www.emro.who.int/his/ehealth/AboutEhealth.htm

2 Strategic Context for eHealth

2.1 The International Perspective

The fifty-eight World Health Assembly in May 2005 adopted a resolution setting up a "Global eHealth Strategy" within the World Health Organisation. The same year the WHO set up the "Global Observatory for eHealth (GOe)" with the remit of studying, monitoring and promoting the role of eHealth in health services and systems globally. The GOe has published many documents looking at areas such as telemedicine, internet safety and security, mobility, legal issues and patient records.

The WHO has stated that "eHealth is changing health-care delivery today and is at the core of responsive health systems. The daily business of health relies on information and communication and, increasingly, on the technologies that enable it, at every level and in every country. This is equally so in delivering care, deploying personnel, managing programmes or conducting research. The case for adopting these technologies has been evident for over a decade. However, it has taken a crisis in the health sector in many countries to move eHealth from the periphery to the centre of strategic health planning. In an increasingly digital world, spurred by technological advances, economic investment, and social and cultural changes, there is growing recognition that inevitably the health sector must integrate ICT into its way of doing business. This applies whether the goal is to reach all citizens with high-quality, equitable and safe care, or to meet obligations for public health research, reporting and humanitarian action".

In support of this, the WHO have published an eHealth Strategy Development Toolkit to help countries along the path to eHealth maturity. The document outlines a recommended approach to development of a national eHealth strategy and includes considerations such as stakeholder engagement, policy and governance models.

To ensure that a country realizes the potential from eHealth, it is important to establish an effective governance, management and implementation structure. To support the identification of such structure and help define its essential characteristics, a review of international eHealth experiences has been undertaken to examine best-practice criteria for success. This review included Australia, England, Scotland, Northern Ireland, Denmark, Cuba, Philippines and Canada. These were selected as they represent various approaches to eHealth implementation and have shown varying degrees of success and therefore key factors of both success and failure can be examined.

In addition, review looked at African countries; South Africa, Nigeria, Ghana, Kenya and Tanzania to ensure that regional experiences are also brought into perspective.

The major output of this review was the definition of best-practice guidelines and criteria to identify the optimum governance and operational structure required for implementation. These criteria are used to identify an optimum model for Uganda of this strategy.

The following are a summary of the International Perspective:

(a) **Governance.** Strong governance and leadership is required and clear operational models/roadmaps need to be agreed by all early on in the execution phases. The delivery entity should have overall governance for implementation and manage funding allocations. The funding should be allocated on a milestone/deliverable stage-gate basis, held centrally and awarded to local delivery organisations as an innovation incentive.

(b) **Deploy in Phases:** Using a phased approach to implementation based on national priorities and building up to scale makes more sense than larger 'big bang' deployments.

(c) **Enterprise Architecture, Interoperability and Standards:** Deployments should be based and conform to an eHealth Enterprise Architecture, Interoperability Framework and standards.

(d) **eHealth Services:** eHealth Services should be based on an approved eHealth Enterprise Architecture to enable standardization, interoperability and services that are aligned to the health care business objectives in a holistic manner

(e) **Infrastructure:** Development of a secure network infrastructure is important and this should be shared across public and private healthcare systems. Public investment in these 'building blocks' is warranted and is a key 'enabler' to the applications that will be deployed on top.

(f) **Business Process Re-Engineering:** eHealth deployments should be viewed as Business process re-engineering and change management enabling through the use of information systems rather than ICT projects per se. Much up front effort needs to be directed at organisational impact analysis and change management aspects.

(g) **National Oversight, Local Innovation:** A national oversight approach for key aspects such as standards and interoperability combined with local innovation and incentives should be adopted.

(h) **Stakeholder Engagement:** Front line and clinical engagement is critical and these stakeholders should be 'champions' of eHealth solutions. Engagement with further stakeholders including patient groups, advocacy organisations and standards bodies should be factored in early in the process.

(i) **Health Identifier:** A unique identifier is a cornerstone of most eHealth systems. What needs to be decided is the format this takes. Ideally re-use of existing initiatives and public infrastructure is advisable. Proper legislation needs to account for privacy and security issues.

(j) **Leverage existing investments:** Leverage existing investments wherever possible. For example in Ireland the Integrated Services Framework (ISF).

(k) **Branding and Awareness:** The delivery entity should be strongly branded and there should be strong and early engagement with the public. Campaigns of public awareness, education and benefits should be launched.

(l) **Skills:** The deficit of adequate health informatics skills needs to be addressed. Skills development and training are therefore necessary parts of an implementation program.

2.2 The Uganda Healthcare System

In planning for the more systematic and expanded application of eHealth to the health sector in Uganda, it is important to understand the organization of the healthcare system within the mainland.

Uganda as a country is divided into 112 districts and one city (the capital city of Kampala). The districts are spread across four administrative regions of Northern, Eastern, Central and Western. The districts are subdivided into 181 counties and 22 municipalities and 174 town councils which are further subdivided into 1,382 sub counties, 7,138 parishes and 66,036 villages (Census Report 2014). Parallel with the administration are traditional Kingdoms that enjoy some degree of mainly cultural autonomy. The districts are semi-autonomous in health planning and implementation, which is an important point to take into account when planning the deployment of eHealth throughout the country.

The Uganda Healthcare System is governed and supported through a number of institutions:

i) The Ministry of Health (MoH)

ii) Health Service Commission (HSC)

iii) Public Service Commission (PSC)

iv) Ministry of Local Government (MoLG)

v) National Drug Authority (NDA)

vi) National Medical Stores (NMS)

vii) Uganda Aids Commission

viii) Uganda National Health Research Organisation (UNHRO)

ix) Central Public Health Laboratory (CPHL)

x) Uganda Blood Transfusion Services (UBTS)

xi) Uganda Virus Research Institute (UVRI)

xii) Uganda Heart Institute (UHI)

xiii) Uganda Cancer Institute (UCI)

xiv) Joint Clinical Research Center (JCRC)

xv) Natural Chemotherapeutics Research Laboratory

xvi) Uganda Medical and Dental Practitioners Council (UMDPC)

xvii) Pharmacy Board

xviii) Uganda Nurses and Midwives Council (UNMC)

xix) Allied Health Professionals Council (AHPC)

xx) Pharmaceutical Society of Uganda

xxi) Health Committee of Parliament

xxii) ICT Committee of Parliament

xxiii) ICT Association of Uganda

xxiv) Uganda Manufacturers Association

xxv) World Health Organization (WHO)

xxvi) UNICEF

xxvii) USAID

xxviii) CDC - Uganda

The institutions above have been put into consideration when developing the eHP

The Government of Uganda (GOU) has dedicated significant effort, through public and private providers, to deliver primary healthcare services to its citizens. All the 112 districts in Uganda either have a hospital or HC IV or both.

Currently there are approximately 831 clinics, 2,941 Health Centre II, 1,289 Health Centre III, 197 Health Centre IV, 144 GH, 14 RRH, and 2 National Referral Hospital. About 72% of the population lives within five kilometres of a primary health facility; however, the majority of the population lives in rural areas at a distance from hospitals and the care of specialists.

Efforts by the GoU and Partners have facilitated recruitment of much-needed staff increasing the proportion of approved posts from 56% in 2010 to 69% in 2013/2014. This however leaves Uganda with a human resources (HR) deficit. This crisis, together with other challenges facing the Ugandan health sector, calls for the immediate implementation of eHealth in the country. eHealth development can be supported through the formulation and implementation of an eHealth policy as a way of supporting progress in the sector.

2.3 Justification of eHealth in Uganda

Some of the key pressures facing the health sector include the following:

- Shortage of qualified healthcare professionals at all levels of the health system;
- Disease burden;
- Limited access to health facilities due to poor infrastructure;
- Fragmentation of health related information and insufficient interoperability;
- Weak health information management;
- Inefficiencies of the healthcare system;
- Underdevelopment;
- Inadequate funding;
- Insufficient knowledge.

To be able to mitigate the challenges, there is need to continuously improve the performance and capacity of the supply side to meet some of the growth in demand on health care services. The implementation of eHealth is looked at as one of the solutions to mitigate the challenges faced in the Health System.

3 Situation Analysis

3.1 Uganda eHealth Situation Analysis

The success of eHealth to facilitate improvement of health services is premised on being able to overcome specific ICT in Health challenges. This can be achieved by using existing opportunities and ensuring that the threats are minimised by taking advantage of the Opportunities such as the (i) the existence of Development Partner supported programs/ projects, (ii) the availability of new technologies such as mHealth, (iii) the existence of public-private partnerships legal framework to support eHealth development projects, and etc. An assessment to identify these was carried out through document review, key stakeholder consultations and physical observations. The assessment included an investigation of the current ICT services and infrastructure in the country, how data in the health system are collected and managed, referral ambiguities that result in loss of patients' follow-up, best practices for monitoring and evaluation (M&E), and the information pathway for a network of service providers who could be better supported through ICT.

In line with the International Situation analysis, a detailed analysis is given below.

3.1.1 Leadership and Governance of eHealth

eHealth is included as one of the priorities in Uganda's National Development Plan II and well elaborated in the Health Sector Strategic and Investment Plan II as an as a key enabler for supporting the health system in order to deliver good health to the population.

Currently eHealth leadership and governance function at national level is executed by the eHealth Technical Working Group (eHTWG) of the Ministry of Health. eHTWG is chaired by

the Director General of Health Services (DGHS) with the Department of Health Information as the Secretariat, and is responsible for the development of the National eHealth Policy and Strategy. eHealth leadership and governance at the district and community levels is not clear. This has led to bottlenecks in information flow between the various levels of the health system leading to poor performance.

Summarily, there is lack of proper coordination of eHealth related implementation nationally within Ministries, Departments, and Agencies (MDAs), as well as between other stakeholders such as the Private Sector, Development Partners, and Practitioners.

3.1.2 eHealth Enterprise Architecture, Interoperability and Standards

Currently there are several standards , e.g. Standard for Systems and software engineering - Systems and software Quality Requirements and Evaluation (SQuaRE), Standard for Structured Cabling, etc. that have been developed, adopted or adapted to facilitate use of Information Technology. These standards have not however been reviewed specifically for eHealth. The development of a National Enterprise Architecture and e-Government Interoperability Framework is being spearheaded by NITA-U and to be in place in FY 2017/18. There is need to capitalize on the existing initiatives to develop this area.

There is a challenge of several Silos of eHealth solutions that are not integrated.

3.1.3 eHealth Services, Information Sharing and Data Management

There are some eHealth services being implemented across the health sector such as the Health Management Information Systems (HMIS), DHIS2 and Human Resources for Health Information System (HRHIS) among others. The MoH has a Knowledge Management Portal; an online resource that integrates health and health related information resources from the Ministry of Health and beyond. This provides a single point of access to valuable information that facilitates evidence based decision making.

The affiliated Institutions in collaboration with MoH have some notable eHealth Services such as the Warehouse Management System (WMS) and the computerized Logistic Management Information System (LMIS) among others. Other eHealth initiatives include mTrac, U-Report; Inpatient and specialty services, Community Village Health Team (VHT) activities and routine reporting of data from the Health Facilities to the National Health Data Bank/ RC.

There are also isolated mobile applications developed by local innovators which have not gone fully to the market. Several Telemedicine projects initiated in the country over the years have seldom gone beyond pilot phase. There is limited relevant content on health issues in the local language.

Many of the existing eHealth Services are development partner funded projects and have tended to be proof-of-concept pilots, where ICT is introduced (or imported) to demonstrate innovative use of technology in a limited context and they lack local ownership, support and

funding for roll-out. They often stall when the development partner funding is ended. The projects also fail due to the sustainability in terms of the supporting infrastructure such as affordable and reliable power, connectivity etc.; maintenance, hosting options, etc.

The challenge is that the existing eHealth Services are not based on standards, no unique identifier of health records and the health records are duplicated.

3.1.4 Infrastructure

Currently data connectivity and networking in Uganda covers almost 100% of the whole country including; urban, district, rural and remote areas. This has been achieved through fibre for the major towns and wireless (mobile phone) connectivity for the district, rural and remote areas provided through the government National Data Transmission Backbone (NBI), and the private sector fibre and wireless networks. The Government has also built a National Data Centre (NDC) hosting some MDA systems. Mobile phone penetration is over 57.6 %, and internet penetration of 39.8%.

ICT hardware is mainly comprised of electronic medical devices, computer hardware and mobile telephones. However the cost of internet is still high compounded by unreliable or unavailable power supply especially in lower health units and rural communities. In addition ICT hardware such as computers are few, poorly maintained and underutilized particularly in rural and remote health facilities. Currently there is reliance on imported hardware and software in the face of fast changing technology. This has led to the proliferation of hardware, software and communication equipment used in the numerous fragmented donor-funded projects, which do not share information and provide limited information to healthcare professionals for managing patients effectively.

Currently, there is a challenge of complementary infrastructure such as green and affordable backup power to support eHealth. There is needs to consider options like Solar Energy and Inverter Systems to support eHealth.

There are mature technologies that are embraced in Uganda such as Cloud Computing, Big Data & Open Data, Data Analytics, Smart Systems, Digital Services and Internet of Things. These technologies have been adopted but not in an organized way. There is need to formalize their adoption and utilization to gain targeted benefits from them. There are also some continuously emerging technologies that are upcoming and used in an isolated manner and need to be explored for utilization.

Although some infrastructure exists, it remains insufficient to support the effective and efficient implementation of e-Health.

3.1.5 eHealth Information Assurance

A National Information Security Framework (NISF) was developed and adopted by the GOU and it has attendant policies, standards and guidelines. Its implementation has not been

commenced in the Health Sector. There is need to review and implement the NISF in the Health Sector and also develop attendant mechanisms to enhance information assurance.

There is also a Data Protection and Privacy Bill before Parliament for approval into law. This shall support the implementation of privacy for eHealth. The Data Protection and Privacy Bill includes; Principles of Data Protection, Data Collection and Processing, Security of Data, Right of Data Subjects, Data Protection Register, Complaints and Offences. There is also need to review it and ensure that it takes care of all the requisite privacy issues related to health care.

3.1.6 Ethics

The Uganda Medical and Dental Practitioners Council (UMDPC), Pharmacy Regulatory Bodies (Pharmacy Board and Pharmacy Society of Uganda), Uganda Nurses and Midwives Council (UNMC) and Allied Health Professionals Council (AHPC) are in place to ensure that ethics are adhered too in healthcare[2]. In addition, the Ministry in charge of Ethics and Integrity is also mandated to set standards for the rebuilding and promotion of ethics and integrity in society[3]. The existence of the aforementioned roles provides generic provisions for ethics and integrity that might not apply in an ICT environment. There is need to review implementation and sufficiency of the codes of ethics and integrity to ensure that the ICT environment applicability is fully taken care of.

There is also the NISF and the Data Protection and Privacy Bill developed to cater for Trust, Privacy, Ownership, Dignity, Equity, and Proportionality of ICT related data. These are not health specific. There is need to review the sufficiency of the existing initiatives for completeness and develop supplementary policies for a health environment.

3.1.7 Human Resources and Capacity Building

eHealth capacity building refers to the creation of an environment that fosters technology-enabled improvements to health systems and delivery, including organizational, policy and technical interventions.

Human resources for eHealth comprise of two components; health workforce and health ICT workforce. Health consumers who are individuals or communities also require knowledge and skills to use IT equipment and systems. One of the biggest issues facing health care organizations is the ability to train, attract and retain eHealth and IT professionals.

Most Health workers and consumers are not computer literate. In addition, most nurses and doctors feel overwhelmed by their routine work and feel that ICT is an extra burden that will draw them away from their core duties. However, in some health institutions/facilities where health workers are computer literate, computers are not used for routine official

[2] http://health.go.ug/affiliated-institutions/professional-councils
[3] http://www.dei.go.ug/

work. In summary, there is a challenge of insufficient eHealth skills and trained human resource.

IT professionals to manage and maintain the IT equipment and support the health workers in the use of IT equipment and systems, are not available. The above constraints have hampered the realization of the benefits of eHealth in improving the health system and health outcomes through electronic;

- Collection, management, storage and transmission of routine HMIS data.
- management of patient records because the paper records get misplaced or may not be available when a patient reports in another health facility away from home
- Follow up of patients in the community and providing relevant information to the health worker in the lower health unit.
- Consultation on patient management and referral of patients among health workers at a distance.
- Management of processes such as procurement and supply chain management.
- Planning, policy formulation and analysis, monitoring, evaluation and dissemination, reporting.

The Human Resource situation is compounded by the non-existence of an eHealth Workforce Structure and an eHealth Skills Framework to guide curriculum development for eHealth.

3.1.8 Mainstreaming Special Interest Groups

The need for mainstreaming Special Interest groups for ICT utilization is included in the National ICT Policy and in the National ICT Sector Strategy and Investment Plan. This existence though is not specific to eHealth. There is need to develop a specific Strategy for mainstreaming Special Interest Groups for eHealth based on the national guidance and International best practice.

3.1.9 Research, Innovation and Development

There is growing recognition among the Government, Developments Partners, Private Sector, Academia and the Civil Society about the importance of Research and Innovation and its potential for the transformation of the country as well as the associated economic benefits. This has been manifested in the National Development Plan, Health Sector Strategic Plan, the National Health Policy, and the National ICT Policy among others.

In addition, there are many eHealth Innovations that have come up through a multiplicity of Innovation Hubs. Several ICT Innovation incubations and Hackathons have being conducted in the country (e.g. ACIA, Marie Stopes Health App Challenge, and Vodafone 2016 Health App Challenge).

Although several strides have been taken, eHealth related Innovation is faced with the following challenges;

- No structured and centralized funding for eHealth Research, Innovation and Development;
- Fragmented efforts in eHealth Research, Innovation and Development;
- Insufficient collaboration by the Innovators with the Health experts and other disciplines complementary to the Health Sector;
- Most eHealth Innovations do not translate into marketable products;
- Insufficient research support tools (high cost of innovation space, computing resources, access to online material, internet bandwidth, etc.)

The challenges above are compounded with the lack of standards to support innovation, insufficient entrepreneurship skills amongst innovators and Insufficient national oversight for local innovation.

3.1.10 eHealth Investment

The Government and the Private Sector have invested in Infrastructure that can be used to support eHealth, like the National Backbone Infrastructure (NBI), the National Data Centre (NDC), and other computing infrastructure. These investments still remain fragmented and Investment in eHealth is mainly in the form of donor funded fragmented eHealth projects. The Government has also invested in medical equipment that is complementary to eHealth. The Private Sector on its side has also invested substantially in isolated systems complementary to eHealth without proper guidance. The investments are not based on any standard and thus not properly guided. This has resulted in numerous fragmented vertical eHealth projects/initiatives which do not share information and are not accountable to the Ministry of Health. There is need to develop an eHealth Architecture and Interoperability Framework to guide all investments in eHealth.

3.1.11 Stakeholder Engagement, Collaborations, Advocacy and Smart Partnerships

A National Policy on Public-Private-Partnership in Health[4] was developed to provide guidance to mainstreaming, establishing, implementing, coordinating, monitoring and evaluating partnerships between the Government of Uganda and the private health sector within existing laws, policies and plans.

There are existing partnerships [5]but they are isolated[6] and not SMART. There are opportunities for partnership in eHealth that need to be exploited[7]. There is a need to review the National Policy on Public-Private-Partnership (PPP) in Health to ensure coverage in terms of eHealth PPP with measurable outcomes and also develop and implement a

[4] https://www.usaid.gov/sites/default/files/documents/1860/Uganda-National-Policy-on-PPPH-2012.pdf
[5] http://www.swecare.se/Portals/swecare/Documents/Uganda-Health-Sector-and-Partnership-Opportunities-final.pdf
[6] http://www.ictworks.org/2012/02/22/ugandan-mhealth-moratorium-good-thing/
[7] http://www.swecare.se/Portals/swecare/Documents/Uganda-Health-Sector-and-Partnership-Opportunities-final.pdf

specific and deliberate Partnership and Relationship Management Strategy for eHealth. There is insufficient awareness of eHealth and its benefits.

3.1.12 Business Process Re-Engineering

There are currently isolated efforts in the Health Sector (Private and Public) to review their Business Processes in order to embrace eHealth, however, they remain. There is need to come up with a deliberate strategy for Business Process Re-engineering specific to eHealth led by the MOH and this should be complied to by all stakeholders.

3.1.13 Legal and Regulatory Framework for eHealth

Currently the legal and regulatory frameworks comprise of several laws and regulations which support but are not specific to eHealth, including:

Laws

(a) The NITA-U Act, 2009
(b) The Computer Misuse Act, 2010
(c) The Electronic Transactions Act, 2011
(d) The Electronic Signatures Act, 2011
(e) National Databank Regulations, 2015
(f) The Registrations of Persons Act, 2015
(g) The Uganda Communications Commission Act, 2013
(h) The Uganda National Council for Science and Technology Act, 1990
(i) Copyrights and Neighbouring Rights Act, 2006,
(j) National Records and Retention Act, 2001

Policies

(k) National Development Plan (NDP) II
(l) National ICT Policy, 2015
(m) Rural Communications Development Policy, 2001
(n) Uganda National Council for Science and Technology (UNCST) National guidelines for research involving humans as research participants, 2007

Strategies

(o) National Development Plan II
(p) Health Sector Development Plan 2015/16 - 2019/20
(q) ICT Sector Strategy and Investment Plan

There is need to review in detail the current legal and regulatory framework to establish whether these take care of all eHealth regulatory areas. There is also need to put in place a legal and regulatory function for eHealth to oversee the review as well as coordination of the enforcement and compliance to the legal and regulatory framework.

4 Foundation of the eHealth Policy

4.1 Rationale of the eHealth Policy

Advancements in ICT, as a whole, and the internet in particular, and the convergence of telephony, computing and media have resulted in many devices including hand-held ones. These devices are widely used for accessing health information and care whereby breach of security, confidentiality, and privacy of personal information is a big threat. Uganda has developed the national Health Sector Policy and the Health Sector Development Plan II which provide for the principles and action in health in the country and the national ICT Policy framework which provides for appropriate laws and guidelines for the planning, development, implementation, utilization, maintenance, monitoring and evaluation and disposal of ICTs for national development. There is a need for the development of a National eHealth Policy to address the challenges unique to the utilization of ICTs for health. In this scenario ICTs are used for accessing health services and sharing health information, in order to achieve long term goals of universal health coverage.

4.2 Scope of the Policy

The Policy shall apply to Public, Private, and Development Partner, Non-Governmental, Academic, and Civil Society Institutions. It will also cover full range of healthcare services from operational, preventive, curative, rehabilitation, research and learning. The coverage of the scope shall include the entire country.

5 Vision, Mission, Goal and Guiding Principles

5.1 Vision

Effective use of information and communication technology for better health outcomes of the Ugandan population

5.2 Mission

To transform the health of the people of Uganda by promoting effective utilization of information and communication technology.

5.3 Goal

To create an enabling environment for the development/deployment and utilization of sustainable, ethically sound and harmonized eHealth approaches/initiatives at all levels of the health systems to promote health and improve health services delivery.

5.1 Policy Guiding Principles

a) Client focused eHealth agenda
Establish eHealth agenda that is client focused and with strong leadership, that is driven by country health needs and priorities

b) Equity
Providing equitable access to appropriate electronic health information and services with respect to gender, age and emphasis on vulnerable groups and individuals.

c) User-friendly technology applications
Adopt technology applications and systems that are user-friendly, affordable, sustainable and based on appropriate national standards. The standards should ensure confidentiality, privacy, security, quality, safety and integrity of health information

d) Multi Sectoral Approach
Harness existing initiatives through public private partnership and collaboration with the relevant stakeholders

Foster eHealth research and development including research on the social determinants of health and the impact on the health of the Ugandan population

e) Human Rights based approach
Observe Human Rights throughout the eHealth practices and upholding Human dignity**.**

f) Quality Information generation

g) Generate Quality Information base for strategic planning and policy development.

6 Pillars/ priority areas for the eHealth Policy

The figure below shows the pillars which represent the key areas where policy must give direction in order to achieve our eHealth Vision. For each pillar, the scope, responsibilities and procedure have been described.

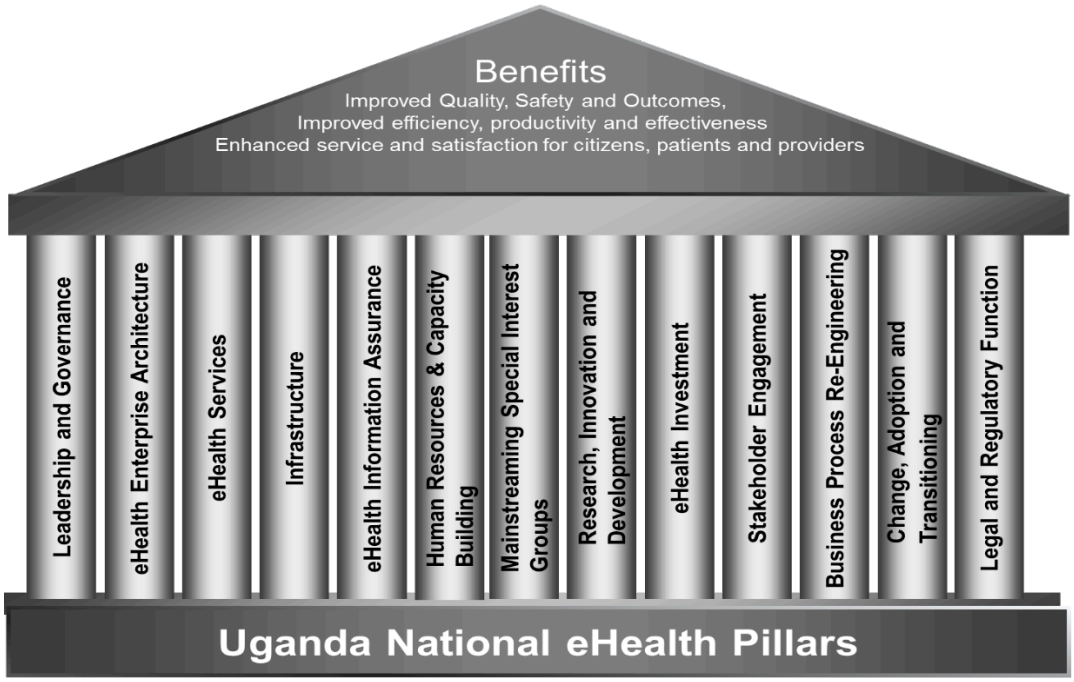

Figure 1 - Uganda National eHealth Pillars

7 Policy Objectives and Strategies

To create an enabling environment for the development, deployment and utilization of sustainable, ethically sound and harmonized eHealth initiatives at all levels, the following are the policy objectives and strategies:

7.1 Leadership and Governance for eHealth

Governance for eHealth includes institutional frameworks for policy oversight, coordination and collaboration, advocacy and partnership, clinical safety, management and operation, program management, strategic architecture, monitoring and evaluation

7.1.1 Objective

To provide effective oversight leadership and governance for the development and progression of eHealth in Uganda.

7.1.2 Scope

This policy applies to all Health practitioners, Health related Government Ministries, Departments and Agencies (MDAs), Employees, Management, Student Interns, and Volunteers. The scope shall cover Inter-Agency Policy Governance, Inter-Agency Technical Governance, eHealth Management within the Ministry of Health, Regulatory Governance, Enterprise Architecture Governance, Practitioner and User Governance.

7.1.3 Policy Strategies

Policy Strategy 1: Design, establish and operationalise Governance and Management Structures to lead, oversee, coordinate and manage the national eHealth program at all

levels of the health system, taking into account existing mandates, roles, relationships and responsibilities.

Policy Strategy 2: Define and formalize relationship and governance interactions with relevant existing national, and local governance bodies.

Policy Strategy 3: Establish and implement mechanisms for compliance to national eHealth regulatory frameworks taking into account relationships and interactions with existing regulatory bodies and functions.

7.1.4 Responsibilities and Procedure

- The Minister of Health Shall Constitute a Steering Committee with appropriate Terms of Reference
- The Steering Committee shall establish other required Governance Structures and constitute the Structures with appropriate Terms of Reference
- MoH shall ensure that all Governance and Management complies to the Terms of Reference and report appropriately to the appointing authority

7.2 eHealth Enterprise Architecture and Interoperability Framework and Standards

7.2.1 Objective

To establish a process and blueprint for transforming the health sector business vision and strategy using ICT into effective enterprise change by creating, communicating and improving the key principles and models that describe the entity's future state. This acts as the design of how eHealth shall be implemented.

7.2.2 Scope

This policy applies to all health stakeholders including all Health practitioners, Health related Government Ministries, Departments and Agencies (MDAs), Development partners, Clients/Patients, researchers and Vendors.

The Enterprise Architecture spells out the Business Architecture, Data and Information Architecture, Applications and eHealth Solutions Architecture, Technology Architecture, the Information Security Architecture and the Privacy Architecture and attendant standards.

7.2.3 Policy Strategies

Policy Strategy 1: Plan, design and development eHealth Enterprise Architecture and Interoperability Framework to guide the implementation of all eHealth Services and Infrastructure in the country

Policy Strategy 2: Develop and implement compliance and review mechanism for the eHealth Enterprise Architecture and Interoperability Framework.

Policy Strategy 3: eHealth Services shall be established and implemented in line with the eHealth Enterprise Architecture and Interoperability Framework

7.2.4 Responsibilities and Procedures

(a) The eHealth Steering Committee shall steer the establishment of the eHealth Enterprise Architecture and Interoperability Framework

(b) The Ministry of Health together with NITA-U and other established Governance Structures shall develop the eHealth Enterprise Architecture and Interoperability Framework

(c) The MoH shall ensure compliance to the eHealth Enterprise Architecture and Interoperability Framework

(d) The MoH shall put in place periodic review mechanism for the eHealth Enterprise Architecture and Interoperability Framework

7.3 eHealth Services, Information Sharing and Data Management,

7.3.1 Objective

To establish eHealth services and tools that address the priority business needs and to facilitate the establishment of a process of authorization, sharing and managing electronic data, information, knowledge, and practices between organizations and stakeholders in the health industry including patients/clients, healthcare providers, and healthcare managers.

7.3.2 Scope

This policy applies to all health stakeholders including practitioners, Health related Government Ministries, Departments and Agencies (MDAs), Employees, Management, Clients/Patients, Student Interns, researchers, vendors and volunteers.

7.3.3 Policy Strategies

Policy Strategy 1: Establish a unique, standardized, comprehensive and comprehensible Electronic Medical Record (EMR), Electronic Health Record (EHR) and Personal Health Record (PHR).

Policy Strategy 2: Establish a comprehensive health facility, provider, and client registries with complete and current information that meets stakeholders' needs.

Policy Strategy 3: Establish, prioritize and implement eHealth Services in line with the eHealth Enterprise Architecture and Interoperability Framework

Policy Strategy 4: Develop and operationalize an eHealth Data Management and Utilization System across all levels of healthcare.

Policy Strategy 5: Align eHealth Data Management and Utilization to other existing government laws and regulations.

7.3.4 Responsibilities and Procedures

(a) The eHealth Steering Committee shall oversee the eHealth Services, Information Sharing and Data Management Program while ensuring Business continuity, Disaster and risk management.

(b) The Ministry of Health together with MoICT, NITA-U and other established Governance Structures shall develop and implement the eHealth Services, Information Sharing and Data Management Program that preserves data quality in compliance with the eHealth Enterprise Architecture and Interoperability Framework

7.4 Infrastructure

7.4.1 Objective

To facilitate establishment and sustainability of ICT Infrastructure and connectivity to support the effective delivery and monitoring of eHealth as an enabler of better healthcare services. This shall include all the components of infrastructure which are computing infrastructure, databases, directory services, infrastructure development & management, connectivity and storage. This also includes complementary infrastructure like power and buildings.

7.4.2 Scope

This policy applies to all Health practitioners and eHealth related Government Ministries, Departments and Agencies (MDAs).

7.4.3 Policy Strategies

Policy Strategy 1: Connect all priority health facilities to the National Backbone and the National Data Centre with a view of having secure, reliable and affordable data connectivity and internet services.

Policy Strategy 2: Ensure all health practitioners (including public and private) develop, utilize and maintain ICT Infrastructure. The Institutional ICT infrastructure shall conform to the e-Health Enterprise Architecture and Interoperability Framework and National IT Standards.

Policy Strategy 3: Ensure all health practitioners (including public and private) implement a seamless connected ICT network system (Local Area/Wide Area Network) of embedded objects/ devices, with identifiers and support for sensors (Internet of Things (IoT)). The Institutional Network shall conform to the e-Health Enterprise Architecture and Interoperability Framework and National IT Standards.

Policy Strategy 4: The MOH in collaboration with the Ministry in charge of Works shall develop, enforce and monitor Medical Facility Building Standards and Architecture ready for e-Health in conformity with the Building Control Act.

Policy Strategy 5: Ensure that all Medical Practitioners comply with the Medical Facility Building Infrastructure Standards and Architecture readiness for e-Health.

Policy Strategy 6: Ensure that all health practitioners (public and private) develop, utilize and maintain green and affordable backup power system in conformance with the Renewable Energy Policy of Uganda

Policy Strategy 7: Ensure that all Health Practitioners utilize mature and emerging technologies while adhering to the eHealth Enterprise Architecture and Interoperability Framework with the guidance of the Ministry of Health, MoICT and NITA-U.

Policy Strategy 8: Ensure that ICT Infrastructure is established in a coordinated manner and meets the standards with guidance from MoH in conjunction with MoICT and NITA-U.

7.4.4 Responsibilities and Procedures

(a) Ministry of Health in conjunction with MoICT and NITA-U shall ensure the connectivity to the NBI and NDC and provision of affordable Internet Bandwidth to Health Facilities and related institutions

(b) MoH and Ministry of Works and Transport shall ensure that the eHealth ready Building Infrastructure is in place in conformance with established guidelines

(c) MoH and the Ministry of Energy and Mineral Development shall ensure that renewable energy eHealth ready Buildings in conformance with established regulatory framework

(d) The Ministry of Health, MoICT and NITA-U shall ensure utilization of mature and emerging technologies in line with established guidelines

(e) The above ministries shall develop the relevant guidelines for eHealth, secure funding for eHealth activities and also carry our M &E.

(f) Practitioners of eHealth at all levels will be responsible for adherence to the eHealth Enterprise Architecture and Interoperability Framework and standards in the process of procurement, implementation and decommissioning of eHealth infrastructure at their respective institutions. Practitioners shall put in place the optimal staff with skills mix necessary to execute eHealth in healthcare delivery.

7.5 eHealth Information Assurance

7.5.1 Objective

The purpose of this policy is to ensure the effective utilization of secure, confidential, quality and authentic electronic health information, together with mechanisms of disaster recovery.

7.5.2 Scope

This policy applies to all Health practitioners and Health related Government Ministries, Departments and Agencies (MDAs), Clients and other stakeholders that will govern or utilize information through eHealth platforms.

7.5.3 Policy Strategies

Policy Strategy 1: Information Security is observed to ensure confidentiality, integrity, quality and availability of information when designing, procuring, implementing, maintaining and retiring eHealth Infrastructure and Solutions by all Health Practitioners and stakeholders in line with the National Information Security Framework (NISF) and the eHealth Enterprise Architecture and Interoperability Framework and Standards with guidance from MoH, MoICT and NITA-U.

Policy Strategy 2: Ensure that Information Protection and Privacy is maintained by all health practitioners and stakeholders in line with the Data Protection and Privacy Law, international protocols & conventions and with guidance from the MOH, MoICT and NITA-U.

Policy Statement 3: Ensure that all Health Practitioners develop, implement and enforce a Business Continuity and Disaster Recovery Plan for eHealth in line with the National Information Security Framework (NISF) and the eHealth Enterprise Architecture and Interoperability Framework and Standards with guidance from MoH in conjunction with MoICT and NITA-U

7.5.4 Responsibilities and Procedures

(a) Health Practitioners shall develop, operationalize and maintain an Institutional eHealth Information Privacy Protection Program that comprises comprehensive and aligned Information security safeguards, and programs, practices, processes, tools and techniques in conformance with the NISF with guidance from MoH, MoICT and NITA-U.

(b) Health Practitioners shall develop, operationalize and maintain an Institutional eHealth Information Security Program that comprises comprehensive and aligned Information security safeguards, and programs, practices, processes, tools and techniques in conformance with the NISF with guidance from MoH, MoICT and NITA-U.

(c) MoH, MoICT and NITA-U conduct training, awareness and sensitization related to Information Security, Privacy and Business Continuity and Disaster Recovery.

(d) MoH, MoICT and NITA-U shall monitor compliance to Information Security, Authenticity, Privacy and Business Continuity and Disaster Recovery.

(e) Ministry of Health in conjunction with other relevant MDAs shall ensure that eHealth-ready Building Infrastructure is in place in conformance with established regulatory framework.

(f) MoH, MoICT and NITA-U shall ensure authenticity of the institutional eHealth Information privacy protection program

7.6 Ethics

7.6.1 Objective

The purpose of this policy is to ensure that all stakeholders (Patients, clients, Institutions, all service providers and development partners) conform to all principles of ethical behavior in managing their own health and the health of those in their care while utilizing eHealth services.

7.6.2 Scope

The policy applies to all eHealth Stakeholders including practitioners both public and private, Government MDAs, healthcare managers and clients.

7.6.3 Policy Strategies

Policy Strategy 1: Put in place eHealth Ethical Standards and guidelines in conformance to cultural and religious values as well as international best practice.

Policy Strategy 2: Put in place and enforce an eHealth Code of Ethics

7.6.4 Responsibilities and Procedures

The MoH in conjunction with MoEI, MoICT, NITA-U, UNBS and the Health Professional Councils and other related bodies shall develop and enforce eHealth Ethical Standards, Guidelines and Code of Ethics.

The MoH through the eHealth regulatory function shall monitor compliance to the eHealth Ethical Standards, Guidelines and Code of Ethics

7.7 Human Resources and Capacity Building

7.7.1 Objective

The purpose of this policy is to facilitate the establishment and building a sufficient skilled eHealth Human Resource to ensure the sustained implementation of the eHealth in the country.

7.7.2 Scope

This policy applies to all Health practitioners and Health related Government Ministries, Departments and Agencies (MDAs), Clients and other stakeholders that govern or utilize information through eHealth platforms.

7.7.3 Policy Strategies

Policy Strategy 1: Evaluate the current readiness of the Health Workers to embrace and support the implementation of eHealth and establish, enforce and monitor an eHealth Workforce Structure for all Medical Facilities and Government MDAs.

Policy Strategy 2: Embed eHealth training and certification at all levels of education and training in the country.

Policy Strategy 3: Promote access to continuous professional development by Health practitioners, through e-learning and digital resources.

7.7.4 Responsibilities and Procedures

(a) The MoH in collaboration with line MDAs shall:

I. Evaluate the current readiness of the Health Workers to embrace and support the implementation of eHealth

II. Establish, enforce and maintain an eHealth Workforce Structure for all Health Facilities and other relevant institutions.

III. Put in place a mechanism to embed eHealth training and certification at all levels of education and training in the country.

(b) Health Practitioners shall conform to the Workforce Structure, Training and Certification requirements for eHealth

7.8 Mainstreaming Special Interest Groups (SIGs)

7.8.1 Objective

The purpose of this policy is to put in place a mechanism to mitigate the barriers that might hamper the utilization of eHealth by Special Interest Group-specific barriers; such as SIG-relevant content and digital services, safety issues and culture norms.

7.8.2 Scope

This policy applies to all Health practitioners and Health related Government Ministries, Departments and Agencies (MDAs), Vendors, Clients and other stakeholders that will procure, govern or utilize information through eHealth platforms. The SIGs include but are not limited to Women, the Disabled, the Aged Persons, the Illiterate, etc.

7.8.3 Policy Strategies

Policy Strategy 1: Support and enhance the access to, acceptance and utilization of eHealth by Special Interest Groups (SIGs) by putting in place mechanisms to mitigate challenges anticipated by the SIGs.

7.8.4 Responsibilities and Procedures

(a) The MoH together with MoICT, NITA-U shall support the setup and institutionalization of a Special Interest Group Forum under the eHealth Users Forum

(b) The MoH together with MoICT, NITA-U and other relevant institutions/regulators shall develop, enforce and evaluate conformance to Standards, Policies and Guidelines for eHealth for SIGs

(c) All Health Practitioners (Public, Private and NGOs) shall conform to the Standards, Policies and Guidelines for eHealth for SIGs

7.9 Research, Innovation and Development

7.9.1 Objective

The purpose of this policy is to promote research, innovation and development in eHealth in order to optimally address the country's evolving needs in the healthcare landscape.

7.9.2 Scope

This policy applies to all Health practitioners, Innovators, and Health related Government Ministries, Departments and Agencies (MDAs), Vendors, Clients and other stakeholders that procure, govern or utilize information through eHealth platforms.

7.9.3 Policy Strategies

Policy Strategy 1: Enhance Health Research and Innovation using Information and Communications Technology.

Policy Strategy 2: Establish an open multidisciplinary approach to Research, Innovation Development, Translation and Commercialization of eHealth for health providers, academia, and the general public**.**

Policy Stratgey 3: Promote Research, Innovation Development, Translation and Commercialization of eHealth for innovators, Providers, Academia and the General Public.

7.9.4 Responsibilities and Procedures

(a) MoH in collaboration with line MDAs shall:

I. Design and operationalize a National Health Care Web Portal

II. Develop a Research and Innovation Strategy (including an Agenda for priority Research and Innovation) for eHealth

III. Identify and maintain a record of all players in the eHealth Innovation Ecosystem with their stake and responsibilities;

IV. Put in place an eHealth Innovation Governance and Partnership mechanism

7.10 eHealth Investment

7.10.1 Objective

The purpose of this policy is to establish a sustainable, affordable, robust funding mechanisms, rational selection, acquisition and deployment of cost effective eHealth systems in the country.

7.10.2 Scope

The policy applies to all Government MDAs & Local Governments (LGs), Development Partners, CSOs, NGOs, Private Practitioners and communities.

7.10.3 Policy Strategies

Policy Strategy 1: Mainstream and integrate funding for eHealth programmes and Projects into the national Health and ICT plans and budgets

Policy Strategy 2: Leverage available resources through Public-Private-Partnerships (PPP) to support eHealth Programmes and Projects

Policy Strategy 3: Develop, implement and monitor eHealth Investment Plan to guide all investments related to eHealth

Policy Strategy 4: Coordinate Development Partner Support to eHealth programmes and projects

7.10.4 Responsibilities and Procedure

(a) Develop guidelines for developing, planning and implementing eHealth projects as well as mainstreaming the projects in the Government Planning, Procurement and Reporting system.
(b) Develop and implement a mechanism for effective collaboration and partnership in the planning, organization and management of all eHealth PPP projects and programs
(c) Develop and ensure implementation of an eHealth Investment Plan.

7.11 Stakeholder Engagement, Collaborations, Advocacy and Smart Partnerships

7.11.1 Objective

The purpose of this Policy is to ensure effective stakeholder engagement and collaboration in order to improve information exchange, mobilization of support, identification of opportunities, highlighting priorities, managing and mitigating risk.

7.11.2 Scope

The policy applies to all eHealth Stakeholders including practitioners both public and private, Government MDAs, academia, civil society organizations, development partners and clients.

7.11.3 Policy Strategy

Policy Strategy 1: Identify and engage appropriately all eHealth Stakeholders at National, Regional and International level to ensure ownership, participation and contribution to the national strategy.

7.11.4 Responsibilities and Procedures

(a) The MoH shall develop and regularly update Stakeholder Register including but not limited to health consumers, health care providers, health- service managers, Government MDAs, Development Partners

(b) The MoH shall develop, implement and continuously review the Stakeholder and Partnership Engagement Plan

7.12 Business Process Re-Engineering

7.12.1 Objective

The purpose of this policy is to encourage and enable participants in the health system to adopt eHealth solutions and change their work practices to be able to use these solutions effectively. It furthermore focuses on how to manage the rapid changes in technology while implementing eHealth.

7.12.2 Scope

The policy applies to all eHealth Stakeholders including practitioners, Government MDAs, healthcare managers and patients/clients.

7.12.3 Policy Strategies

Policy Strategy 1: Develop and implement a comprehensive change and adoption strategy to promote and enforce the development and use of eHealth solutions for both public and private institutions at all levels.

Policy Strategy 2: Develop and implement a comprehensive Business Process Re-Engineering strategy to take to facilitate the uptake of eHealth.

Policy Strategy 3: Develop and implement a comprehensive eHealth Transitioning strategy to take care of rapid changes in technology.

7.12.4 Responsibilities and Procedures

(a) The MoH in conjunction with MoICT, NITA-U and Health Professional Council shall develop and enforce eHealth Change and Adoption Strategy.

(b) The MoH shall develop and enforce an eHealth Business Process Re-Engineering Guidelines

(c) Medical Practitioners and Managers shall change their Business Processes in line with the guidelines

(d) The MoH in conjunction with MoICT, NITA-U and the Health Professional Councils shall conduct compliance assessment to the Business Process Re-Engineering Guidelines.

7.13 Legal and Regulatory Framework

7.13.1 Objective

This policy aims at putting in place the relevant rules, laws, regulations and procedures that shall facilitate the smooth implementation of eHealth together with mechanisms of enforcing them.

7.13.2 Scope

The policy applies to all eHealth Stakeholders including Practitioners both private and public, CSO, Government MDAs, Healthcare Managers and Clients.

7.13.3 Policy Strategies

Policy Strategy 1: A legal and regulatory function shall be established in the MOH to oversee the legal and regulatory role, enforcement, audit, compliance assessment and review working closely with relevant ministries and Regulatory Bodies.

Policy Strategy 2: The existing legal and regulatory framework related to eHealth shall be reviewed and make recommendations on requisite improvements.

7.13.4 Responsibilities and Procedures

(a) The MoH, MoICT, NITA-U MoJCA and the Health Professional Council shall ensure that the relevant laws and regulations are in place to enable the implementation of eHealth.

(b) The MoH shall enforce the national laws and regulations for licensure, liability and reimbursement for eHealth practice and eHealth systems and applications.

(c) The MoH shall Develop and implement appropriate monitoring and evaluation guidelines for legal and regulatory framework for eHealth.

(d) The eHealth Regulatory Function as established by MoH, shall monitor compliance to the Legal and Regulatory Framework

8 Policy Implementation

8.1 Framework

Recognizing the multifaceted nature of ICT in Health issues and the factors that impacts on them, the MoH is conscious that the successful implementation of this policy and achievement of its objectives is through partnership with other MDAs, the Private Sector, Civil Society, academia and Development Partners. Consequently, the participation and involvement of all key stakeholders is crucial.

In addition, the MOH and key Stakeholders has to continue to develop the necessary capacity and instrument, such as indicators, to monitor the impact of the policies on social and economic development.

Mindful of the fact that the ICT industry itself is one of the most dynamic sectors necessary mechanisms will have to be put in place to ensure that the policies are reviewed from time to time. Enhancing of knowledge and information flows is one of the effective tools that would be used to stimulate innovation and facilitate fine-tuning of the policies for the maximum impact and responsiveness to changing technological and competitive conditions. The National eHealth Policy implementation shall be aligned with to the National Health Policy and National Health Sector Development Plan. The implementation shall be through the eHealth Strategy and eHealth Investment Plan. These plans shall be implemented through integrated eHealth projects/ programs which shall be based on the eHealth Enterprise Architecture national standards and shall constitute the National eHealth Program.

8.2 Policy Dissemination and Sensitization

The Dissemination and sensitization shall be the responsibility of the author.
The dissemination is aimed at ensuring that all Stakeholders know the policy and their respective responsibilities.

The Policy shall be disseminated through the following channels

(a) The Policy shall be shared with shareholders electronically (MoH, Government Portal, MoICT, NITA-U portals and websites.)
(b) Through Workshops and Awareness campaigns and other communication channels

8.3 Planning, Budgeting, Resource Mobilization and Investment

The Planning for policy implementation shall be through the eHealth Strategy and eHealth Investment Plan.

8.3.1 Planning and Budgeting

a) Establish and enforce mechanisms for effective collaboration and partnership in the planning, organization and management of all eHealth projects and programs at all levels of the health system
b) Promote public private partnerships, pooling of resources by all partners and international collaborative projects in research, education and training, in eHealth
c) Develop and implement eHealth investment plan

8.3.2 Resource Mobilization

a) Integrate eHealth budget into the national health plans and budget.
b) Mobilize resources for the development and implementation of standardized eHealth systems and solutions for electronic health information sharing and electronic health services delivery.

8.4 Monitoring, Evaluation and Compliance Assessment

Monitoring and evaluation will be performed the extent to which eHealth has been implemented and specifically to check for compliance to the set standards and regulations.

8.4.1 Monitoring and Evaluation

Systematic monitoring and evaluation of the effectiveness of the national eHealth policy shall be conducted to ensure it is really dealing with problems it was designed to solve. Learning from experience of what works and what does not and building on the lessons back into the policy review.

Monitoring and evaluation shall be planned and executed within the existing overall MOH national monitoring and evaluation arrangement. The specific monitoring and evaluation processes for eHealth activities shall be aligned with the national approach and shall include eHealth subject experts

The monitoring and evaluation framework shall focus on the outcomes, impact, and level of change anticipated using a mixture of quantitative and qualitative indicators.
M&E eHealth indicators and targets to be measured shall be developed. They shall ensure monitoring and evaluation of progress over the duration of the implementation plan.
Monitoring and evaluation time frames shall be aligned with the implementation phases defined in the implementation plan. However periods of very high eHealth activity may require closer monitoring of particular indicators. Indicators shall also be linked to timeframes for measuring other health outcomes where possible (for example, in the national health system reporting processes) to show the contribution of eHealth to these outcomes and avoid creating separate reporting processes

8.4.2 Compliance Assessment

A Compliance Assessment Mechanism shall be developed, communicated and complied to. Furthermore the compliance stall be done through the eHealth Strategy.