UGANDA NATIONAL EHEALTH STRATEGIC PLAN


April 2013
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EXECUTIVE SUMMARY

eHealth is this context is the use of information, computer and hand held devices, software applications and telecommunications in support of meeting the needs of patients and the health of the Ugandan population.
This is to be achieved by exploiting the power of electronic information to help ensure that patients get the right care, involving the right health providers, at the right time, to deliver the right outcomes and the individuals in Uganda get the right information in the right language and culture and at the right time to empower them in maintaining their health status.
Sharing the appropriate health information for provision of quality health services and public health is a key responsibility of the Ministry of Health.

The National eHealth Strategic Plan shows what needs to be put in place and the steps to take in order to exploit the benefits of eHealth for improving health outcomes. These steps will be taken in stages/phases while building on what exists and filling the gaps where necessary as well as learning from each stage/phase. The national eHealth Strategic Plan emphasises the National eHealth Programme as the foundation for integrated eHealth implementation. This will be through a nationally co-ordinated approach, collaborative at all levels of the health system, and closely aligned to the delivery priorities for National Health Policy. Good governance will be put in place and must have roles and responsibilities which are clear to those who need to deliver them.

The strategic priorities addressed by the strategic plan include; Providing effective leadership and governance for the development and progression of eHealth in Uganda, Establishing investment programmes for sustainable eHealth implementation, Implementing appropriate laws, regulations and policies for secure and effective electronic health information exchange, Developing appropriate eHealth expertise and accelerating national adoption of eHealth, Implementing core technical foundations for secure and effective electronic information exchange across all levels of the health system and the population, and Implementing priority eHealth initiatives

Monitoring and evaluation of the eHealth strategy and eHealth National Program is emphasised to guide the achievement of the desired goal – a healthy and productive Ugandan population.

This Strategic plan is high level. The Technology Framework has been developed and published. Other documents will be developed and published including a Programme Plan and a Finance Strategy and detailed Standards and Guidelines among others.

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<td>HPA</td>
<td>Health Professional Associations</td>
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<td>UHI</td>
<td>Unique Healthcare Identifiers</td>
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<td>NASH</td>
<td>National Authentication Service for Health</td>
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<td>ACHS</td>
<td>Assistant Commissioner Health Services</td>
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<td>CHS</td>
<td>Commissioner Health Services</td>
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<td>CIS</td>
<td>Community Information System</td>
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<td>CPD</td>
<td>Continuing Professional Development</td>
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<td>DGHS</td>
<td>Director General of Health Services</td>
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<td>DHO</td>
<td>District Health Officer</td>
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<td>GOe</td>
<td>Global Observatory for eHealth</td>
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<td>HDPs</td>
<td>Health Development Partners</td>
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<td>HIS</td>
<td>Health Information System</td>
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<td>HP&amp;E</td>
<td>Health Promotion and Education</td>
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<td>HPAC</td>
<td>Health Policy Advisory Committee</td>
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<td>HSC</td>
<td>Health Service Commission</td>
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<td>HSL</td>
<td>Health Sector Leadership</td>
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<td>HSSIP</td>
<td>Health Sector Strategic and Investment Plan</td>
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<td>ICTs</td>
<td>Information and Communication Technologies</td>
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<td>IFMS</td>
<td>Integrated Financial Management Systems</td>
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<td>IHRMS</td>
<td>Integrated Human Resource Management System</td>
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<td>IPPS</td>
<td>Integrated Personnel Payroll System</td>
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<td>JLOS</td>
<td>Justice, Law and Order Sector</td>
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<td>LIMS</td>
<td>Land Information Management System</td>
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<td>LOGICS</td>
<td>Local Government Information Communication System</td>
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<td>LRC</td>
<td>Law Reform Commission</td>
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<td>MDAs</td>
<td>Ministries Departments and Agencies</td>
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<td>MDGs</td>
<td>Millennium Development Goals</td>
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<td>MHSDMU</td>
<td>Medicines, Health Services and Drugs Monitoring Unit</td>
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<td>MoES</td>
<td>Ministry of Education &amp; Sports</td>
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<td>MoF</td>
<td>Ministry of Finance</td>
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<td>MoFPED</td>
<td>Ministry of Finance, Planning and Economic Development</td>
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<td>MoGLSD</td>
<td>Min. of Gender, Labour &amp; Social Development</td>
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<td>MoH</td>
<td>Ministry of Health</td>
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<td>MOICT</td>
<td>Ministry of Information Communications and Technology</td>
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<td>MoJ</td>
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<td>MoLG</td>
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<td>Ministry of Public Service</td>
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<td>NDP</td>
<td>National Development Plan</td>
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<td>NeHP</td>
<td>National eHealth Policy</td>
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<td>Acronym</td>
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<td>NeHSP</td>
<td>National eHealth Strategic Plan</td>
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<td>NITA-U</td>
<td>National Information Technology Authority Uganda</td>
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<td>NMS</td>
<td>National Medical Stores</td>
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<td>NRH</td>
<td>National Referral Hospitals</td>
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<td>P&amp;H</td>
<td>Population &amp; Health</td>
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<td>PDA</td>
<td>Personal Digital Assistant</td>
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<td>PHC</td>
<td>Primary Health Care</td>
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<td>PNFP</td>
<td>Private-Not-for-Profit</td>
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<td>PPPH</td>
<td>Public Private Partnership in Health</td>
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<td>RCDF</td>
<td>Rural Communications Development Fund</td>
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<tr>
<td>RRH</td>
<td>Regional Referral Hospitals</td>
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<td>SC</td>
<td>Senior Consultant</td>
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<td>SHI</td>
<td>Social Health Insurance</td>
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<td>TWG</td>
<td>Technical Working Group</td>
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<td>UBTs</td>
<td>Uganda Blood Transfusion Service</td>
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<td>UCC</td>
<td>Uganda Communications Commission</td>
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<tr>
<td>UCMB</td>
<td>Uganda Catholic Medical Bureau</td>
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<td>UNHRO</td>
<td>Uganda National Health Research Organisation</td>
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<td>UNMHCP</td>
<td>Uganda National Minimum Health Care Package</td>
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<td>UPMB</td>
<td>Uganda Protestant Medical Bureau</td>
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<td>URANET</td>
<td>Uganda Revenue Authority Network</td>
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<td>VHT</td>
<td>Village Health Team</td>
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<td>VPH</td>
<td>Veterinary Public Health</td>
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<td>WHO</td>
<td>World Health Organization</td>
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**DEFINITION OF TERMS**

**Electronic medical records (EMRs)**
An EMR is a computerized medical record used to capture, store and share information between health-care providers in an organization, supporting the delivery of health services to patients. EMR systems may stand alone or may be integrated with other information systems in a health services organization. They function as the legal record created during the provision of care to the patient.

**Electronic health records (EHRs)**
An EHR is a computerized health record used to capture, store, access and share summary information for a patient between health-care organizations and providers. Examples of information include demographics, medical history, medication and allergies, immunizations, discharge summaries and other summary information. Typically, EHRs are developed to support the provision of care across health-sector or geographical boundaries. They may also be used by individuals and their caregivers to take a more active role in the management of their own health.

**Personal health records (PHRs)**
A PHR is a computerized health record created and maintained by an individual who is proactive in the management of her or his own health. The record can be private, or made available to health-care providers. PHRs can store a diverse range of information such as an individual’s allergies, adverse drug reactions, chronic diseases, family history, illnesses and hospitalizations, medications, diet and exercise plans, and test results.

**Telemedicine (telehealth)**
Telemedicine supports the provision of health-care services at a distance; that is, the individual and health-care providers need not be in the same location. Telemedicine enables the delivery of safe and quality care to individuals living in areas with limited access to services. Examples of telemedicine services are provided below.

- Store-and-forward services involve acquiring medical data (e.g. images) and transmission to a health-care provider (e.g. doctor or medical specialist) for offline assessment and treatment recommendation. Examples include teleradiology and telepathology.

- Remote monitoring services enable health-care providers to monitor an individual’s condition remotely, using technologies such as implanted devices and sensors with wireless or wired connections.

- Interactive services enable real-time interaction between an individual and her or his health-care provider through means such as telephone, web conference, video conference, and other forms of online and remote communication. Psychiatry and mental health
services are classic examples. Telecare services enable care and support to older individuals and those with special needs. This helps them to remain independent in their homes and increases their sense of connectivity with the broader community. Services include alerts (e.g. domestic accidents such as falls) and monitoring (e.g. vital signs, blood glucose, weight).

**Mobile health (mHealth)**

mHealth describes services and information provided through mobile technology, such as mobile phones and handheld computers. mHealth has emerged rapidly in developing countries as a result of the large penetration of mobile phones and the lack of other, modern health infrastructure. 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 programmes
- diagnostic and treatment support, communication for health-care workers.

**Decision support systems**

Decision support systems assist health-care providers in making diagnosis and treatment decisions. These systems combine an individual’s current and historical health information with the health-care provider’s knowledge, to provide advice intended to result in better quality care and outcomes for the individual. For example, in the area of medication management, decision support tools draw on electronic knowledge sources, such as clinical practice guidelines and knowledge bases, and apply this knowledge to local patient and clinical data through expert rules to guide medications decisionmaking.

Decision support systems, when coupled with a comprehensive and accurate base of patient information, are able to identify potential drug interactions, dosing inaccuracies and prescribing errors that could lead to serious adverse events.

**Chronic disease management services**

Chronic disease management services are designed to improve coordination and management of care for individuals with chronic conditions. Better tracking of health status, test results, and other parameters enables closer management and prevention of episodes of acute illness or decline in status. Information tracked over time supports individual care planning as well.
as programme design, resource allocation and research on disease states, benefiting clinicians, administrators, managers and researchers.

**Practice, patient and clinical management systems**

Practice, patient and clinical management systems refer to the computer systems that health-care organizations use to manage the delivery of care to individuals. These systems provide the ability to capture, store, access and share health information for patients during their care episode. These systems can also provide a broad range of health-care management and delivery functions for a health-care entity, such as diagnostics management, scheduling and resourcing management, clinical care management and reporting. Practice, patient and clinical management systems form one of the foundations required for collecting, recording and sharing electronic information across a country’s health sector.

**Electronic medication services**

Electronic medication services benefit health-care professionals and the general public. Services such as electronic prescribing allow the electronic transmission of prescription information from the health professional to the pharmacy, reducing medication errors and replacing paper based systems. Online (Internet) medication purchase from certified pharmacies can reduce cost and improve convenience and access to medications.

**Health knowledge resources**

Health knowledge resources encompass those services that manage and provide access to trusted information to support health-care providers and individuals. Resources include; international electronic journals and resource collections, national electronic journals, and national open archives.

**Distance learning for health professionals (eLearning)**

eLearning services comprise education and training in electronic form for health professionals. 
eLearning can improve the quality of education, increase access where learning resources are unavailable, or use new forms of learning. Examples of use include continuing medical education 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.

**Health information systems**
Health information systems facilitate gathering, aggregating, analysing and synthesizing 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 health information systems supporting reporting on diseases or programmes. 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.
1. OVERVIEW OF THE NATIONAL eHEALTH STRATEGIC PLAN

The Uganda National eHealth Strategic Plan guides the implementation of the National eHealth Policy. It aims to contribute to the attainment of the goals and objectives of the Second National Health Policy 2010 – 2020, the National Health Sector Strategic and Investment Plan-HSSIP (2010/11 – 2014/15) by strengthening the national capacity to optimize the management and use of eHealth resources for better health outcomes. It is relevant to all strategic directions, identified in the HSSIP. The eHSP is aligned to the eGovernment policy framework and is consistent with the objectives of the National Development Plan. The National eHealth Strategic Plan implementation will be in 2 parts. The first part will be for the period 2012/13 – 2014/15 in line with the current HSSIP. A second National eHealth Strategic Plan will be developed to cover the remaining period 2015/16 – 2019/20 of the National eHealth Policy.

1.2 Development of the National eHealth Strategic plan

The National eHealth Strategic plan focuses on principles and guidelines because of the limited timeframe of the consultancy. These principles and guidelines will enable development of more comprehensive action plans and activities and facilitate the effective planning and budgeting process for coordinated and integrated eHealth implementation.

2.0 SITUATION ANALYSIS FOR eHEALTH

The situation analysis for eHealth was informed by; preliminary meetings with MOH eHealth TWG and Senior Management Committee, questionnaire inventory of current eHealth initiatives, key informant interviews, field visits, literature review, technical and broad consultative meetings, developments in the East Africa Region and beyond, and international best practice. The current eHealth Strategic Plan is outlined in the context of the eHealth Priority Areas indicated below

2.1 Health Status

The Government of Uganda has prioritised improvement of the health status of the people in Uganda. Health indicators have generally improved over the last ten years, but they remain unsatisfactory and disparities continue to exist across the country. This calls for new strategies for action including eHealth.

2.2 Current eHealth environment

eHealth as defined by WHO is “The use of information and communication technologies (ICT) for health”. ICTs in Africa include; radio, television, telephone, computer, portable disc players, internet and other digital technologies which enable services like; mobile telephony, text messaging, teleconferencing, electronic mail and videoconferencing. The findings from the situation analysis for eHealth and literature review indicate that Uganda is making greater progress in embracing the use of ICTs and the accompanying potential to
make a major contribution to improving access and quality of health services. The benefits of eHealth among others include: information management, access to quality health care, enhanced communication between clients and providers and among providers especially those separated by distance, human resource capacity building and supporting biomedical research. The situation analysis noted the following:

2.2.1 Leadership and Governance for eHealth
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 DGHS with the Resource Centre as the Secretariat, and is responsible for the development of the National eHealth Policy and Strategic Plan. eHealth leadership and governance at the district and community levels is not clear. This has lead to bottlenecks in information flow between the various levels of the health system leading to poor performance.

2.2.2 Investment for eHealth
Investment in eHealth is mainly in the form of donor funded fragmented eHealth projects. There is no special budget allocation by government for the broader health ICT requirements. This has resulted in numerous fragmented vertical eHealth projects/initiatives which do not share information and are not accountable to the Ministry of Health.

2.2.3 Services and applications
The majority of eHealth services being implemented across the health sector are in the form of Health Management information Systems. Others are for; 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 which form part of the national health information and knowledge sources existing today. These eHealth services/projects are in most cases stand-alone and funded by donors. The majority of these projects use mobile phones which belong to individuals. Others use different ICTs from different donors. The applications and products are not interoperable and compatible. Information is not shared and the services are not integrated. These donor funded projects have tended to be proof-of-concept pilots, where ICT is introduced (or imported) to demonstrate innovative technology in a limited context and they lack local ownership, support and funding. They often stall when donor funding is ended.

2.2.4 Infrastructure, Standards and Systems.
ICT infrastructure; hardware and connectivity.

- 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. Mobile phone penetration is over 40%, and internet penetration of 3.2 users per 100 inhabitants. Operational TV stations are 44 while operational FM stations are 211.

- ICT hardware is mainly comprised of desktop computers 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 underutilised 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 lead 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.

b) eHealth Standards and systems

- Currently there are no national standards for management of secure electronic health information and services for individuals. In addition, the security of personal information and access by unauthorized individuals are not adequately addressed. This hinders the adoption of eHealth and the realization of its benefits such as enhancement of health information sharing and effective management of the health system.

- Computer systems and network-based communications are available to a limited extent in the PNFP and the PFP health facilities. The Uganda Catholic Medical Bureau (UCMB) is to a large extent computerised with a high level of adoption across the country. This can be scaled up appropriately.

2.2.5 Legal and Regulatory Framework for eHealth

Currently the legislative and regulatory frameworks comprise of three cyber laws which address security and legal transactions, these are; The Computer Misuse Act 2011, the Electronic Signature Act 2011 and The Electronic Transactions Act 2011. These laws apply to all levels of government; national, district and community.
The existing data protection, legislation and regulatory frameworks, do not ensure security, confidentiality and privacy of personal information. This may lead to access to personal information by unauthorised persons and mistrust in the health system by the intended users.

The national judicial system and the professional health councils are responsible for regulating compliance with data protection legislation. The health professional councils have an oversight function for legal and regulatory compliance in the health sector. However they do not have the competence in the area of eHealth for effective enforcement.

Human Resources for eHealth.

Human resources for eHealth comprise of health workers, IT professionals and electronic content developers. Health consumers who are individuals or communities also require knowledge and skills to use IT equipment and systems. Most Health workers and consumers especially those in rural areas 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 work. 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 especially in the lower health facilities (HCIV – HCII) and communities.

There is limited relevant local content on health issues in local language and culture.

The above constraints have hampered the realization of the benefits of eHealth in improving the health system and health outcomes through electronic;

- collection 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.
3.0 ASPIRATIONS OF THE NATIONAL EHEALTH POLICY

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

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

3.3 Policy 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.

3.4 Guiding Principles for eHealth Strategic Plan

1. Provide Government leadership and direction for eHealth development and implementation in Uganda.
2. Ensure confidentiality safeguards of electronic health information as an obligation.
3. Expedite delivery of benefits of eHealth by leveraging existing eHealth initiatives within the health system which are consistent with the capabilities and priorities of the country, are integrated and comply with national eHealth standards.
4. Develop/promote eHealth programmes that focus on improving outcomes of health services delivery, its safety and efficiency, supported by technology and change.
5. Ensure a collaborative and consultative approach to joint programme delivery by public, private and partner organisations at national and local level around a common sense of purpose and working for common good, and drawing on best expertise.
6. Realise delivery through a benefits driven approach. The intent is to empower the Ugandan people in all their roles in the health system as; stewards, providers and clients.
7. Provide appropriate eHealth solutions and systems that adhere to set standards, are user-friendly and integrated, taking into account the needs and aspirations of the population, the environment and available resources.
3.5 **Policy Objectives**

1. To harness eHealth to facilitate the transformation of the Uganda health system and improve health outcomes.
2. To make patient care safer and more effective by making available the right information in the right place at the right time.
3. To ensure equitable access to quality health services for all, with emphasis on improving access to underserved communities and vulnerable populations.
4. To contribute to ‘health literacy’ of all citizens for the necessary skills, knowledge and confidence to manage their own health.
5. To safeguard confidentiality, privacy, security and integrity of patient information.
6. To enable more efficient use of healthcare resources through replacing paper intensive processes and providing better management of information.
7. To promote eHealth research and development including research on the social determinants of health and the impact on the health of the Ugandan population.

4. **STRATEGIC FOCUS**

The NeHSP shall focus on 8 priority areas to ensure implementation of the National eHealth Policy for the period 2012/13 – 2014/2015. A second NeHSP shall be developed to cover the rest of the period of the NeHP: 2014/2015 – 2019/2020.

Figure 1 shows – The conceptual framework for eHealth contribution to health systems goals. The priority areas represent essential areas that need to be addressed in order to facilitate eHealth adoption and allow the eHealth outcomes to be achieved. They also describe what needs to be introduced or strengthened in order to achieve strategic benefits and outcomes for the health system and population through the use of eHealth.

These policy priority areas for eHealth are interdependent and are often linked to deliver specific health outcomes in an integrated manner. They shall enhance coverage, quality, access and safety of health service delivery in Uganda through eHealth. They shall also progressively lead to increased efficiency of the health system, and improved health of the Ugandan population which shall become more responsive to its health needs.
Figure 1: Conceptual Framework; eHealth Contribution to Health Systems Goals

**eHealth Pillars**
- Governance & Leadership
- Capacity Building
- Investment for eHealth
- Access to eHealth Services
- Electronic HIS
- Advocacy and Communication
- Legal and Regulatory Framework
- eHealth Infrastructure

**eHealth Outcome Domains**
- Improved planning, organization and management of Health Services
- Improved functioning of all health information systems
- Improved safety and quality of care
- Increasing demand and reducing barriers to accessing health services
- Improving health research, knowledge networks and learning
- Optimization/improving efficiency of human resource for health

**Health System Outcomes**
- Coverage
- Quality
- Access
- Safety

**Health System Goals**
- Improved Health
- Responsiveness
- Social and Financial Risk Protection
- Improved Efficiency
5. STRATEGIC PRIORITIES

5.1 Leadership and Governance for eHealth

5.1.1 Provide effective leadership and governance for eHealth in Uganda.

The most important determinant of the success of eHealth in Uganda will be in the area of governance arrangements that are put in place at national and sub-national levels. The sector will focus on putting in place an eHealth governance mechanism based on consensus among all eHealth stakeholders that guarantees broad-based representative participation, leadership and ownership by MOH, and allows for collective determination of needs and priorities for eHealth. The governance mechanism will also promote integration of all eHealth initiatives to facilitate harmonization and synergy and encourage collaboration with all partners in eHealth implementation. Priority interventions will be as follows:

- Establish and implement an eHealth Governance/Organisational Structure
- Define and formalize the relationship and governance interactions with existing relevant national, and local governance bodies.
- Establish and implement, mechanisms for compliance of national eHealth regulatory frameworks and functions

5.1.1.1 Establish and implement eHealth Governance/Organisational Structure

EHealth mainly in the form of projects is currently implemented by the MOH, donor agencies, PNFP and PFP health providers. In most cases these projects/programmes are managed independent of the Ministry of Health. They lack direction and fizzle out when donor funding ends. This has lead to limited contribution of eHealth to improvement of health outcomes.

EHealth leadership and governance is primarily a function of the Ministry of Health which must effectively oversee and guide the development and implementation of eHealth-related activities in the country in order to exploit the full benefits of eHealth.

Strategies and Interventions

- Analyse the current and proposed structures of the Ministry of Health
- Analyse the mandates, roles, relationships and responsibilities of these structures.
- Determine the most effective structure for eHealth within the existing structures.
- Establish a functional broad multidisciplinary national working framework for effective eHealth coordination and implementation. This framework will be representative of all stakeholders such as health and IT professional associations’ policy-makers, decision-makers, academia and researchers from the health, education, science and technology, and other relevant sectors.
- Establish committees and task forces to support eHealth implementation
- Implement eHealth Governance/organisational structure.
Indicators with targets
- eHealth governance structure established by 2012/2013
- Guidelines for establishment of and regular engagement with working groups/ task forces for the development of eHealth in the country 2013/2014

Implementation arrangements
MoH will implement with relevant MDAs
The eHealth Technical Working Group eHTWG was constituted to provide technical advice on eHealth. The Resource Centre division in the Ministry of Health is the secretariat for eHealth.
- eHealth shall be a division of the Resource centre and shall be headed by an Assistant Commissioner.
- The eHTWG will be strengthened to include representation of key stakeholders example donors, professional councils (health & ICT), private sector, relevant MDAs and civil society among others.
- The eHTWG shall be chaired by the Director General of Health Service.
- The eHTWG shall constitute sub-committees and task forces to deal with specific areas. Technical input will be sought by co-opting appropriate individuals or groups as necessary.

5.1.1.2 Formalize the relationship and governance interactions with existing governance bodies.
NITA-U is mandated to coordinate e-Government initiatives in all government sectors. eHealth falls under e-Government. Health service delivery is by the MoH and MoLG. eHealth governance interactions will have to be clearly defined and delineated in relation to NITA-U mandate.

Strategies and Interventions
- Identify relevant existing national, and local governance bodies in the area of eHealth for example NITA-U, Ministry of ICT.
- Establish appropriate mechanisms of cooperation for eHealth related issues.
- Ensure harmonized and aligned collaboration and coordination mechanisms across public and private sectors, partners, civil society and communities.

Indicators with targets
- Guidelines formalizing governance relationship between eHealth Technical Working Group and other relevant bodies example NITA-U 2013/2014

Implementation arrangements –
MoH will implement with donors MoICT, NITA-U and relevant MDAs.
5.1.1.2 Establish and implement, mechanisms for compliance of national eHealth regulatory frameworks and functions

Regulations in eHealth provide guidance for all stakeholders on effective implementation of ehealth. Regulations will be put in place in consultation with relevant stakeholders. Implementation of such regulations will determine the success of eHealth.

**Strategies and Interventions**

- Provide eHealth regulations and their functions.
- Publish and disseminate the eHealth regulations and their functions.
- Facilitate institutionalization and integration of eHealth.
- Ensure provision of untied, predictable and coordinated eHealth systems/services by donors.
- Aligned all ehealth initiatives with national health development priorities and using country eHealth standards, guidelines and specifications
- Lobby for enforcement of coordinated eHealth development across sectors.
- Ensure transparency and accountability on eHealth through regular audit

**Indicators with targets**

To be determined after further stakeholder consultation

- eHealth regulatory function established 2013/2014

**Implementation arrangements** –

MoH will implement with MoICT, MoJ, NITA-U and relevant MDAs

5.2 Capacity Building for eHealth

5.2.1 Support eHealth workforce planning and utilisation

eHealth workforce is composed of Health and ICT professionals who have eHealth skills and competencies. The health professionals provide the eHealth services while the ICT professionals provide IT support to the eHealth providers and manage the eHealth infrastructure and systems. There is a need for a critical mass of health workers, administrative leadership and communities, who are e-practitioners capable of leveraging ICT in their clinical or other activities, backed by a cadre of IT professionals to ensure that eHealth systems are adequate, up-to-date and well maintained, and provide technical support to the health workers. Priority interventions will be as follows:

- Establish an eHealth function within the Uganda Public Service.
- Determine the required eHealth workforce.
5.1.1.3 Establish an eHealth function within the Uganda Public Service.
Recruitment and retention of the eHealth workforce depends on job opportunities in the public and private sector, the level of remuneration and career progression. Recruitment into the public sector is dependent on the establishment of the required posts as determined by the Ministry of Public Service, and is yet to be determined. Recruitment into the private sector is open and competitive. The development of eHealth is heavily dependent on establishment of the required posts for eHealth workforce for all levels of the health system.

**Strategies and Interventions**
- Establish the need for ehealth function in the public service
- Determine the establishment for eHealth in the civil service for all levels of the health system
- Align eHealth posts to existing establishment of equivalent cadres in the civil service.
- Operationalise the eHealth function in the public sector and align it to similar functions in the private sector.

**Indicators with targets**

**Implementation arrangements**
MoH will work with MoPS, MoFP, MoICT, NITA-U

5.2.1.2 Determine the required eHealth workforce.
eHealth workforce consist of health workers and ICT professionals with the right eHealth competencies and motivation to implement eHealth. eHealth workforce is required at all levels of the health system namely; MOH, NRHs, RRhs, DHs, HCIV-HCII and the communities. This eHealth workforce may be in the public, PFP, PNFP and donor institutions. Highly trained ICT workforce is very expensive and sharing is often required to make it more affordable.

**Strategies and Interventions**
- Establish eHealth staffing requirement for each level of the health system
- Define the required roles and responsibilities of eHealth staff at each level of the health system.
- Determine the qualifications and remuneration of ehealth staff for each level of the health system.
- Develop and implement strategies for recruitment, motivation and retention of eHealth workforce.
- Provide guidelines on career development structure to support ongoing development and retention of eHealth staff.
• Maintain up-to-date eHealth workforce information for effective planning and utilisation.

**Indicators with targets**
To developed after further stakeholder consultation.

**Implementation arrangements**
MoH will work with MoPS, MoFP, MoICT, NITA-U

5.2.2 **Develop appropriate expertise for eHealth implementation.**
Expertise required for eHealth implementation consists of IT-literate health professionals, ICT professionals, Health consumers and managers and the general public that are IT-literate in order to harness the numerous benefits of eHealth. ICT professionals take care of the day-to-day functioning of the equipment and provide support to the users. Special cadres of eHealth specialists like Health Informaticians facilitate the institutionalisation of eHealth.

eHealth workers in the different parts of the service will be required to understand their roles and what they are accountable for delivering in order to ensure that eHealth projects are not IT projects. People are at the heart of the success of eHealth. Organisational development and training needs will be addressed in every eHealth initiative. Priority Interventions will be as follows:

• Establish eHealth competency framework for health and health ICT practitioners.
• Establish professional practice standards and accreditation requirements for eHealth practice.
• Provide appropriate education and training for eHealth workforce

5.2.2.1 **Establish eHealth competency framework for health and health ICT practitioners.**
An effective workforce for eHealth comprises of a team with the required competencies for eHealth. The competencies range from basic computer skills to more complex skills all of which contribute to effective utilisation of eHealth. The framework will provide an understanding of required eHealth knowledge, skills and attributes for the various professional groups of health workers and health ICT practitioners for all levels of the health system. These issue shall be addressed in the planning and capacity building for eHealth:

**Strategies and Interventions**
• Define standard eHealth competency framework
• Develop guidelines on the required eHealth competency levels for safe practice.
• Disseminate the guidelines.
**Indicators with targets**
To be determined after further stakeholder consultation.

**Implementation arrangements**
MoH to implement with health and ICT professional Associations, Tertiary education Institutions, MoES, NITA-U, relevant MDAs

### 5.2.2.2 Establish professional practice standards and accreditation requirements for eHealth practice.

The professional practice standard shall define the expectations and obligations of the health service providers to collect, store and share high-quality electronic health information in a timely, appropriate and secure manner. In addition accreditation will be required of health and health ICT professionals in order to practice eHealth.

**Strategies and Interventions**
- Develop eHealth professional practice standard guidelines.
- Define new accreditation requirements
- Develop guidelines that include eHealth practice to existing professional accreditation programmes for health-care organizations and individual health service providers.
- Agree and implement new accreditation requirements

**Indicators with targets**
To be determined after further stakeholder consultation.

**Implementation arrangements**
MoH will develop eHealth professional practice standards with appropriate professional bodies and stakeholders from relevant sectors, MDAs. The agreed changes will be implemented throughout the high-priority segments of the health sector; example clinicians and health service providers in lower health units (HCIV – HCII) and the communities. Implementation at all levels of the health system and the population will be carried out in a phased manner.

### 5.2.2.3 Provide appropriate education and training for eHealth workforce

ICT education and training is offered in the primary secondary and tertiary institutions. On-job training is also offered by some institutions. Education and training for effective eHealth practice has not been established in Uganda. This issue shall be addressed in liaison with relevant entities.
Strategies and Interventions

- Identify and implement education and training course changes for eHealth.
  - Develop guidelines on the inclusion of eHealth in the education curricula for health workers and health ICT practitioners.
  - Implement education and training course changes
  - Develop guidelines on the implementation of formal training/education programmes designed to recognize and promote the spread of eHealth skills and expertise
  - Implement eHealth education and training

- Provide knowledge and skills in ICTs for health providers and consumers, for use of eHealth systems and address basic literacy and e-literacy

- Develop comprehensive policies and plans for use of ICTs in health workforce development
  - Provide training on the use of eLearning for formal training or continuing professional development
  - Improve the number and performance of eHealth workers through continuing education, training and learning using appropriate eHealth applications such as;
    - Electronic conventional and multimedia learning materials mainly in the form of (voice and images) for illiterate communities to support the learning of all the users.
    - M-learning materials (mobile phone based) for the community health workers, Village Health teams and the people they get in touch with.
    - Internet based information/materials for health workers in the health units for decision support systems and health information on various areas for the e-literate population

- Provide guidelines on establishment of appropriate nationally recognized tertiary qualifications in eHealth (e.g. Health Informatics)

- Establish/invest in national eHealth centers of excellence for eHealth development.
  - Provide specialized eHealth courses and qualifications in relevant areas.
  - Prepare a generation of professionals who can plan, develop, maintain, implement and manage information resources and eHealth systems in health care and evaluate eHealth applications.

- Establish a national eHealth knowledge repository

- Promote collaboration and harmonization, between different sectors, research institutions and industry in building human resource capacity for ICTs, and the exchange of e-health expertise between countries

- Promote knowledge and exchange of eHealth best practices nationally and within the East African region.

Indicators with targets
To be determined after further stakeholder consultation.
Implementation arrangements
MoH will implement with MoES, Health training Institutions, Health and ICT Professional Associations, NITA-U and relevant MDA’s

5.3 Investment for eHealth

Establish mechanisms for sustainable eHealth implementation
Sustainable eHealth initiatives are enhanced by; establishment of robust funding mechanisms, rational selection, acquisition and deployment of cost effective eHealth systems, provision of appropriate financial incentives to providers, and implementation of effective eHealth interventions that ensure access to effective health services for all individuals. eHealth players include the donors, public, private and NGO sectors.
The Government of Uganda will provide initial resources for the national eHealth Programme within the health and ICT budget. Additional resources shall be secured through; public private partnership, donor support and private sector investment. Implementation of the National Health insurance scheme shall also help realise funds for eHealth through integrated health service delivery
Priority interventions shall be as follows:
- Integrate eHealth budget into the national health plans and budget.
- Promote public private partnerships and pooling of resources by all partners.
- Develop and implement eHealth investment plan

5.3.1.1 Integrate eHealth into the national health plans and budget.
Integration of eHealth initiatives into comprehensive national plans especially the national health sector strategic plan makes it possible for eHealth to access financing through the national budget and also provides an entry point into donor resources negotiated by governments. Integration also brings with it economies of scale as shared infrastructure and human resources and other inputs can be made available for eHealth initiatives.
eHealth budgets should cover; capital expenditure, operation budgets, salaries for all staff and costs for training and maintenance of systems

Strategic Interventions
- Provide guidelines for developing, planning and implementing eHealth programs
- Mainstream eHealth in the national health budget and development frameworks.
- Provide appropriate funding and operational mechanisms for eHealth

Indicators with targets
- Guidelines for the development, planning and implementation of ehealth programs 2012/2013
• Guidelines for mainstreaming ehealth in the national health budget and development frameworks 2013/2014
• Guidelines on funding mechanisms for ehealth 2012/2013

Implementation arrangements
MoH will work with MoICT, MoFP, MoLG and other relevant MDAs to implement this interventions.

5.3.1.2 Promote public private partnerships and pooling of resources by all partners
One of the greatest challenges to the MOH is the fragmented approach to ehealth in country. There are many stand alone ehealth projects which are mainly donor funded and not aligned to the nation health system and priorities. A lot of resources are spent in these eHealth projects. However their contribution to the overall improvement in the health of the population is minimal. The MOH will put in place mechanisms to enhance Public Private Partnership and international collaborative projects in research, education and training.

Strategic Interventions
• Develop and implement guidelines for effective collaboration and partnership in the planning, organisation and management of all eHealth projects and programs.
• Implement guidelines for strengthening public private partnerships and pooling of resources by all partners to support a common implementation framework for eHealth.

Indicators with targets
• Guidelines for collaboration and partnership in implementing ehealth projects/programs 2013/2014
• Guidelines for strengthening public private partnership and pooling of resources.2013/2014

Implementation arrangements
MoH will work with private sector, donors, MoICT, MoFP, MoLG and other relevant MDAs to implement this interventions.

5.3.1.3 Develop and implement eHealth investment plan
The MOH shall design and establish an investment funding program in consultation with key stakeholders, to encourage the development and implementation of high-priority eHealth solutions that support national standards and that can be effectively scaled and leveraged across all levels of the health systems and the population.

Strategic Interventions
• Lobby for the resources generated from ICT sector (Universal access/service funds) to develop eHealth applications for rural and remote areas to provide effective health services.
• Secure funding for eHealth through the National Health insurance scheme
• Outsource some components in eHealth implementation

**Indicators with targets**
• Increased allocation of resources to eHealth from Universal Access funds 2013/2014
• Allocation of National Health Insurance funds for eHealth 2013/2014

**Implementation arrangements**
MoH will work with private sector, donors, MoICT, NITA-U, UCC, MoFP, MoLG and other relevant MDAs to implement this interventions

5.4 Access to eHealth Services

5.4.1 Implement priority eHealth interventions

Community access to effective and integrated essential health services is still limited. Appropriate eHealth applications and solutions will be deployed based on the needs and available resources to increase community access to effective and integrated essential electronic health information and services. This will be implemented through multisectoral action, community participation and ownership. Priority interventions will be as follows:

• Implement priority eHealth systems
• Provide access to appropriate electronic public health information.
• Establish national standards for eHealth services and their certification/accreditation.

5.4.1.1 Implement priority eHealth systems.
The effectiveness of eHealth systems for improving access and quality of health services for the whole population depends on a number of factors. Where systems are used in silos, the ability to share and use health information effectively is limited. This will be addressed by putting in place appropriate eHealth systems which can enhance effective health services delivery and information sharing among health providers and consumers. These systems relate to electronic health services management, tele-diagnosis, tele-consultation, decision support, patient referral and electronic access to public health information among others.

**Strategies and interventions**
• **Establish and implement electronic Health Service Management and Administration System.**
  o Provide and utilize appropriate electronic information to support performance management and service planning through increased use of real-time operational management data for; patient referral, communicable disease outbreaks, cancer, long term disease conditions and mental health through text messaging using the mobile phone
  o Enable the use of appropriate electronic health information systems (example, logistics and supply chain management, human resource management etc) to facilitate effective management of integrated health service delivery.
  o Enable the use of individual electronic health record for continuous capture and retrieval of personal information, and provision of efficient and seamless service.
  o Provide and utilise real-time electronic information to support operational management for direct care process such as mass accidents (road traffic, landslides and fires).
  o Plan and implement changes to patient pathways and support change and benefits management

• **Provide and enhance the use of appropriate electronic Health Service delivery tools** (mHealth/telehealth) to facilitate equitable access to essential health services as indicated in the minimum healthcare package, especially for HCIV-HCI in rural and remote areas.
  o Provide a secure standardised patient health record identification for use as the primary identifier.
  o Ensure effective coordination between authorised care providers such as; government, PNFP, PFP and community health service points.
  o Use agreed common standards to facilitate secure and confidential information sharing, example in Emergency Care Summary, patient information passed from one electronic patient record to another as part of a referral and what is sent by one clinician must be exactly what is seen by the recipient clinician.
  o Provide appropriate eHealth tools to enhance multi-disciplinary working and information sharing, within the health sector, and with social care and educational sectors.
  o Provide and utilise a secure “clinical portal” a single online entry point for authorised access to individual patient information.
  o Establish and implement secure appropriate electronic patient referral and tele-consultation for better, local and faster access to quality health care and sustainable remote rural health services:
    - provide specialist advice for critical support to healthcare professionals in remote areas and centres and VHTs using a mobile phone

Uganda National eHealth Strategic Plan – Developed by Dr Catherine Omaswa
- enable teleconferencing/videoconferencing in District hospitals, HCIV- HCII to minimise patient travel to NRHs and RRHs
- provide specialist support in diagnosis capability to HCIV, HCIII, HCII and isolated practitioners by sharing digital data such as laboratory results through appropriate electronic channels.
- utilise effective tele-consultation and image transfer (example tele-radiology and tele-pathology) to support remote delivery of services and professional education, re-enablement and rehabilitation of patients
- exploit advances in mHealth to support the delivery of care closer to home, to improve chronic disease management and to support clinical education.
- Send and receive referrals, discharge communications transfer or shared care information through a secure gateway.
- provide electronic communications for critical support to healthcare professionals in remote areas and the Centres and the Community.
  o Enable patients and their carers to receive accessible, plain, clear, appropriate and timely information for self management using a mobile telephone and text message reminders in collaboration with telecom providers
  o Evaluate current and evolving models of care and use the findings to improve the quality of care at all levels of the health system especially for VHTs, midwives and community and mental health nursing staff.
- Enhance electronic healthcare communication and collaboration for sharing of confidential patient information between clinical professionals to improve the quality, safety, efficiency and effectiveness of health service delivery.
  o Provide and maintain functional basic computer hardware, connectivity and mobile phones
  o Train staff and support them in the use of the eHealth equipment.
  o Provide and implement guidelines on information governance/ confidentiality controls.
  o Provide high quality electronic information to support clinical governance, in particular clinical audit, patient safety, clinical effectiveness and health outcomes
  o Enable improved case management to support the multi-disciplinary and multi-agency teams to reduce delays and waiting times
  o Enable improved access to appropriate information for professional development through e-Learning

**Indicators with targets**
- Electronic Health Service Management and Administration increased 2013/2014
- Electronic healthcare communication and collaboration increased 2013/2014
- Use of appropriate electronic Health Service delivery tools increased 2013/2014
**Implementation arrangements**

The implementation of this component will be phased. It shall be guided by a comprehensive analysis and evaluation of existing eHealth projects/programs for scale up depending on predetermined criteria. The criteria include eHealth projects that are needs-based, demand-driven, simple, adaptable, affordable and respond to the social, cultural and linguistic setting of the beneficiaries and are integrated into the community support structure and the national health system. The primary objective is to provide support for improving eHealth for integrated primary and community care through appropriate systems and applications (mHealth) as part of a broader programme. Progress towards higher levels of eHealth maturity shall be phased. The Division responsible for eHealth shall play a leading role in this process in collaboration with other organisations.

The efficiency and effectiveness of the eHealth systems shall be increased by:

- MOH working with other stakeholders such as development partners, relevant Ministries, Departments and Agencies, Civil Society and industry among others, to:
  - Motivate, prepare and support the health sector in adopting and using eHealth as a core part of health services delivery and management of the health system in the country.
  - Enable Health service providers and consumers to adopt eHealth services and applications, and to change their work practices so as to be able to use the eHealth services and applications effectively.
  - Promote electronic (virtual) Clinical Care Networks for sharing of confidential patient information between clinical professionals to improve the quality, safety, efficiency and effectiveness of health service delivery.
  - Provide ICTs such as radio broadcasting and radio call systems, fixed and mobile telephony, television, email and internet to enhance communication between health workers, patients and the communities.
  - Promote research and development of eHealth solutions based on the development in the infrastructure programmes.

**5.4.1.2 Provide access to appropriate electronic public health information.**

Electronic public health information is commonly delivered through radio, television and short messaging. Enhancement of these methods in addition to use of other electronic means, will enable greater public access for health promotion and education, and increased community participation in and ownership of eHealth programmes/projects.

**Strategies and interventions**

- Develop and provide appropriate electronic public health information sources and enable greater public access, participation and ownership.
- Encourage production of local health content relevant to the needs of all the Ugandan population.
• Define and address social cultural issues regarding technology
• Define and strengthen consumer health informatics

**Indicators with targets**

- Appropriate electronic public health information sources provided and accessed by the individuals and communities. 2013/2014
- Relevant local health content production increased 2013/2014
- Social cultural issues related to technology defined and addressed - 2013/2014
- ICT literacy of end users and consumers increased/strengthened – 2013/2014

**Implementation arrangements**

Provision of public health information for health promotion and disease prevention continues to be a priority in Uganda. Although a lot of work has been done by MOH in collaboration with other stakeholders, more needs to be done to achieve the desired results. The MoH shall work together with relevant MDAs to;

- To enhance the use of appropriate affordable and interoperable ICT applications such as radio, mobile text messaging and television broadcast, to provide communities and the general public relevant public health information in order to empower them to adopt healthier lifestyles taking into account consumer literacy and e-literacy.
- To increase health provider and consumer e-literacy to enable the use of relevant ICT for accessing the information they need.

**5.4.1.3 Establish national standards for ehealth services and their certification/accreditation.**

Technology is rapidly changing leading to availability of many applications which can provide more than one service. Affordability, scalability, cultural and linguistic considerations in selecting appropriate applications for Uganda to extend health services especially to the rural populations is critical. eHealth solutions based on agreed national standards will be deployed to ensure that quality and secure electronic health information and services are provided and shared.

**Strategies and interventions**

- Design and establish national guidelines for testing eHealth services and applications and certifying their compliance with national eHealth standards.
- Develop and publish certification and compliance criteria:
  o Design and implement appropriate solutions compliance-testing processes for supporting technical infrastructure
  o Perform ongoing certification of eHealth services and applications as they emerge from the health ICT and broader health sector.
Develop and publish certification and compliance criteria for eHealth and relevant health ICT solutions.

**Indicators with targets**
- National standards for eHealth services in place 2013/2014
- National guidelines for certifying eHealth services in place 2013/2014
- National guidelines for enforcing compliance to national standards for ehealth services in place 2013/2014

**Implementation arrangements**
eHealth services are provided by government, PNFP and PFP for clinical and public health. For optimal benefit to the Ugandan population, these services will be defined and standardised. The MoH will work with MoLG, MoICT, donors, civil society and other relevant MDAs to implement this intervention.

### 5.5 Electronic Health Information Management

#### 5.5.1 Enable effective utilisation of secure, confidential and authentic electronic health information.

Electronic health data and information is collected, transmitted, analysed, stored through the numerous donor funded, public and private fragmented projects. Decisions for planning and implementation of health programmes are based on this data and information which often differ depending on the source. Electronic health data and information from different sources shall be aligned, secured and authenticated for effective utilisation and realisation of improved health outcomes. Primary interventions will be as follows:
- Ensure security, privacy and confidentiality of electronic health data and services.
- Ensure quality integrity of the electronic health information provided.
- Promote effective utilisation of electronic health information

**5.5.1.1 Ensure security, privacy and confidentiality of electronic health data and services,**

There are a number of requirements to be met that enable data and information to be shared/exchanged securely and be understood by the users. These requirements include; the use of interoperable eHealth systems based on uniform standards and guidelines that address technical aspects, nomenclature and coding for healthcare data/information, and enable systems to interact and exchange data securely and effectively through application of key features namely; anonymization; audit trails; physical security; user authentication; client and server authentication; security breach detection; encrypted data movement; data integrity; availability and access control.
Strategies and interventions

- **Develop and implement appropriate technical standards.**
  - Define national interoperability standards (e.g. messaging standards, base standards)
  - Harmonize and coordinate efforts in standards development.
  - Determine the level of health data security, privacy and confidentiality in the eHealth systems currently in use especially for EMRs
  - Develop and implement national standards and agreements for health data/information management that address; technical aspects, terminologies for content and coding including; health data types, classification, structure for data capture/collection methods, storage, retrieval, analysis, interpretation, reporting, protection and communication of information, data interchange standards between different health information systems, data standards for interoperability, privacy, confidentiality and security.
  - Provide appropriate information security back up and access rights
  - Institute measures to ensure compliance in the implementation of the required level of security, privacy and confidentiality of health data managed using eHealth systems
  - Monitor and review the relevant policies, laws and regulations that support maximum synergy and promote secure standardized, coordinated and equitable eHealth services
  - Promote the use of internationally agreed standards and protocols for data protection, privacy and authenticity, taking into account linguistic and cultural issues.

- **Develop and implement appropriate information standards.**
  - Define existing information standards and determine the need to supplement or change these standards.
  - Develop and implement compatible syntactic and semantic standards for Health information systems.
  - Aligned national standards to international standards to ensure transferability of information across all health providers and interoperability of all systems used for health information.
  - Develop/adopt implementation guidelines and mechanisms for adhering to the set standards.

- **Provide and implement policies and regulations.**
  - Review the current national laws and regulations for electronic health information protection and address the gaps.
  - Establish a legal and ethical environment that ensures data privacy, security and confidentiality, especially regarding the exchange of medical data and electronic health records.
  - Provide legislative and ethical policies that address information integrity, storage, retrieval, access, tracking, sender verification and encryption, data replication, resolution, sanctions and penalty enforcement.
  - Develop and implement policies on health data; ownership, stewardship and intellectual property rights., national data protection, notice and consent,
identification and authentication, secondary users and enforcement mechanisms, wireless communication, privacy and confidentiality of medical records of patients.

- Provide a national eHealth legislative framework for protecting data users and citizens.
- Provide/review guidelines on consistent health information management with regard to; protection, privacy, confidentiality, access and consent, usage and disclosure, storage and retention of data.
- Enforce uniform application of these policies among all eHealth practitioners.

**Indicators with targets**
To be developed after further stakeholder consultation

**Implementation arrangements**
MOH will work together with MoICT, NITA-U, MoLG, Private sector, Donors and other relevant MDAs.

5.5.1.2 Ensure quality and integrity of the electronic health information provided
Digitization of data and information has increased the ease of its manipulation by unauthorised persons. Indeed cybercrime is a big challenge that is on the rise. Measures will be put in place to ensure that health the data collected at every source is authentic, accurate and safe. Similarly electronic health information will also be monitored and protected.

**Strategies and interventions**
- **Establish and implement relevant policies and legislation**
  - Provide a judicial code of conduct for eHealth governing the use of health data/information.
  - Provide comprehensive national laws and regulations for ICT use in health service delivery, that ensure data/information, security, privacy, confidentiality, and integrity.
  - Establish and enforce policies for patient information to ensure; proper coding, removal of identifiers and safety.
  - Develop policies to clearly define and guide the use of terminologies, composition, coding and interpretation of data and information.
  - Provide policies on public health information covering; the quality and credibility of information, conflicts of interest and consent, regulation and monitoring of content.
  - Establish policies and legislation governing health information exchange and use at the community, sub-national, national, regional, continental and international levels.
- **Establish and implement relevant processes and procedures**
  - Design/provide processes and procedures for data management including; data definitions, gathering, collection and flow procedures.
  - Perfect the paper-based systems for individual patient care, other processes before conversion to electronic format.
o Provide standards and guidelines on management, access to and sharing of information.
o Establish a repository of information and knowledge on what is happening where, how well it works

**Indicators with targets**
To be developed after further stakeholder consultation

**Implementation arrangements**
MoH will work together with NITA-U, MoICT, Ministry of Information, donors and relevant MDAs

5.5.1.3 **Promote effective utilisation of electronic health information**
Effective utilisation of quality electronic information for critical interventions such as decision making and planning enables effective delivery of eHealth service and improvement in health outcomes.

**Strategies and Interventions**
- Develop and implement appropriate electronic health information systems example; person and population-based eHealth systems like EMRs, EHRs, HMIS, HRIS, LIS and GIS.
  - Identify the existing applications that are most suitable for national use.
  - Establish effective and user-friendly formats for electronic data collection, analysis, interpretation and presentation of information.
  - Dissemination and share information, evidence and knowledge using electronic materials in appropriate formats and languages.
  - Develop/strengthen web-based applications and databases and their management.
  - Improve access to existing global health information, evidence and knowledge.
  - Implement person- and population-based eHealth systems namely; EMRs, EHRs, HMIS, HRIS, LIS and GIS
  - Integrate and strengthen existing information, knowledge and communication systems
- Develop and implement Knowledge Management Systems
- Develop and utilize directories of Healthcare organisations and providers, and Healthcare services
- Promote knowledge and exchange on eHealth best practices nationally and internationally.

**Indicators with targets**
- Common terminologies developed 2013/2014
- The following standards developed and guidelines implemented. 2013/2014
  - Data structure Standards
  - Clinical Coding Standards,
  - Data Presentation Standards
Secure messaging standards,
Software accreditation standards

• Guidelines on the following developed and implemented 2013/2014
  • Directories for Healthcare organisations and providers, and Healthcare services
  • Appropriate Health information systems and Health care management systems
  • A framework for the safe and secure access of health information

Implementation arrangements
MoH will implement with donors and relevant MDAs

5.6 Advocacy and Communication

5.6.1 Enhance the utilisation of eHealth for improved health outcomes
For eHealth to take root, people have to be the centre of eHealth application as users and service providers. In addition the general population has to be transformed from passive observers to active participants in their health through eHealth. Priority interventions will be as follows:

• Create awareness for eHealth
• Promote eHealth adoption and change of work practices

5.6.1.1 Create awareness for eHealth
eHealth needs to be demystified using different approaches to enable health providers, consumers and the general population to use eHealth to help improve the health of the population. Concerted effort will be made to carry out most awareness campaigns in the course of implementing an actual eHealth project/programme and during eHealth training, because this yields better results. During the hands on period the user gets to know the “do’s” and “don’ts” and is able to ask more targeted questions. Mass campaigns will provide larger target groups a certain level of eHealth knowledge. Each target group will be matched with the eHealth solutions and systems that are relevant to their needs and are user-friendly.

Strategies and interventions
• Identify and engage priority stakeholder segments such as; health consumers, health care providers and health- service managers on eHealth.
• Develop and roll-out eHealth awareness campaigns and build a positive attitude.
• Develop appropriate communication mechanisms and forums for defined target groups.
• Promote awareness of eHealth, specific eHealth services applications, and their benefits.
- Develop a schedule for carrying out identified awareness campaigns for the agreed target groups.
  - Establish a framework for measuring effectiveness of engagement and awareness activities.
  - Provide guidelines with clear definition of criteria and targets for eHealth awareness and progress expected.
  - Provide guidelines for measuring the effectiveness of the intervention against the intended targets
- Assess the effectiveness of eHealth change and adoption activities across consumers, service providers, managers and administrators.
- Establish a national, web-based knowledge repository that captures eHealth project successes and enables sharing/learning across the national health system.
- Design and effectively engage targeted stakeholder reference and working groups.
- Promote and sustain national development of eHealth.
- Promote collaboration and buy-in of all stakeholders and partnerships with various organizations.
- Ensure continuous improvement and minimal duplication of efforts on eHealth.

**Indicators with targets**
- Nurses and Allied Health Professionals in HCIV-HCII, and the VHTs awareness of eHealth completed by 2013/2014
- The general population awareness of eHealth increased 2013/2014.
- Health administrators, managers and providers in government, PNFP and PFP health services, awareness of eHealth completed by 2013/2014

**Implementation arrangements**
MoH will work with health professional associations, eHealth Civil society organisations, donors, the private sector and relevant MDAs.

**5.6.1.2 Promote eHealth adoption and change of work practices**
Most health workers example doctors find eHealth cumbersome and time consuming especially since they have to make ends meet by carrying out some private practice. They lose money if they have to learn to practice eHealth without additional remuneration. Nurses also get overwhelmed with their day to day work and have no time to learn eHealth practice especially since their computer skills are limited. Re-imbursement for eHealth practice will be provided to encourage more health providers to learn to use ICTs in carrying out their daily normal duties of providing health services.

**Strategies and interventions**
- **Develop and roll-out financial incentive regime**
  - Develop guidelines for an appropriate financial incentive programme covering;
- conditions for funding and eligibility criteria – preference given to health providers and consumers in rural and remote areas.
- application and approval processes,
- funding administration, and associated roles and responsibilities.
  o Develop financial incentive communications programme
    - Develop and sustain appropriate communication strategy and materials to publisize incentives.
    - Develop funding guidelines and other relevant material to support the communication strategy.
  o Roll-out financial incentive communications programme
    - Roll out the communications programme to health providers and consumers in rural and remote areas and special interest groups like pregnant women.
    - Extend the Communication programme to all levels of the health system and the population in a phased manner.

- **Plan and implement changes to patient pathways.**
  o Develop guidelines on planning and implementation of redesign of patient pathways.
  o Define and address social cultural issues regarding technology
  o Provide continuous eHealth technical support to the users.

- **Monitor eHealth solution adoption**
  o Develop and implement guidelines for monitoring and evaluation of adoption of priority eHealth solutions in target segments.
  o Reduce and stabilize financial incentives and other change and adoption activities as the adoption increases and becomes part and parcel of health services delivery, and access to health information.

**Indicators with targets**
- Financial incentives implemented 2013/2014
- eHealth solution adoption monitoring indicators developed 2013/2014

**Implementation arrangements**
MoH will work with Health Professional Associations, eHealth Civil society organisations, donors, the private sector and relevant MDAs especially MoFP, MoPS, eHealth National Program Team. eTWG.

**5.7 Legal and Regulatory Framework for eHealth**

5.7.1 **Implement appropriate laws, regulations and policies effective electronic health information management and electronic health services delivery.**
Uganda is moving from paper based to electronic based health information systems and this has brought with it challenges which can be addressed by technical, legal and ethical
means. These information related challenges include; lack of security, privacy and confidentiality of personal data, unclear intellectual property rights between public and private sectors, health information integrity, access to quality information on public health and country ownership. In addition existing legal and regulatory framework does not fully address safe practice of eHealth. Priority interventions will be as follows:

- Establish a conducive legal and ethical environment for health information management.
- Establish a legal enforcement environment for effective eHealth practice to establish trust and protection for consumers and industry in eHealth practice and systems

5.7.1.2 Establish a conducive legal and ethical environment for effective eHealth practice.

Information is central to eHealth practice. This information has to be in the right place at the right time and in the right format for effective eHealth practice. In addition there are critical issues that have to be addressed especially when handling personal data.

**Strategies and Interventions**

- Provide legislative and ethical policies on data protection that address:
  - Security, privacy and confidentiality of personal data
  - Health information integrity, quality and access
  - Intellectual property rights and ownership of health information.
- Develop and implement nationally agreed laws, regulations and policies for compliance, conformance and accreditation for eHealth systems and practice.
- Provide comprehensive national laws and regulations for licensure, liability and reimbursement for eHealth practice.
- Review sectoral policies for alignment and comprehensiveness on eHealth.
- Establish and enforce relevant legislation for current and emerging issues on eHealth.
- Establish regular policy reviews.
- Develop and implement appropriate national monitoring and evaluation regulations for the quality and safety of the electronic health information and services provided.

**Indicators with targets**

- Laws, regulations and policies for compliance, conformance and accreditation for eHealth systems and practice 2013/2014
- Laws and regulations for licensure, liability and reimbursement for eHealth practice 2013/2014
- Regular policy reviews as necessary.

**Implementation arrangements**

MoH will work with relevant MDAs in particular, NITA-U, MoICT, Ministry of Information, law Reform Commission, Ministry of justice.

5.7.1.3 Establish a legal enforcement environment for effective eHealth practice.

There are many good laws and policies in place but they have little benefit if they are not enforced. eHealth in particular requires the trust of the consumers which is best earned by
ensuring protection of personal information in eHealth practice and systems through effective enforcement of appropriate laws, policies and code of practice.

**Strategies and Interventions**

- Establish and Implement enforcement mechanism for eHealth specific policy
- Ensure compliance with standards, conformance with accreditation for eHealth practice

**Indicators with targets**

- Enforcement guidelines for eHealth specific policy 2013/2014
- Guidelines for compliance with standards and conformance with accreditation for eHealth. 2013/2014

**Implementation arrangements**

MOH will work with MoICT and other relevant MDAs and institutions.

### 5.8 eHealth Infrastructure

#### 5.8.1 Provide connectivity, hardware, software, core services and applications for eHealth.

eHealth infrastructure is made of three major components; connectivity, computing hardware and software. The Ministry of ICT has laid the national backbone Infrastructure (NBI) to be used by all sectors. In addition the private sector has provided wireless connectivity for the “last mile”. The health sector will take advantage of these opportunities to develop/deploy appropriate eHealth infrastructure and systems that is responsive to the needs of the health sector. This eHealth infrastructure and systems will be on a common platform to ensure interoperability and facilitate integrated eHealth services, that will increase coverage and access to quality health service delivery while ensuring patient safety. Priority interventions will be as follows;

- Ensure connectivity and access to communication services at all levels of the health system.
- Provide appropriate functional computing infrastructure (hardware, software and peripherals) at all levels of the health system
- Provide core services and applications for eHealth

#### 5.8.1.2 Ensure connectivity and access to telecommunication services at all levels of the health system.

Data connectivity facilitates sharing of electronic health information between health providers, and provision of health services through electronic channels (e.g. tele-health/telemedicine. Connectivity is broadband in the urban areas and wireless in the rural and hard to reach areas and is provided by Government and the private sector. Access to connectivity is limited by cost and availability of power.
**Strategies and Interventions**

- Provide appropriate functional data connectivity – broadband and mobile for all levels of the health system and the population (national, district, community and individual), for shared use between sectors both public and private.
- Provide affordable power source
- Establish affordable connectivity costs through subsidies using Universal Access Fund.

**Indicators with targets**

- Broadband connectivity to MOH, NRHs, RRHs and DHs 2013/2014
- Wireless connectivity to HCIVs – HCI/Community 2013/2014
- National grid and solar power where there is no national grid 2013/2014
- Connectivity costs that enable high usage for eHealth -2013/2014

**Implementation arrangements**

NITA-U is responsible for the national Backbone Infrastructure project which is near completion and is to provide broadband connectivity to urban areas. Wireless connectivity is in place in most places through private telecom companies. The MOH will lobby for affordable costs and alternative power source for eHealth through subsidy and public private partnership.

5.8.1.3 **Provide appropriate functional IT hardware, software and peripherals at all levels of the health system**

IT hardware and software facilitate collection, recording, analysis, storage and sharing of electronic health information. IT hardware consist of computers, laptops, tablets and hand held devices. IT hardware and software constitute systems which need to be in place for effective eHealth practice.

**Strategies and Interventions**

- Provide and maintain appropriate user-friendly computing infrastructure.
- Provide appropriate eHealth solutions that are easy to use, culturally and linguistically acceptable
- Integrate eHealth solutions into national health systems and local settings
- Apply technology standards in the selection, deployment and operationalization of eHealth infrastructure and Systems
- Provide regular maintenance and upgrade of eHealth infrastructure and systems
- Link health service organization and provider accreditation to minimum computing infrastructure requirements.
- Develop and implement national compliance, conformance and accreditation standards/guidelines for eHealth infrastructure and systems.
- Provide appropriate power source to support eHealth infrastructure use.
- Implement the policy for disposal of IT related infrastructure and equipment.
**Indicators with targets**

- Desk tops and laptops with appropriate software for ehealth practice in NRHs, RRHs, DHs, HCIVs-HCIIs implemented in phases 2013/2014
- Technology standards approved and in use 2013/2014
- Alternative power source in place 2013/2014
- Accreditation requirements for eHealth service organizations and providers to include minimum computing infrastructure 2013/2014
- National standards for compliance, conformance and accreditation for eHealth infrastructure and systems in place 2013/2014
- e-Waste disposal policy enforced 2013/2014
- Regular maintenance and upgrade of eHealth infrastructure and systems carried out on-going

**Implementation arrangements**

MoH will work together with relevant MDAs, the donors and private sector in carrying out this intervention.

- NITA-U is responsible for e-Government under which eHealth falls. Under their mandate on eGovernment NITA-U is responsible for technology standards. MOH will work with NITA-U in defining standards for eHealth infrastructure and systems.
- MOH will supply health institutions with appropriate computing infrastructure and software
- MOH will accredit eHealth service organisations
- Health Professional councils will accredit ehealth professionals
- MoH and MoICT will work together enforcing e-Waste disposal policy

**5.8.1.4 Implement core technical services and applications for eHealth**

The foundation for effective eHealth development is determined by having in place core technical services and applications that facilitate building of systems that are compatible and scalable for sharing of health information and services.

**Strategies and Interventions**

- Define, develop and implement the national eHealth architecture.
- Develop and implement a unique national health identification regime and service
- Develop and implement the National Authentication Service for Health
- Provide Directory Services for ehealth
- Develop and implement eHealth-care provider systems
- Develop and implement Individual Electronic Health Record (EHR) Repositories
- Develop and implement Health information datasets

**Indicators with targets**

- The national eHealth architecture developed - 2013/2014
- A unique national health identification regime and service implemented - 2013/2014
- National Authentication Service for Health implemented - 2013/2014
- Directory Services for eHealth developed - 2013/2014
• eHealth-care provider systems developed -2013/2014
• Individual Electronic Health Record (EHR) repositories developed – 2013/2014
• Health information datasets implemented – 2013/2014

**Implementation arrangements**
Relevant departments/divisions of MoH, Health Professional bodies, ICT professional bodies, donos and NITA-U will work together in implementing this priority intervention.

6. **IMPLEMENTATION PHASES**
The National eHealth Strategic Plan will be implemented in phases for maximum benefit taking into account what is already on the ground. Lessons learnt in each phase will be used for continuous improvement in quality adding value at each stage, leading to reduction in the Total Cost of Ownership. There will be three implementation phases for the period 2012 – 2020. Each phase will have defined targets and deliverables. Phase 1 and 2 will be implemented in the 2012/13 – 2014/15 in line with the current National Health Sector Strategic and Investment Plan (HSSIP) plan 2010/11 -2014/15. Phase 3 will be implemented in the remaining period of the National eHealth Policy based on the Second National eHealth Strategic Plan for a 5 year period (2014/15 – 2019/20 that will be developed.

6.1 **Introductory phase – (to Connect and communicate).**

The focus is on establishing the foundations for eHealth and providing basic connections that allow information sharing to occur between care providers and across the health sector.

This will comprise of the following;

i) Providing basic connections that allow information sharing to occur between health service providers at NRHs, RRHs, DHs, HCIV – HCl and VHTs
   • Use computers, mobile and email for administration

ii) Improving access to and quality of health care for the population by providing telemedicine services to remote areas, and tele-consultation for access to medical advice.
   • Use voice, text messaging and email for teleconsultation and patient referral between HRHs, RRHs and lower health units
   • Strengthen tele-pathology, tele-radiology and elearning for CPD and others

iii) Creating awareness and carrying out advocacy for eHealth, and highlight outcomes of successful pilots and proof-of-concept projects
   • Provide awareness and training as part of every eHealth project/programme
iv) Carrying out workforce education and training and adoption of eHealth for health service delivery and eLearning
   - Develop guidelines to enable organised training
v) Improving health information systems and communication infrastructure to link health facilities
   - Collaborate with NITA-U and other relevant organisations
vi) Reviewing and implementing selected projects/programmes that adhere to national standards and yield quick results to help make a case for eHealth
vii) Establishing eHealth governance structures.

6.2 Enablement phase; developing and building up (Collaboration)

The focus will shift from basic communication to collaboration across sectors, joint service planning and multi-disciplinary care delivery through more extended information sharing. This phase will comprise of the following;
i) Establishing appropriate eHealth laws and regulations for health data protection and privacy
ii) Establishing appropriate policies and guidelines for delivering eHealth services more broadly.
iii) Identifying/establishing eHealth data interoperability and associated compliance and accreditation mechanisms. This is to ensure that building ever-larger vertical systems is avoided.
iv) Implementing changes to education and training programmes to improve eHealth workforce capability and capacity
v) Securing long-term funding for investment in national eHealth infrastructure and services
vi) Establishing national eHealth planning processes, which have broader cross-sectoral stakeholder representation and participation
vii) Adopting standards and establishing shared processes to expand the scale of successful eHealth projects; telemedicine; tele-radiology, tele-pathology, tele-psychiatry, tele-consultation for all specialities including nursing and pharmacy
viii) Adopting eHealth on a systematic basis to meet health needs such as access to quality care by;
   - Implementing more extensive telemedicine/teleHealth/mHealth projects/programs that adhere to national standards. Telemedicine can deliver valuable services and yields first successes which impact on health outcomes often seen and provide evidence for building on.
   - Strengthening health information systems (HIS) by implementing the HIS strategy. This will include coordinated adoption of electronic medical record (EMR) systems and procurement and supply tracking systems.
• Adopting coordinated and integrated mobile-health applications for medication management and appointment reminders.

6.3 Consolidation phase – consolidating and mainstreaming.

In this phase eHealth becomes part of business-as-usual for health and health-care provision. The focus is on maintaining and enhancing a sustainable health information-sharing in an environment that supports on-going innovation and the development of future models of care based on rich and extensive information sharing.

This phase is characterised by;

i) Existence of appropriate policies, standards and laws for incorporation of ICT in health services, and the development of a competent workforce.

ii) Health sector leadership in planning and utilizing eHealth to deliver on health objectives.

iii) Full incorporation of eHealth into standard service delivery models with paid services, insurance reimbursement and competent health professionals.

iv) Broad uptake of ICT by the general public with exposure to more e-services in which there is increased demand and expectations.

v) Health information systems are increasingly linked.

vi) Increased demand for efficiency in eHealth systems and processes for; hospital and care networks (including electronic health records), home health monitoring, chronic disease management applications, and tailored online services for self-management of health records.

vii) Priority areas for action include;

- interoperability and complete adoption of standards

- providing incentives for innovation and integration of eHealth into core services

- identifying funding for medium-to-long term implementation

- responding to the expectations of citizens for more efficient, effective and personalized services

- providing education and awareness programmes to health-care providers and citizens

- using data and information for public health planning and management.

• undertaking monitoring and evaluation to ensure that eHealth delivers according to health priorities.

• expanding and mainstreaming services further, thus improving cohesion, efficiency and quality on a broader scale.
7 IMPLEMENTATION ACTION PLAN

The National eHealth Strategic Plan will be implemented through the National eHealth Program which will comprise of integrated projects/programmes at national, district, community and institutional level. All programmes/projects will adhere to agreed national standards so that information can follow seamlessly as required. The focus will be to ensure that different parts of the service understand their roles and what they are accountable for delivering and meeting the agreed targets on time.

eHealth projects are not IT projects. People are at the heart of the eHealth Strategic Plan. Therefore aspects such as organisational development and training needs must be addressed in every eHealth initiative. The implementation plan will comprise of the following:

7.1 **Actions for development of eHealth in the provision of health services at a distance** i.e. telehealth / telemedicine; (in terms of services practice, as well as hardware and software guidelines, standards and legal frameworks) – expected outputs and risks.
   - Telemedicine (telehealth)
   - Mobile health (mHealth)
   - Decision support systems
   - Chronic disease management services
   - Practice, patient and clinical management systems
   - Electronic medication services

7.2 **Actions for development of eHealth for the management of clinical and administrative/management information system** i.e. health informatics, ; (in terms of services practice, as well as hardware and software guidelines, standards and legal frameworks); – expected outputs and risks.
   - Electronic medical records (EMRs)
   - Electronic health records (EHRs)
   - Personal health records (PHRs)
   - Mobile health (mHealth)
   - Health information systems *(MoH/USAID Capacity Project etc)*

7.3 **Actions for development of eHealth for sharing information and knowledge** with health care providers, patients, and communities i.e. e-learning activities; (in terms of services practice, as well as hardware and software guidelines, standards and legal frameworks) – expected outputs and risks.
   - Health knowledge resources
   - Distance learning for health professionals (eLearning)
7.4 Actions for development of eHealth Governance institutions
(oversight/coordination/ethics) and for leadership to:
- build capacity for infrastructure
- build capacity of workforce skills for eHealth
- build capacity for financing of eHealth services
- build capacity for eHealth Research and Development of institutions to manage stake-holder sensitization, the diffusion of eHealth technologies;

7.5 Programme Management Plan
Programme management plan will aligned with the governance structure. Detailed activity plans will be developed after approval of the National eHealth Strategic Plan.

8 GOVERNANCE /ORGANISATIONAL STRUCTURE
Leadership and accountability arrangements will be in line with the governance/organisational structure. See Figure 2 below. Detailed arrangements will be established after approval of the National eHealth Strategic Plan

PROPOSED eHEALTH ORGANISATIONAL STRUCTURE

Office of the Minister

Permanent Secretary

Director General of Health Services

Directorate of Planning and Development

Commissioner Resource Centre

Assistant Commissioner eHealth
The National eHealth Policy and Strategic plan will be implemented using the current structures of the Ministry of Health and in line with the Public Service staffing regulations. eHealth will be headed by Assistant Commissioner of Health Services as per the above Organisational Structure. The eHealth Technical Working Group will provide technical advice on eHealth and will comprise of representatives of key eHealth stakeholders. The eHealth Technical Working Group will be chaired by the Director General of Health Services.

9 MONITORING AND EVALUATION

Ensure continuous monitoring and review as necessary the relevant policies, laws and regulations that support maximum synergy and promote secure standardized, coordinated and equitable eHealth services and applications. See Figure 3 bellow

9.1 Systematic monitoring and evaluation of the effectiveness of the national eHealth Strategy – will 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 that inform the policy review –

9.2 Monitoring and evaluation of the National eHealth Strategy will be planned and executed within the existing overall MOH national monitoring and evaluation arrangement. The specific monitoring and evaluation processes for eHealth activities will be aligned with the national approach.

9.3 The governance arrangement of M&E for eHealth will include subject experts. It will provide oversight, coordination and guidance for monitoring and evaluation efforts, and ensures timely intervention when there appears to be divergence between what is actually happening and what a country was aiming to achieve through its eHealth programme. It will also determine what needs to be monitored or measured and will monitor progress towards that output and outcome

9.4 M&E eHealth indicators and targets to be measured will be developed. In addition the governance and processes required will be defined. The indicators will be a mixture of quantitative and qualitative indicators and will be observable, reliable and controllable.

9.5 A monitoring and evaluation framework will be developed to enable tracking and assessment of the results of implementing the eHealth. ‘Results-based management’ method will be adopted in order to focus on performance and on achievement of outputs, outcomes and impacts using indicators that provide insight into the adoption of eHealth and the tangible results for health and non-health stakeholders. However programme inputs and activities, and eHealth outputs will also be monitored. Monitoring and
evaluation framework provides insight into the adoption, use and results that eHealth is delivering.

9.6 Indicator baseline and target measures will be identified to allow monitoring and evaluation of progress over the duration of the implementation plan. The monitoring and evaluation framework for the national eHealth strategy focus on the outcomes, impact, and level of change that was anticipated.

9.7 Monitoring and evaluation timeframes will 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 will 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.

Figure 3: Relationship of Monitoring and Evaluation to the Results Chain
(Adopted from the WHO ITU National eHealth Strategy ToolKit (2012))
10 IMPLEMENTATION TIMELINE.

eHealth activities, M&E of the National eHealth Program and the national eHealth Strategy will be carried out in line with the implementation timeline – *See figure 4 below*
### Figure 4: eHEALTH STRATEGIC PLAN IMPLEMENTATION TIMELINE; 2012 – 2020

<table>
<thead>
<tr>
<th>Activity Area</th>
<th>Yr 2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2018</th>
<th>2020</th>
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<tbody>
<tr>
<td>Infrastructure and Standards</td>
<td>UHI</td>
<td>Implement UHI Service</td>
<td>Operate Unique Health Identification Service</td>
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<tr>
<td></td>
<td>NASH</td>
<td>Implement NASH Service</td>
<td>Operate National Authentication Service for Health Service</td>
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<tr>
<td>eHealth Standards</td>
<td>Define high priority national eHealth solution Standards</td>
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<td>Develop New Standards</td>
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<td></td>
<td>Implement consistent national standards process</td>
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<tr>
<td></td>
<td>Implement &amp; enhance standards</td>
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<tr>
<td>Physical Infrastructure</td>
<td>Extend Broad band coverage and wireless coverage for “last mile”</td>
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<td></td>
<td>Maintain infrastructure</td>
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<td></td>
<td>Provide funds</td>
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<td></td>
<td>Set accreditation requirements</td>
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<td></td>
<td>Implement &amp; enhance standards</td>
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<tr>
<td>eHealth Services and Applications</td>
<td>Development fund</td>
<td>Establish fund</td>
<td>Foster development of high priority solutions</td>
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<tr>
<td>Compliance</td>
<td>Establish compliance fund for implementing compliance</td>
<td>Operate certification process</td>
<td></td>
<td>Embed compliance into existing Health S regime</td>
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<td>Solutions infrastructure</td>
<td>Establish Health Information Portals</td>
<td>Rationalise &amp; validate information sources</td>
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<td></td>
<td>Healthcare Communication and collaboration tools</td>
<td>Electronic Patient Referral Services</td>
<td>Care plan management</td>
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<tr>
<td>High Priority Solutions</td>
<td>Electronic information sharing</td>
<td>Service delivery tools ; mHealth, Telemedicine/telehealth, Clinical decision support, Disease management, Real-time clinical data access &amp; analysis, Test order decision support, Medication management, Alerts monitoring &amp; management</td>
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<tr>
<td>Human Resource for eHealth</td>
<td>Awareness campaigns</td>
<td>Define awareness programs</td>
<td>Roll out awareness programmes</td>
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<tr>
<td></td>
<td>Incentive programs</td>
<td>Define incentive regime</td>
<td>Roll out incentives</td>
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<td>Professional Accreditation</td>
<td>Professional practice standards</td>
<td>Set Accreditation Requirements</td>
<td>Agree &amp; implement new accreditation requirements</td>
<td>Accredit care providers and care provider organisations against new requirements</td>
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<td>Education and training</td>
<td>Define professional development programs</td>
<td>Implement changes to education &amp; training programmes to include eHealth</td>
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<td></td>
<td>Engagement forums</td>
<td>Establish reference Groups</td>
<td>Consult with reference and working groups</td>
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<td>eHealth Governance</td>
<td>National eHealth Entities</td>
<td>Strengthen eHTWG</td>
<td>Align with relevant existing entities</td>
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<td></td>
<td>eHealth Regulation</td>
<td>Establish other eHealth Entities</td>
<td>Establish eHealth regulatory function</td>
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<tr>
<td></td>
<td>National Governance Body</td>
<td>Establish eHealth Governance Board</td>
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