GHANA HEALTH SERVICE

POLICY AND STRATEGY ON DIGITAL HEALTH

THE GLOBAL FUND

MINISTRY OF FOREIGN AFFAIRS OF DENMARK
Danida

2023 - 2027

YOUR HEALTH OUR CONCERN

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FOREWORD

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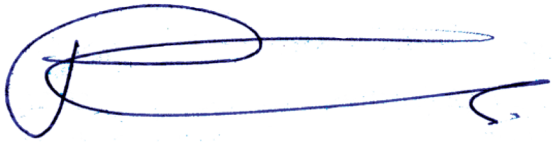
Globally, Information and Communication Technology (ICT) is driving transformation in health service delivery. The digital industry has consistently been introducing efficient, time-saving and cost-effective solutions for health. The COVID-19 pandemic brought into focus the vital role of ICT in healthcare and related systems. The lessons learnt have inspired the development of a policy and strategy on digital health that aims at driving quality health services with current innovations in ICT. This is not only to address the vulnerabilities which were exposed by the pandemic but also to ensure Ghana is fully prepared for any future national or global health emergency.

The policy and strategy was developed through consultations with experts in digital health, healthcare professionals, industry players and academia among others. It is based on empirical evidence from authoritative sources such as the World Health Organization (WHO), United Nations Children's Fund (UNICEF) and the United States Agency for International Development (USAID).

This policy and strategy introduces a renewed vision for establishing a general framework for coordinating digital health interventions in Ghana Health Service (GHS). Furthermore, it provides a platform to ensure that different applications used in the service can communicate effectively and share information.

The expected outcomes are reflected in ten strategic objectives which also serve as priorities in the service's digital transformation agenda in the next five years. These strategic objectives provide the blueprint for establishing the foundations for a sustainable digital health ecosystem for the service while addressing inherent weaknesses which prevent GHS from benefitting fully from existing digital health interventions being implemented.

Ghana Health Service is the custodian of this policy and strategy, with its role evolving through the provision of strategic leadership, innovation and collaboration with relevant stakeholders in digital health.



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ACRONYMS AND ABBREVIATIONS

ACRONYMS AND **ABBREVIATIONS**

3G	-	Third Generation of Wireless Mobile Telecommunication Technology
4G	-	Fourth Generation Wireless Mobile Telecommunication Network
CHIM	-	Centre for Health Information Management
CII	-	Critical Information Infrastructure
CMO	-	Chief Medical Officer
COBIT	-	Control Objectives for Information and Related Technology
CPD	-	Continuous Professional Development
DANIDA	-	Danish International Development Agency
DDoS	-	Distributed Denial of Service
DHIO	-	District Health Information Officer
DHIS2	-	District Health Information Software 2
DHMT	-	District Health Management Team
DHPS	-	Digital Health Policy and Strategy
DHTWG	-	Digital Health Technical Working Group
DoS	-	Denial of Service
EHR	-	Electronic Health Record
eLearning	-	Electronic Learning
EMR	-	Electronic Medical Record
ERP	-	Enterprise Resource Planning
FD	-	Finance Division
FHMApp	-	Family Health Mobile Application
GEPP	-	Global Epidemic Prevention Platform
GhiLMIS	-	Ghana Integrated Logistics Management Information System
GHS	-	Ghana Health Service
GSM	-	Global System for Mobile Communication
HIS	-	Health Information System
HMIS	-	Health Management Information System
HPD	-	Health Promotion Division
HR	-	Human Resources
HRDD	-	Human Resource and Development Division
HRIMS	-	Human Resource Information Management System
HSS	-	Health System Strengthening

HW	-	Health Worker
IAD	-	Internal Audit Division
ICD	-	Institutional Care Division
ICT	-	Information and Communication Technology
IDSR	-	Integrated Disease Surveillance and Response
IME	-	Information Monitoring and Evaluation
IoT	-	Internet of Things
IP	-	Implementing Partners
ISP	-	Internet Service Providers
LAN	-	Local Area Network
LIMS	-	Laboratory Information Management System
LMIS	-	Logistics Management Information System
LWEHS	-	Lightwave eHealthcare Services
M&E	-	Monitoring and Evaluation
MCH	-	Maternal and Child Health
MDA	-	Ministries, Departments and Agencies
MIC	-	Ministry of Information and Communication
MNCAH	-	Maternal, Neonatal, Child and Adolescent Health
MoH	-	Ministry of Health
MoU	-	Memorandum of Understanding
MTHS	-	Medium-Term Health Strategy
NDHSC	-	National Digital Health Steering Committee
Net4Schs	-	Net for Schools
NETAPP	-	Net Application
NGO	-	Non-Governmental Organization
NMEP	-	National Malaria Elimination Program
ODG	-	Office of the Director General
OpenEHR	-	Open Electronic Health Records
OpenHIE	-	Open Health Information Exchange
PACS	-	Picture Archiving and Communication System
PHD	-	Public Health Division
PHEOC	-	Public Health Emergency Operation Centers
PPMED	-	Policy, Planning, Monitoring and Evaluation Division
PPP	-	Public-Private Partnerships
RDD	-	Research and Development Division
RDHTC	-	Regional Digital Health Technical Committee
SBCC	-	Social and Behavior Change Communication

SDGs	-	Sustainable Development Goals
SHIS	-	School Health Information System
SiCapp	-	Seasonal Malaria Chemoprevention in Children App
SIM	-	Subscriber Identity Module
SMS	-	Short Message Service
SOP	-	Standard Operating Procedures
SORMAS	-	Surveillance Outbreak Response Management and Analysis System
SSDMD	-	Supplies, Stores and Drugs Management Division
SWOT	-	Strengths, Weaknesses, Opportunities, and Threats
TOR	-	Terms of Reference
TWG	-	Technical Working Group
UHC	-	Universal Health Coverage
UNFPA	-	United Nations Population Fund
UNICEF	-	United Nations International Children's Fund
USAID	-	United States Agency for International Development
WAN	-	Wide-Area Network
WHA	-	World Health Assembly
WHO	-	World Health Organization
WiFi	-	Wireless Fidelity
YMK	-	You Must Know

GLOSSARY

GLOSSARY

TERM	DEFINITION
Artificial Intelligence	An area of computer science that emphasizes the simulation of human intelligence processes by machines that work and react like human beings
Digital Health	The field of knowledge and practice associated with the development and use of digital technologies to improve health. Digital health expands the concept of eHealth to include digital consumers, with a wider range of smart-devices and connected equipment.
eHealth	The cost-effective and secure use of information and communications technologies in support of health and health-related fields, including health care services, health surveillance, health literature, and health education, knowledge and research
Encryption	The process of maintaining data integrity and confidentiality by converting data into a secret code with the help of an algorithm.
Firewall	A method of preventing unauthorized access to or from a particular network. Firewalls can be implemented in both hardware and software or both
Hardware	The physical components of a computer system including the keyboard, monitor, disk drive , internal chips and wiring
Health Data	The systematic application of information and communications technologies, computer science, and data to support informed decision-making by individuals, the health workforce, and health systems, to strengthen resilience to disease and improve health and wellness.
Health Information System	A system that integrates data collection, processing, reporting, and use of the information necessary for improving health service effectiveness and efficiency through better management at all levels of health services.
Information	Data that is interpreted, organized or structured
Internet of Things	A system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to computer interaction.
Internet Service Provider	An organization or company that provides internet connectivity
Interoperability	The ability of different applications to access, exchange, integrate and cooperatively use data in a coordinated manner through the use of shared application interfaces and standards, within and across organizational, regional and national boundaries, to provide timely and seamless portability of information and optimize health outcomes

TERM	DEFINITION
Local Area Network	A network that extends over a small area (usually with a square mile or less) which connects a group of computers for the purpose of sharing resources such as programs, documents, or printers.
Network Infrastructure	It is a set of software and hardware components that help build, run and maintain an ICT network.
Protocols	A set of rules that regulate how computers exchange information
Software	It is a set of instructions, data, application or programs used to operate a computer and execute specific tasks.
Telemedicine	The delivery of health care services, where distance is a critical factor, by all health-care professionals using information and communications technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and the continuing education of health care workers, with the aim of advancing the health of individuals and communities.
Wide Area Network	A group of networked computers covering a large geographical area
Wireless Fidelity	A generic term from the Wi-Fi Alliance that refers to any type of 802.11 network, e.g., 802.11b, 802.11a etc. Products approved as "Wi-Fi Certified" are certified as interoperable with each other for wireless communications.

CHAPTER ONE

INTRODUCTION

1

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

The goal of Universal Health Coverage (UHC) is to ensure quality, accessible and affordable health services for all. The Ghana Health Service continues to work towards the UHC goal of ensuring health services are delivered with the intended quality without causing financial hardship to clients. The effective and efficient use of ICT will not only translate into better and efficient health service delivery but will also improve training of health personnel and research in the health sector. WHO has stated that "Universal Health Coverage cannot be achieved without the support of eHealth[1]"

In 2005, the World Health Assembly through its resolution WHA58.28 on eHealth urged Member States to consider the following:

- Draw up a long-term strategic plan for developing and implementing eHealth services
- Develop the infrastructure for information and communication technologies for health
- Promote equitable, affordable and universal access to beneficiaries

Countries including Ghana and stakeholders were urged to direct their efforts towards creating a consistent eHealth vision in line with the country's health priorities and resources, developing an action plan to deliver the proposed vision, and creating a framework for monitoring and evaluating eHealth implementation and progress.

A review of Ghana's e-health landscape reveals that within the last decade Ghana has developed strategic documents to streamline the implementation of eHealth. These include:

- ICT for Accelerated Development (ICT4AD) Policy- 2003
- Health Sector's ICT Policy and Strategy, 2005
- Ghana Government Enterprise Architecture Interoperability Framework, 2008
- Ghana Health Service Enterprise Architecture, 2009
- National E-Health Strategy, 2010
- Ministry of Health 5 year Digital Health Roadmap- 2018
- Ghana eGovernment Interoperability Framework (Version 2) - 2022

1 Global diffusion of eHealth: making Universal Health Coverage achievable: report of the third global survey on eHealth

Ghana has recorded significant strides in eHealth since the implementation of these strategies including the 2010 eHealth strategy which sought to: streamline the regulatory framework for health data and information management; build sector capacity for wider application of eHealth solutions in the healthsector; increase access and bridge equity gaps in the health sector through the use of ICT and develop strategies towards paperless records and reporting systems.

In 2013, the World Health Assembly adopted resolution WHA66.24 on eHealth standardization and interoperability, which urged Member States "to consider developing policies and legislative mechanisms linked to an overall national eHealth strategy." This informed the adoption of resolution WHA71.7 in May 2018 on digital health, in which it requested the WHO to develop a global strategy on digital health in close consultation with Member States and with inputs from relevant stakeholders.

The consultative processes resulted in the development of a global strategy on digital health (2020–2025) which was launched in March 2019 and endorsed by the Seventy-third World Health Assembly in decision WHA73(28) (2020). In the global strategy, Member States including Ghana have been urged to develop national digital health strategies or equivalent strategic frameworks. In addition, Ghana is to prioritize national investment in digital health in support of Primary Health Care and Universal Health Coverage.

The development of this policy and strategy is part of initiatives of the Ghana Health Service to build on the foundation laid over the years from the implementation of eHealth strategies, to facilitate shared understanding of the digitalization agenda of the service and an approach towards creating an interoperable digital health ecosystem that drives Universal Health Coverage.

1.2 Overview of Ghana Health Service

1.2.1 Vision and Mandate

The Ghana Health Service (GHS) is one of the autonomous agencies under the Ministry of Health (MoH) that implements national policies with emphasis on expanding primary health care services at regional, district and sub-district levels under the guidance of its administrative offices. It was established under Act 525 of 1996 as required by the 1992 constitution.
The objectives of the Service are to:

- Implement approved national policies for health delivery in Ghana.
- Increase access to good quality health services, and
- Manage prudently resources available for the provision of the health services

Vision

All communities having access to timely, quality and comprehensive healthcare.

Mandate

To provide and prudently manage comprehensive and accessible health service with special emphasis on primary healthcare at regional, district and sub-district levels in accordance with approved national policies.

1.2.2 Governance Structure and Functions

GHS is governed by a Council, the membership of which is appointed in line with the provisions of the Act (GHS & THs Act, 1996 (Act 525)) that sets up the Service. The Council under its chairman is responsible for directing and controlling the affairs of GHS:

Functions of the Council

- Ensuring the implementation of the functions of the Service
- Submitting to the Minister recommendation for health care delivery policies and programmes
- Promoting collaboration between the Ministry of Health, Teaching Hospitals and the Service
- Advising the Minister on the qualification for posts in the Service and other matters that the Minister may request

The Chief Executive Officer or the Executive Head of GHS is the Director General who serves as an Ex-officio member of the Council. At the National level, the Director-General is supported by a Deputy Director General and Directors of Divisions namely:

1. Policy Planning Monitoring and Evaluation Division (PPMED)
2. Public Health Division (PHD)
3. Finance Division (FD)
4. Stores, Supply and Drugs Management Division (SSDMD)
5. Institutional Care Division (ICD)
6. Family Health Division (FHD)
7. Internal Audit Division (IAD)
8. Health Administration and Support Services Division (HASSD)
9. Research and Development Division (RDD)
10. Human Resource and Development Division (HRDD).
11. Health Promotion Division (HPD)

There are sixteen(16) Regional Health Directorates led by Regional Directors of Health Service and supported by Regional Health Management Teams and Regional Health Committees.

All Districts in Ghana have District Directors of Health Service who are supported by District Health Management Teams, District Health Committees and Sub-district Health Management Teams. The GHS plays an essential role in rolling out key strategies outlined in the Medium-Term Health Strategy (MTHS), aimed at promoting greater equity and efficiency, and creating a more accessible and responsive health care system. The GHS directly provides comprehensive health services at all levels, and also collaborate with other Agencies as well as partners to:

1. Develop strategies and technical guidelines to implement national policies
2. Undertake management and administration of the health resources within the Service
3. Promote healthy mode of living and good health habits by people
4. Establish effective mechanism for disease surveillance, prevention and control
5. Determine charges for health services with the approval of the Minister of Health
6. Perform other relevant functions that promote, protect and restore population health..

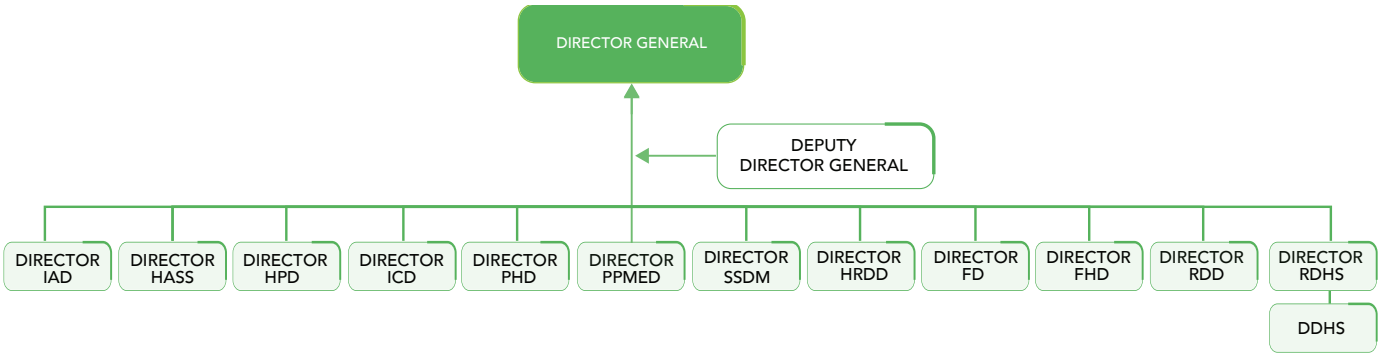

Figure 1: Organogram of the Ghana Health Service

1.3 Ghana Health Service Information Communication Technology (ICT) Unit

At the National level the ICT unit is under the Information Monitoring and Evaluation (IME) Department in the Policy Planning Monitoring and Evaluation Division. The unit works with sixteen(16) Regional Information Technology Managers across the country.

1.3.1. Vsion

All communities in Ghana have access to timely, quality and comprehensive health through the use of Information Communication Technology.

1.3.2. Mission

To provide technical support for ICT infrastructure and related services for healthcare delivery

1.3.3. Mandate

To implement digital health solutions for comprehensive and quality service delivery in accordance with approved national policies

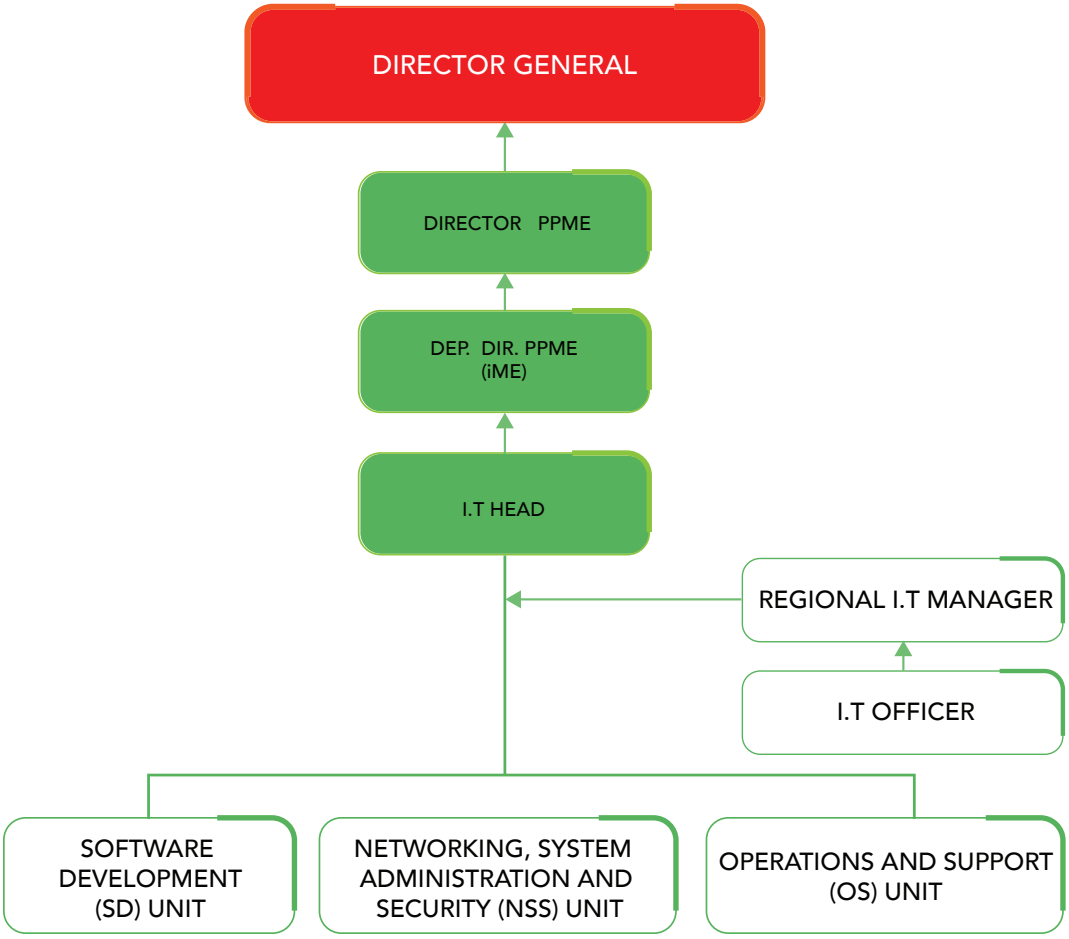

Figure 2: Current Organogram of the ICT Unit

1.3.4. The roles of ICT within the Ghana Health Service

- Provide guidance on implementation of digital health interventions and initiatives
- Ensure compliance and adherence to national laws, policies, guidelines and standards on digital health
- Provide data on digital health services and interventions for formulation of strategies and policies

- Develop and support digital platforms for planning, implementation, monitoring and evaluation of health services including:
    - Electronic storage of health data and human resource information
    - Disease surveillance and emergency response
    - Social and Behavior Change Communication (SBCC)
    - Monitoring and evaluation of health services
    - Electronic research and analytic tools for effective health service management,
    - Prudent financial management and robust audit processes
    - Ensuring robust procurement, logistics, and supply chain systems
    - Improving access to quality health services
- Build capacity for use of digital technologies in health service delivery
- Coordinate ICT at all levels

1.4. Context and Rationale for Policy and Strategy on Digital Health

Increasing demands on healthcare systems call for a change in the organization and management of health services, including the information systems that support timely and accurate decisions. Ghana Health Service implements several digital platforms which support data management, service delivery and quality assurance initiatives as well as social and behavior change communication initiated by different divisions of the Service. It has become more imperative to have a policy and strategy on digital health that will coordinate and guide the different digital health initiatives. The non-existence of guiding document for digital health present challenges such as:

- Uncoordinated and parallel investments and interventions in ICTs
- Lack of clearly articulated vision and gaps in existing ICTs regulations for adoption, implementation and scale-up of ICTs
- Parallel implementation of digital health solutions leading to duplication of efforts and resources
- Inadequate clarity on health information management framework that would drive the generation and utilization of data for supporting planning and management processes
- Multiple ICT silos systems across the service of which most do not follow professional standards.

Having a robust strategy which integrates available financial, technological, and human resources would enable the Service benefit from the potential ICT has for promoting the health and wellbeing of Ghanaians.

The Service recognizes that health data are to be classified as sensitive data that require a high level of safety and security standards hence the Cyber Security Authority (CSA) has classified Ghana Health Service as a sector with Critical Information Infrastructure (CII). Therefore, it is imperative that a strong legal and regulatory basis for processing data and for protecting privacy, confidentiality, integrity, and the availability of data is put in place.

A national policy and strategy that sets out shared priority areas and standards can help generate and sustain a conducive environment to facilitate the creation, scaling up and maintenance of digital health solutions. This policy and strategy lays a foundation for engaging patients, caregivers and healthcare providers as well as industry and academia.

1.5 Development of the Policy and Strategy on Digital Health

This strategic document was developed through a participatory approach using the capacities of stakeholders and partner collaborators, institutions, and agencies from multiple sectors. The Danish International Development Agency (DANIDA) and Global Fund provided financial and technical support for developing the document. The process involved in-person and online working group meetings coordinated by the ICT unit.

Plenary sessions were held to review content and suggested changes were effected on consensus. The draft strategic plan was circulated to all key stakeholders for their inputs as part of the validation process. The document went through a process of joint assessment and review by various external and internal resource persons and inputs were incorporated appropriately before completion.

CHAPTER TWO

SITUATION ANALYSIS

2

CHAPTER TWO

2.0. SITUATION ANALYSIS

2.1. Introduction

Information and Communication Technology (ICT) presents many opportunities for improving the performance of health systems in developing countries, including Ghana. The government of Ghana recognizes ICT as central to economic growth and development. ICT has become an effective tool in the delivery of health services. The essence of this chapter is to examine the current state of ICT in the GHS, including its strengths, weaknesses, opportunities, and threats. It is also to offer an evidence-based foundation for utilizing digital technologies to respond to population health needs, expectations and provide future strategic orientations for GHS.

2.2. Strengths

2.2.1. Leadership and Governance

Leadership and governance provide systems for tracking, ensuring accountability, and overseeing the implementation of digital health initiatives to support the attainment of health objectives. The GHS has a dedicated unit with a singular focus on ICT at the National level, complemented by sixteen fully functional regional information technology units. Divisions and regions plan and budget for digital health in their annual work plans through a well-laid-out decentralized structure.

2.2.2. Services and Applications

The GHS is experiencing rapid growth in the development and adoption of mobile and web-based digital health solutions that address challenges related to access to health services and information along with its administration and management.

These digital solutions include:

- District Health Information Management System II (DHIMS II) and tracker
- Human Resource Information Management System (HRIMS)
- Global Epidemic Prevention Platform (GEPP)
- Surveillance Outbreak Response Management and Analysis System (SORMAS)
- Ghana Integrated Logistics Management Information System (GhiLMIS)
- GHS eLearning Platform
- WHO Web-based Platform for Monitoring Quality of Adolescent Health Services
- "You Must Know" (GHS-YMK)

- Family Health Mobile Application (FHMApp)
- Web-based Platform for Cyber Counselling
- School Health Information System (SHIS)
- Mobile Application for Point Mass Distribution (NETAPP)
- Seasonal Malaria Chemoprevention in Children App (Sicapp)
- Mobile Application for Insecticide Treated Net Distribution (Net4Schs)
- Mobile Application for Larval Source Management
- Lightwave eHealth care Services (LWEHS)
- Sage 300 Software
- Claim-IT
- Transport Information Management System
- Ghana Integrated Financial Management Information System (GIFMIS)

2.2.3. Infrastructure

The Service has a Local Area Network (LAN) at the National level, which helps provide connectivity for routine work (as shown in figure 3). The ICT unit oversees and supports seamless broadband internet service from a provider for all divisions at the national level.

At the regional level, various network infrastructures and topologies are used to support the multiple directorates and health facilities. Some equipment used include network servers, switches, routers, computers, mobile hand-held devices, and printers.

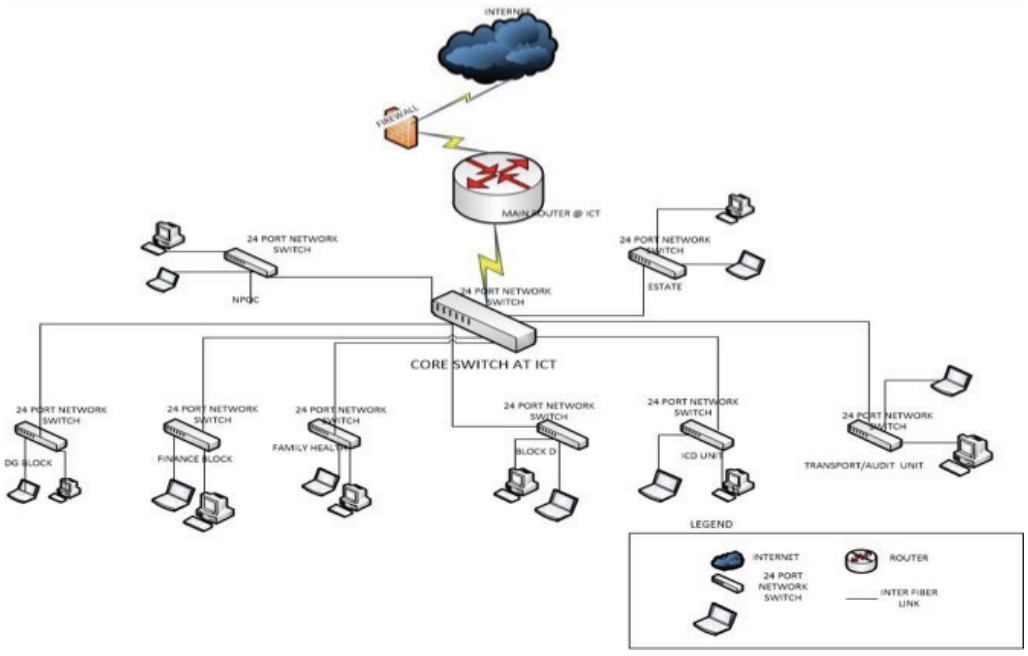

Fig 3: Current Local Area Network (LAN) topology at the national level.

2.2.4 Workforce

The GHS has trained ICT staff with a high capacity to develop and manage ICT systems. The staff capacity comprises software, hardware, and network engineers that have, over the years, been the backbone and sustenance of the current technologies available.

2.3. Weaknesses

2.3.1. Legislation, Policy, and Compliance

Implementation of developed digital platforms of the GHS has been done with obsolete and fragmented national policies, strategies, and standards on ICT. This exposes the GHS to potential data security breaches and cyber-attacks. The lack of harmonized national strategies implies that digital platforms are implemented in silos leading to duplication of efforts and resources.

Digital health service policy, strategy and standards must be developed and operationalized. This will help accelerate the full integration of eHealth systems such as telemedicine, mHealth, and eLearning into the health service delivery system.

2.3.2. Infrastructure

The existing ICT infrastructure has considerable challenges which prevent GHS from maximizing the benefits of ICT and scaling up some of the digital solutions being implemented. Infrastructure including the following is lacking or inadequate at all levels:

- computing equipment
- networking devices
- multimedia systems
- imaging and internet systems

The existing Local Area Network (LAN) at the national level is over 15 years. The obsolete nature of the LAN poorly supports current systems and applications. Out of the 11 divisions at the headquarters, only four are connected through Fiber-Over-Ethernet (FoE), while the rest are relying on fourth-generation wireless (4G) for internet access. The situation in the various regions and districts is no different. This has the potential to create conflicts in Internet Protocols and networks. A new protocol in line with emerging trends in network connectivity should be implemented.

2.3.3. Services and Applications

A number of the existing application in GHS are not integrated and/or interoperable. When all these applications are consolidated, they can be implemented as an Enterprise Resource Planning (ERP) system. This ERP system is a software that will manage the operations of GHS.

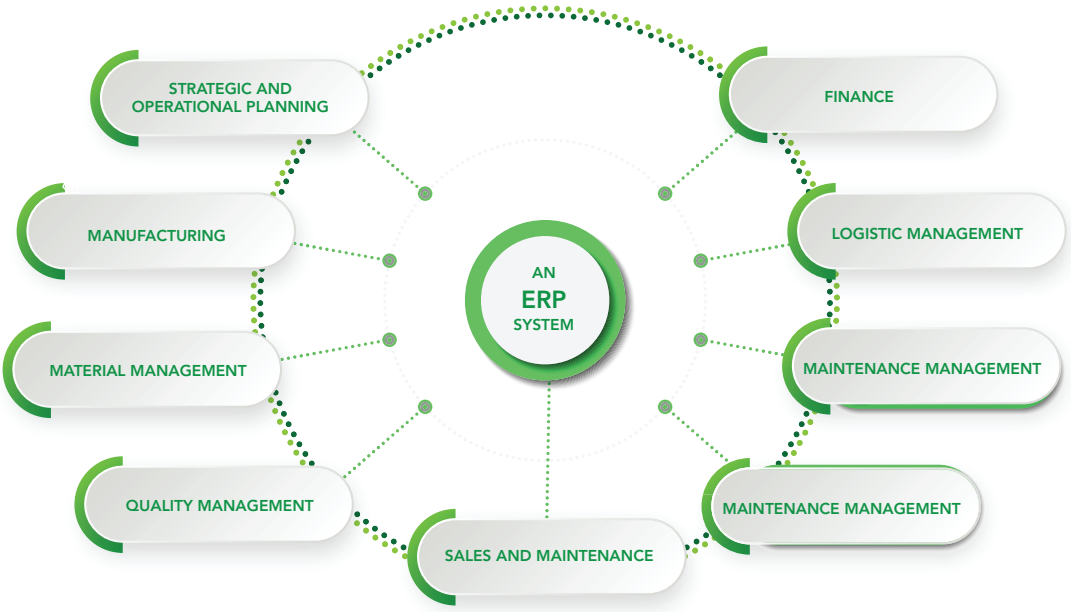

Fig 5: Example of an ERP system

2.4. Opportunities

- Ghana has the highest level of mobile data penetration in the West African sub-region allowing for the easy and broad deployment of web and mobile apps. [1]
- The ICT industry in the country has witnessed increased and consistent support from the government coupled with a vibrant young generation enthusiastic about ICT.
- GHS has goodwill with the private sector, particularly the telecommunication sector. This can be harnessed to build strategic partnerships for mutual benefits.
- There are health and development partners and donors who have digital health interventions as one of their areas of support.

2.5. Threats

GHS is exposed to many threats if its strengths, opportunities, and weaknesses are not managed well. Among the threats the GHS is likely to encounter are the following:

1. Cyber-attacks, including Distributed Denial of Service (DDoS), Cross- Site Scripting, SQL Injection, Phishing, and Ransomware.
2. Data breaches and loss such as unecrypted devices, cloud storage devices, removable devices and improper access control.
3. High attrition of ICT Staff

1 Atinga, R. A., Abor, P. A., Suleman, S. J., Anaba, E. A., & Kipo, B. (2020). e-health usage and health workers' motivation and job satisfaction in Ghana. PLOS ONE, 15(9), e0239454.

2.6. SWOT Analysis

S	W	O	T
• Innovative mHealth and eHealth initiatives • Increase in use of digital technologies by health workers • Availability of at least one ICT staff in each region • Use of task-sharing approach in addressing the shortage of ICT staff • Increase in penetration of Internet connectivity • Availability of telemedicine infrastructure in some facilities • Existence of donor-funded projects that support digital health activities • Wider electricity availability in rural areas	• Lack of service policy, strategy, standards, and guidelines • Existence of multiple and fragmented digital health systems • Poor ICT infrastructure to support digital health solutions • Insufficient funds to implement digital health activities • Inadequate number of ICT personnel for implementation of digital health activities at all levels of the health systems • Limited digital health capacity of ICT personnel • Over-reliance on donors in funding digital health initiatives • Low uptake of digital health solutions	• Strong political will on the application of ICT for socio-economic development • Commitment of the government to the use of digital technologies to transform the health sector • Establishment of relevant Ministries, Departments, and Agencies for ICT • Law on data security (storage, transmission, use) that is relevant to digital health • Law to protect individual privacy, governing ownership, access, and sharing of individual identifiable digital health data • Existence of health partners who are interested in supporting digital health • Emerging digital health technologies • Thriving ICT industry • Large ownership of mobile smart phones by health workers	• Rising cost of equipment and logistics • Cyber security attacks • Lack of or unreliable electricity supply • Lack of or unreliable and slow Internet connectivity in some areas • Dependence on donor-funding for digital health implementation • Diverse ownership of health facilities in the country • High ICT Personnel Attrition

CHAPTER THREE

STRATEGY FOR DIGITAL HEALTH

3

CHAPTER THREE

3.0. STRATEGY FOR DIGITAL HEALTH

3.1 Introduction

This strategy is inspired by Ghana's roadmap for achieving Universal Health Coverage which is defined as "ensuring that all people have access to needed promotive, preventive, curative and rehabilitative health services, of sufficient quality to be effective, while ensuring that the use of these services does not expose the user to financial hardship" (WHO, 2010).

The policy and strategy on digital health is also informed by the GHS mandate to provide and prudently manage comprehensive and accessible health services with particular emphasis on primary health care at the national, regional, district, and sub-district levels in accordance with approved national policies.

The strategy recognizes the critical participation of categories of stakeholders to its success. These include:

- **Clients:** These are individuals who access and receive services from Ghana's public and private health facilities at various levels.
- **Health service providers:** These are professionals in public and private health facilities and directorates that provide health and support services to the public.
- **Health service managers:** These include managers at the national, regional, district and sub-district levels.
- **Research bodies and policy think tanks:** These include government and non-governmental research institutes that perform research and advocacy in the field of ICT.
- **Academia:** This includes the community with the pursuit of research, education, and scholarship.
- **Relevant Ministries Departments and Agencies (MDAs):** These include current and future MDAs working in the ICT space.
- **ICT service providers:** These include public and private entities and companies operating or managing, or providing ICT Services.

3.2. Definition of Digital Health

The World Health Organization defines digital health as "the field of knowledge and practice associated with any aspect of adopting digital technologies to improve health, from inception to operation". Digital health is understood to incorporate eHealth and deals with issues such as scalability, replicability, interoperability, security, and accessibility [1].

1 Recommendations on Digital Interventions for Health System Strengthening, WHO Guideline. 2019,

3.3. Component Areas [2]

COMPONENT	DESCRIPTION
Leadership and Governance	☐ Direct and coordinate eHealth at the national level; ensure alignment with health goals and political support; promote awareness and engage stakeholders.
	☐ Use mechanisms, expertise, coordination, and partnerships to develop or adopt eHealth components.
	☐ Support and empower systems required for desirable changes, implement recommendations and monitor results to deliver expected benefits.
Strategy and Investment	☐ Ensure a responsive strategy and plan for the national eHealth environment. Lead planning, with the involvement of major stakeholders and sectors. ☐ Align financing with priorities, donor, government, and private sector funding identified for the medium term.
Legislation, Policy and Compliance	☐ Adopt national policies and legislation in priority areas, review sectoral policies for alignment and comprehensiveness, establish regular policy reviews.
	☐ Create a legal and enforcement environment to establish trust and protection for consumers and industry in eHealth practice and systems.
Workforce and Capacity Building	☐ Make eHealth knowledge and skills available through internal expertise, technical cooperation, or the private sector.
	☐ Build national, regional and specialized networks for eHealth implementation.
	☐ Establish eHealth education and training programmes for health workforce capacity building.
Architecture, Standards and Interoperability	☐ Introduce standards that enable consistent and accurate collection and exchange of health information across health systems and services.
Infrastructure	☐ Form the foundations for electronic information exchange across geographical and health-sector boundaries. This includes the physical infrastructure, core services, and applications that underpin a national eHealth environment.
Services and Applications	☐ Provide tangible means for enabling services and systems, access to, and exchange and management of information and content. Users include the general public, patients, providers, insurance, and others. The means may be supplied by the government or commercially.

2 National eHealth Strategy Toolkit, WHO, 2012

3.4. Guiding Principles

The following guiding principles underpin the development of Ghana Health Service Policy and strategy on digital health:

3.4.1. Client-centredness

The Policy and strategy have been developed to focus on the health needs of clients and health service providers. These needs are at the centre of decision-making, supporting improved prioritisation and user experience.

3.4.2. Open Standards and Open Source

The Policy and strategy promotes data preservation and greater freedom from technology and vendor lock-in through the use of open standards, open source, and open innovation. These should conform to Limited General Public Licence (LGPL).

3.4.3. Digital Competent Health Workforce

This policy and strategy underscores the GHS commitment to developing a workforce that is able to use digital health technologies confidently.

3.4.4. Multi-sectoral Approach and Strategic Partnerships

Collaboration across diverse stakeholder groups is critical to the success of this policy and strategy. It encourages effective stakeholder engagement in driving the digital transformation agenda of the Service.

3.4.5. Evidence-Based Innovations for Sustainability

Innovation will be one of the drivers of the implementation of this policy and strategy. Digital health presents opportunities for paradigm shifts in the way we do things, including automation of processes, application of artificial intelligence, and new opportunities for transformation in delivering comprehensive and quality health services.

3.4.6. Quality-driven

This policy and strategy focuses on total quality management and ensures adherence to minimum benchmarks for quality health service delivery.

3.4.7. Data Security

This policy and strategy is committed to protecting client's data's privacy, confidentiality, and integrity. The client's data is only used when necessary and with consent. Balancing safe information sharing and maintaining client-provider privacy and confidentiality is a priority.

3.4.8. Efficient use of Resources

The strategies and interventions selected are based on the judicious use of available resources and the need to ensure value for money in developing, adopting, and implementing digital health technologies.

3.4.9. Leveraging Existing Assets and Capabilities

GHS has made significant strides in advancing the delivery of digitally enabled health services. This policy and strategy has been developed with respect to leveraging current and potential resources to avoid duplication.

3.4.10 Interoperability:

Promote seamless and secure information exchange through open standards and interoperable digital solutions.

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Figure 8: Guiding Principles

3.5. Vision

All communities in Ghana having access to timely, quality and comprehensive health through the use of Information and Communication Technology.

3.6. Outcomes

- Enable electronic access to appropriate healthcare services for all, including populations in remote and hard-to-reach communities.
- Facilitate continuous quality improvements in health service delivery through more effective utilization of health outcomes.
- Improve the quality, safety, and efficiency of clinical practices by giving healthcare providers better access to patient information, clinical evidence, and decision-support tools.

- Support more informed policy, investment, and research decisions through access to timely, accurate, and comprehensive reporting of health service delivery activities and outcomes.
- Ensure the correct client health information is made available electronically to the right person at the right place and time to enable informed care and treatment decisions and avoid data breaches.
- Enable the GHS to operate more effectively as an integrated system, overcoming fragmentation and duplication.
- Provide patients and clients with electronic access to the information needed for better promotion and management of their health.
- Enable multi-disciplinary teams to communicate and exchange information electronically and provide efficiently coordinated services across the continuum of care.
- Enable GHS to use health information for forecasting and predictions to reduce or avoid the impact of disease outbreaks.
- Institute measures for sustainability of effective digital interventions
- Ensure a competent ICT workforce in the Service

3.7. Goal

Contribute to increasing access to comprehensive and quality health services through the use of ICT by 2027.

3.8. Strategic Objectives

The eHealth components defined by WHO informed drafting of the strategic objectives.

They include:

3.8.1. Strengthen governance and accountability systems for digital health at national, regional, district and sub-district levels.

3.8.2. Create an enabling environment for implementing digital health solutions.

3.8.3. Improve accessibility, efficiency, equity, quality, and continuity of care through digitalisation of health service delivery.

3.8.4. Strengthen disease prevention, surveillance, detection, reporting, response, and control at all health system levels.

3.8.5. Improve the security of health ICT infrastructure and data.

3.8.6. Improve Interoperability and connectivity of all ICT systems.

3.8.7. Build a competent health workforce using digital technologies.

3.8.8. Promote collaboration and advance the transfer of knowledge among ICT Personnel.

3.8.9. Promote Public-Private Partnerships.

3.8.10. Mobilize resources for digital health.

1. Leadership and Governance

Objective 1: Strengthen governance and accountability systems for digital health at national, regional district, and sub-district levels.

This objective seeks to address issues related to leadership and governance structures at all levels of the health service. Leadership and governance involve ensuring strategic policy frameworks exist and are combined with effective oversight, coalition-building, regulation, attention to system design, and accountability. Poor leadership and governance lead to:

- Undesirable staff attitudes staff segregation or working in silos
- Loss of high-performing employees
- Unattractive workplace culture
- Fragmentation and non- interoperability among various applications.
- Misallocation of resources or under-resourcing

These have negative effects on the quality of service delivery. The GHS would need to institute a task team to oversee the implementation of the Policy and strategy on digital health. The ICT unit at all levels would need to benefit from continuous professional training complemented with the required resources and infrastructure for practice. A robust reporting system should be established to monitor the digital implementation of digital health interventions. The key strategies for this objective are outlined as follows:

Strategies:

a. Build a high-level strategy implementation oversight structure with appropriate committees to drive the delivery of digital health action plans.

b. Establish a system that can support reviews to enable decision-making.

2. Legislation, Policy and Compliance

Objective 2: Create an enabling environment for implementing digital health solutions.

An enabling environment is a good and varied space where risks are minimized and well-managed. This is needed to support and provide solutions at all levels of service delivery, learn from, and strengthen experiences as well as access opportunities and address gaps in the digital health environment. In this strategic document, an enabling environment means policy,

legal, market, and socioeconomic considerations that interact with both domestic and global levels to create a fertile condition for ICT-led growth.

This strategic objective intends to create an enabling environment that seeks to build on the growing momentum for the use of digital health as one of the tools to improve health outcomes and strengthen the health system at all levels.

Strategies:

a. Improve the policy and regulatory framework to ensure client safety, data security, confidentiality, and privacy.
b. Ensure deployment of qualified human resources competent in developing, implementing, and maintaining digital health platforms
c. Improve ICT infrastructure to support the delivery of digital health services

3. Services, Applications and Infrastructure

Objective 3: Improve accessibility, efficiency, equity, quality, and continuity of care through digitalisation of health service delivery.

Quality and comprehensive health services must reach all Ghanaians regardless of their status or residence. In providing quality services, measures must be taken to ensure judicious use of resources and effective accountability of expended resources. Available evidence suggests that using digital technologies not only improves access to health services and facilitates continuity of care but minimizes the wastage of resources.

This strategic priority seeks to digitise and automate routine processes in health service delivery, ensuring data protection, facilitating continuous and accurate timely access to essential health services, including referral as well as managing community-based health services and facilitating clients' feedback. The Service would implement the following strategies in this regard.

Strategies:

a. Establish a national telemedicine service for rural and remote communities
b. Integrate digital technology in continuous quality improvement initiatives
c. Implement a client feedback system for continuous quality improvement
d. Strengthen existing auditing, financial, procurement, logistics, and supply chain systems

Objective 4: Strengthen disease prevention, surveillance, detection, reporting, response, and control at all health system levels.

The use of ICT in the management and prevention of diseases is on the increase.

Evidence exists that the use of ICT for health-promoting lifestyle and behaviour programmes enhances health behaviours that are essential in preventing and controlling of diseases. ICT is used in health surveillance for communicable and non-communicable diseases in the service.

The purpose of this strategic priority area is to leverage digital solutions for improving surveillance and reporting of notifiable diseases, disease outbreaks, and public health events.

The country's high penetration of mobile phones and networks presents opportunities to implement mHealth initiatives aimed at disease prevention and control through promoting healthy lifestyles, health-seeking behaviour, and facilitating early interventions in chronic illness.

Initiatives, such as short message services and mobile and web applications, can be implemented for public health promotion and information sharing.

Strategies:

a. Strengthen the disease surveillance and response system at all levels, most especially in rural and remote areas

b. Improve service data management

c. Improve digital solutions for the promotion of health and safety practices

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Objective 5: Improve the security of health ICT infrastructure and data

Physical or online security is a vital part of any security plan and is fundamental to all security efforts. Without it, information security, software security, user access security, and network security are considerably more difficult, if not impossible, to initiate. Physical Security protects building sites and equipment (and all information and software contained therein) from theft, vandalism, natural disaster, artificial catastrophes, and accidental damage. It requires solid building construction, practical emergency preparedness, reliable power supplies, adequate climate control, and appropriate protection from intruders.

Virtualized healthcare ecosystem must be secured at several layers to ensure complete I.T. infrastructure security. This strategic priority aim seeks to improve and strengthen and safeguard physical data security measures as a primary line of defense from potential threats and to share client information in accordance with acceptable security standards.

Strategies:

a. Enhance physical Security to safeguard eHealth infrastructure.

b. Enhance data security and privacy.

c. Enhance digital privacy mechanisms.

d. Enhance organisational information security awareness.

4. Standards and Interoperability

Objective 6: Improve interoperability and connectivity of all ICT systems.

Interoperability is the ability of different computer systems, applications, and platforms to exchange and use information. It creates a standard for other organizational systems to communicate and exchange information securely. Interoperable information systems can reduce data errors and improve data quality better than systems that exist in silos.

This strategic priority intends to strengthen ongoing efforts at developing health enterprise architecture and facilitating interoperability across different systems within the Service. The specific strategies for this priority area include:

Strategies:

a. Establish an integrated information architecture of Interoperability for the effective sharing of health information across health systems and services

5. Workforce

Objective 7: Build a competent health workforce using digital technologies.

Workforce competence is critical for quality health services delivery and dictating the extent to which service providers can respond to health needs of clients. In the context of the changing health landscape, especially in eHealth, the competencies of staff need to be constantly sharpened to use and support modern healthcare service delivery. Continuous professional development of staff with modern digital technologies needs to be structured to enhance knowledge and skills.

This requires that the Service:

- Develop and implement evidence-based policies for transforming and scaling-up health workforce education
- Develop accreditation, standards, and regulatory systems to certify and ensure the quality of online training

This strategic objective aims to implement eLearning and micro-learning services to build and improve health workforce competencies. The strategies to be considered include:

Strategies:

a. Ensure continuous education, sensitisation and technical support for staff as end users of digital health platforms.

b. Mainstream eLearning in capacity building for service providers.

c. Strengthen ICT infrastructure and resources to support the institutionalization of eLearning.

d. Decentralizing and easy access to eLearning platforms.

Objective 8: Promote collaboration and advance the transfer of knowledge among ICT Personnel

The main aim of ICT collaboration in this objective is to build relationships and networks through shared training and technological development agendas with other stakeholders in the ICT industry. Collaborative ICT strategies would greatly benefit GHS's ICT strategy in making significant strides in reducing the digital divide. Exchange and periodic meetings would be scheduled to strengthen the collaboration between these existing partners. This would eventually evolve toward reflection, planning, and concerted actions. This Strategy presents opportunities for negotiating with collaborators interested in investing in and supporting ICT within the health service.

A high attrition rate among highly skilled staff poses a threat to ICT; however, this strategy will seek to sustain long-term relationships that could yield possible collaborations with other organizations where these staffs leave to. Moreover, active knowledge transfer between current and prospective staff would be facilitated to ensure continuity

Health is a sector that naturally attracts collaborations and support. The strategy would leverage this opportunity to establish more collaborations and networks beyond what already exists. This would create more channels for exchange programs between GHS and other sister ICT institutions.

Strategies:

a. Institute peer learning communities among ICT staff for continuous capacity building and education.

b. Establish knowledge-sharing hubs and fora to identify and share best practices, updates on new technologies, and lessons learned on the implementation of digital health interventions across regions and districts.

c. Strengthen collaboration with ICT service providers.

d. Explore exchange programmes with relevant institutions.

6. Strategy and Investment

Objective 9: Promote Public-Private Partnerships (PPP)

Public-Private Partnership is a long-term contract between a private party and a government entity for providing a public asset or Service, in which the private party bears significant risk and management responsibility. This strategic objective aims to position the Service in a way that ensures that we participate and make inputs into the agreement issues involving ICT. Actions taken would enable the Service to review and fully understand technical, social, and financial agreements and ensure that service-level agreements protect and promote its interest.

Strategies:

a. Optimise the use of resources by sharing costs and risks in addressing health issues and initiatives at all levels.

Objective 10: Mobilize resources for digital health

Increased competition for scarce resources requires that the Service champion creative efforts that facilitate using its local ICT assets, technological ideas, and expertise to acquire support across all fronts. Strategic direction needs to be provided to:

- Secure new additional resources for the organization.
- Maximize the use of existing resources.
- Ensure efficient management of available resources.
- Reduce over-dependence on donor support.

Strategies:

a. Mobilize internal and external resources for digital health

CHAPTER FOUR

IMPLEMENTATION PLAN

4

CHAPTER FOUR

4.0 IMPLEMENTATION PLAN

Objective	Strategies	Main Activities	Timeline					Lead Division/Unit Responsible	Support Division/Unit Responsible
			Year 1	Year 2	Year 3	Year 4	Year 5		
Objective 1: Strengthen governance for digital health at national, regional, district and sub- district levels	1.1 Build a high-level strategy implementation oversight structure with appropriate steering committees to drive the delivery of digital health action plans.	1. Develop terms of reference to guide the advisory and technical roles of the committee and task teams.	√					ODG	PPMED/IT
		2. Constitute a national steering committee to oversee the implementation of a policy and strategy on digital health.	√					PPME/IT	RDHS DDHS MED SUPs
		3. Constitute task teams at all levels to provide technical support for the implementation of the policy and strategy on digital health	√					ODG	PPMED
		4. Institute half-yearly meetings for the steering committee and quarterly meetings for the task teams.	√					PPME/IT	RDHS DDHS MED Sups
	1.2 Establish a system that can support reviews to enable decision-making.	1. Organize annual review meetings to assess the progress of implementation.	√	√				PPME/IT	The Steering Committee

Objective	Strategies	Main Activities	Timeline					Lead Division/Unit Responsible	Support Division/Unit Responsible
			Year 1	Year 2	Year 3	Year 4	Year 5		
Objective 2: Create an enabling environment for implementing digital health solutions	2.1 Improve policy and regulatory framework to ensure client safety, data security, confidentiality, and privacy.	1. Review the Service health enterprise architecture as a blueprint for design and implementation of digital health platforms system	√					PPME/IT Unit	All divisions
		2. Develop and review operational guidelines and standards for Health Information Systems		√				PPME/IT Unit	
	2.2 Ensure deployment of qualified human resources competent in developing, implementing and maintaining digital health platforms.	1 Revise the scope of practice for ICT staff to reflect the current digital agenda for the Service	√	√				HRD	PPME/IT
		2 Conduct training needs assessment for ICT personnel	√	√	√	√	√	HRD	PPME/IT
		3 Develop a training plan to respond to training needs	√	√	√	√	√	HRD	PPME/IT
		4 Design and implement a continuous professional development and education for ICT personnel	√	√	√	√	√	HRD	PPME/IT
		5 Assign ICT persons to all administrative and implementation levels	√	√				HRD	PPME/IT Unit
	2.3 Improve ICT infrastructure to support delivery of digital health services.	1. Conduct periodic needs assessment of ICT infrastructure.	√		√		√	PPME/IT Unit	RHD
		2. Engage the Internet Service Providers to ensure the provision of reliable and fast internet service at all levels.	√	√	√	√	√	ODG	PPME/IT

Objective	Strategies	Main Activities	Timeline					Lead Division/Unit Responsible	Support Division/Unit Responsible
			Year 1	Year 2	Year 3	Year 4	Year 5		
		3. Develop and implement a procurement replacement plan for equipment and logistics for digital health.	√	√	√	√	√	PPME/IT Unit	SSDM
		4. Develop Centralized Active Assets Register for easy management of ICT equipment, and Network. 5. Update of Assets Register (twice yearly)	√	√	√	√	√	PPME/IT Unit	HASS
Objective 3: Improve accessibility, efficiency, equity, quality and continuity of care through digitalization of health service delivery	3.1 Establish national telemedicine service.	1. Conduct stakeholders' engagement and awareness creation 2. Carry out needs assessment 3. Develop the implementation plan 4. Implement the existing roadmap	√	√	√	√	√	PPME/IT Unit	SSDM Finance Internal Audit PPME/IT unit
	3.2 Integrate digital technologies in continuous quality improvement initiatives.	1. Develop or adapt digital solutions for supportive supervision, coaching and mentoring.	√	√	√	√	√	PPME/IT Unit	ICD
		2. Implement client and community feedback system for continuous quality improvement.	√	√	√	√	√	PPME/IT	ICD

Objective	Strategies	Main Activities	Timeline					Lead Division/Unit Responsible	Support Division/Unit Responsible
			Year 1	Year 2	Year 3	Year 4	Year 5		
Objective 4: Strengthen disease prevention, surveillance, detection, reporting, response, and control at all level of the health system	4.1 Strengthen ICT Infrastructure and solutions for the disease surveillance and response system at all levels most especially at the rural and remote areas.	1. Review and update existing platforms for disease surveillance and response	√	√	√	√	√	PHD/DSD	PPME/IT Unit
		2. Procure required ICT services, equipment and logistics for disease surveillance and response	√	√	√	√	√	SSDM	PPME/IT Unit PHD
		3. Provide ICT technical support for the maintenance of all Public Health Emergency Operation Centres	√	√	√	√	√	PPME/IT Unit	PHD HASS
	4.2 Improve service data management	1. Develop and implement a data governance policy based on the existing Standard Operating Procedures (SOPs) for Health Information Management	√	√	√	√	√	PPMED/IT Unit	ODG MEDICO-LEGAL
	4.3 Improve digital solutions for promotion of health and safety practices	1. Review and upgrade existing applications for health promotionand safety practices	√	√	√	√	√	PPME/IT Unit	All Units

Objective	Strategies	Main Activities	Timeline					Lead Division/Unit Responsible	Support Division/Unit Responsible
			Year 1	Year 2	Year 3	Year 4	Year 5		
Objective 5: Improve the Security of health ICT infrastructure and data	5.1 Enhance physical security to safeguard eHealth infrastructure	1. Procure appropriate equipment and technology for safeguarding digital infrastructure	√	√	√	√	√	SSDM	PPMED/IT Unit
	5.2 Enhance data security and integrity	1. Develop health information security policy for the Service	√	√				PPMED/IT Unit	All divisions
		2. Develop and review protocols for managing data at rest and in transit		√		√		PPMED/IT Unit	All divisions
	5.3 Enhance digital privacy mechanisms to protect data from unauthorised access	1. Develop and review protocols for access to levels of all digital platforms		√		√		PPMED/IT Unit	All divisions
	5.4 Enhance organizational information security awareness	1. Organize sensitisation meetings to create awareness at all levels through physical and virtual means	√	√	√	√	√	PPMED/IT Unit	PPMED/IT Unit

Objective	Strategies	Main Activities	Timeline					Lead Division/Unit Responsible	Support Division/Unit Responsible
			Year 1	Year 2	Year 3	Year 4	Year 5		
Objective 6: Improve Interoperability and connectivity of all silos IT systems	6.1 Establish an integrated information architecture of interoperability for effective sharing of health information across health systems and services	1. Develop and operationalize interoperabilityframework, standards, and guidelines for digital health platforms.	√	√	√			PPMED/IT Unit	All divisions
		2. Monitor interoperability and ensure compliance to standards and guidelines	√	√	√				
Objective 7: Build a productive health workforce using digital technologies	7.1 Ensure continuous education, sensitization and technical support forstaff as end users of digital health platforms for the Service	1. Conduct scheduled sensitization on use of digital tools for service delivery	√	√	√	√	√	PPME/IT Unit	All divisions
		2. Develop operational manuals and visual aids for all digital platforms deployed	√	√	√	√	√	PPME/IT Unit	All divisions
	7.2 Mainstream eLearning in capacitybuilding for service providers	1. Develop and operationalise an eLearning platform for the service	√	√	√	√	√	PPME/IT Unit	HRD
	7.3 Strengthen ICT infrastructure and resources to support the	1. Set up and operationalise a digital learning resource centre for the Service at the National level	√					PPME/IT Unit	HRD

Objective	Strategies	Main Activities	Timeline					Lead Division/Unit Responsible	Support Division/Unit Responsible
			Year 1	Year 2	Year 3	Year 4	Year 5		
	institutionalization of eLearning	2. Establish support services for eLearning and related platforms for capacity building	√					PPME/IT Unit	HRD
		3. Develop a training programme for eFacilitators or eCoaches to support deployment of online courses	√					PPME/IT Unit	HRD
		4. Recruit and train eFacilitators or eCoaches to support deployment of online courses	√					PPME/IT Unit	HRD
		5. Train ICT staff to manage, support and maintain the Learning Management System for eLearning for GHS	√					PPME/IT Unit	HRD
		6. Conduct scheduled audit of established eLearning resource center, Learning Management System and related support services	√	√	√	√	√	PPME/IT Unit	HRD
		7. Develop communication strategy to create demand for eLearning.		√				PPME/IT Unit	HRD
		8. Train courseware developers, graphic and web designers to design eLearning materials		√				PPME/IT Unit	HRD
		9. Organise quarterly bootcamp to design online lessons	√	√	√	√	√	PPME/IT Unit	HRD

Objective	Strategies	Main Activities	Timeline					Lead Division/Unit Responsible	Support Division/Unit Responsible
			Year 1	Year 2	Year 3	Year 4	Year 5		
		10. Conduct a multisectoral committee meetings to review eLessons prior to upload	√	√	√	√	√	PPME/IT Unit	All division
Objective 8: Promote collaboration and advance the transfer of knowledge among IT Personnel	8.1 Institute peer learning communities among ICT staff for continuous capacity building and Education	1. Conduct in-person and virtual trainings or Workshops for capacity building	√	√	√	√	√	PPME/IT Unit	HRD
	8.2 Establish knowledge sharing hubs and fora to identify and share good practices, knowledge about implementation of new methods and techniques, evidence and lessons learned on digital health across regions and districts	1. Conduct scheduled webinars and workshops for knowledge sharing	√	√	√	√	√	PPMED/IT Unit	HRD
		2. Create peer learning communities among ICT staff for continuous professional development and education	√	√	√	√	√	PPMED/IT Unit	HRD
	8.3 Strengthen collaboration with ICT Service providers	1. Explore and implement memorandum of understanding with relevant service providers for knowledge sharing including exchange program	√	√	√	√	√	PPMED /IT Unit	HRD
Objective 9: Promote Public-Private Partnerships	9.1 Optimize the use of resources by sharing costs and risks in addressing health issues and initiatives at all levels	1. Co-create initiatives with relevant private sector players for mutual benefits	√	√	√	√	√	Finance	PPMED/IT Unit

Objective	Strategies	Main Activities	Timeline					Lead Division/Unit Responsible	Support Division/Unit Responsible
			Year 1	Year 2	Year 3	Year 4	Year 5		
Objective 10: Mobilize resources for digital health	10.1 Mobilize internal and external resources for digital health	1. Develop a costed plan for the policy and strategy on digital health	√					ODG	FD PPMED
		2. Develop and operationalise a resource mobilisation plan	√					ODG	FD PPMED
	10.2 Improve accountability and transparency in the management of resources mobilised	1. Prepare yearly expenditure report for audit	√	√	√	√	√	FD	IAD PPMED
		2. Implement recommendations from audit	√	√	√	√	√	Audit Committee	FD IAD Affected Divisions

CHAPTER FIVE

MONITORING AND EVALUATION

5

CHAPTER FIVE

5.0 MONITORING AND EVALUATION

Objective	Strategies	Main Activities	Indicators	Targets	Timelines				
					Year 1	Year 2	Year 3	Year 4	Year 5
Objective 1: Strengthen governance for digital health at national, regional, district and sub-district levels.	1.1 Build a high-level strategy implementation oversight structure with appropriate steering committees to drive the delivery of digital health action plans.	1. Develop terms of reference to guide the advisory and technical roles of the committee and task teams.	• Draft Terms of Reference (TOR)	• TOR developed	√				
		2. Constitute a national steering committee to oversee the implementation of a policy and strategy on digital health.	• List of Members of committee • Implementation plan of committee • Reports or Minutes on Meetings	• National Steering committee Constituted	√				
		3. Constitute task teams at all levels to provide technical support for the implementation of the policy and strategy on digital health.	• Work plan for task teams at all levels developed. • Number of task teams constituted. • Reports on inauguration of task team	• Task teams at all Levels formed	√				
		4. Institute half-yearly meetings for the steering committee and quarterly meetings for the task teams	• Number of recommendations implemented.	• Eight meetings for steering committee and sixteen meetings for task teams		√	√	√	√

Objective	Strategies	Main Activities	Indicators	Targets	Timelines				
					Year 1	Year 2	Year 3	Year 4	Year 5
			• Number of Meeting reports generated.						
	1.2 Establish a system that can support reviews to enable decision-making.	1. Organize annual review meetings to assess the progress of implementation.	• Number of meetings or conferences held.	• Once a year (100%)	√	√	√	√	√
Objective 2: Create an enabling environment for implementing digital health solutions	2.1 Improve policy and regulatory framework to ensure client safety, data security, confidentiality, and privacy.	1. Review the Service health enterprise architecture as a blueprint for design and implementation of digital health platforms system.	• Updated enterprise architecture available	• One updated Enterprise • Architecture for GHS by the end of year two	√	√			
		2. Develop and review operational guidelines and standards for Health Information Systems.	• Operational guidelines and standards for Health Information Systems available	• One Operational guidelines and standards for Health Information Systems developed and review done	√	√	√	√	√
	2.2 Ensure deployment of qualified human resources.	1. Revise the scope of practice for ICT staff to reflect current digital agenda for the Service	• Revised scope of practice available	• Standard scope of practice for ICT staff	√	√			

Objective	Strategies	Main Activities	Indicators	Targets	Timelines				
					Year 1	Year 2	Year 3	Year 4	Year 5
	competent in developing, implementing and maintaining digital health platforms.	2. Conduct training needs assessment for ICT personnel	• Training needs assessments report available	• One per year	√	√	√	√	√
		1. Develop a training plan to respond to training needs	• Number of training plans available	• One updated training plan per year	√	√	√	√	√
		2. Design and implement a continuous professional (CPD) development and education for ICT personnel	• Training package for CPD available for ICT Staff	• Revised training package	√	√	√	√	√
			• Number of trainings carried out CPD	• One per year					
			• Number of ICT staff participating in CPD sessions	• 100%					
		1. Assign ICT persons to all administrative and implementation levels.	• Number of ICT personnel assigned	• At least one ICT officer at all levels	√	√			
	2.3 Improve ICT infrastructure to support delivery of digital health services.	1 Conduct periodic needs assessment of ICT infrastructure	• Number of periodic needs assessment carried out on all ICT infrastructure	• At least once a year	√		√		√
		2. Engage Internet service providers (ISPs) to ensure the provision of reliable, stable, and fast internet service at all levels	• Number of downtimes and user feedbacks	• Steady reduction in the number of downtimes (less than 20%)	√	√	√	√	√

Objective	Strategies	Main Activities	Indicators	Targets	Timelines				
					Year 1	Year 2	Year 3	Year 4	Year 5
		3. Develop and implement a procurement and infrastructure replacement plan for equipment and logistics for digital health	• Final procurement and infrastructure plan available for implementation	• One procurement • and infrastructure replacement plan developed and • implemented	√	√	√	√	√
		4. Develop and operationalize a centralized assets registry for easy management of ICT equipment, and network.	• Centralized assets registry available	• One centralized assets registry available for managing ICT equipment and network	√	√			
		5. Update Assets Register (twice yearly)	• Adequately populated assets register with necessary details.	• Assets registry database	√	√	√	√	√
Objective 3: Improve accessibility, efficiency, equity, quality and continuity of care through digitalization of health service delivery	3.1 Establish national telemedicine service	1 Conduct stakeholders' engagement and awareness creation 2 Carry out needs assessment 3 Develop the implementation plan 4 Implement the existing roadmap	• Number of engagement meetings and awareness programs • Adequate information on appropriate solutions • A fully updated implementation plan • Number of health facilities implementing telemedicine	• Functional telemedicine supporting health service delivery in 20% health facilities					√

Objective	Strategies	Main Activities	Indicators	Targets	Timelines				
					Year 1	Year 2	Year 3	Year 4	Year 5
	3.2 Integrate digital technologies in continuous quality improvement initiatives	3. Develop or adapt digital solutions for supportive supervision, coaching and mentoring	• Number of supportive supervision, coaching and mentoring sessions carried out with digital solutions	• At least 16 supportive supervision sessions carried out using digital solutions		√	√	√	√
		4. Implement client and community feedback system for continuous quality improvement	• Number of quality improvement actions informed by community • feedback system	• 100% of identified gaps addressed		√	√	√	√
Objective 4: Strengthen disease prevention, surveillance, detection, reporting, response, and control at all level of the health system	4.1 Strengthen ICT Infrastructure and solutions for the disease surveillance and response system at all levels most especially at the rural and remote areas	1. Review and upgrade existing platforms for disease surveillance and response.	• Availability of upgraded platforms for disease surveillance and response	• Annual upgrade of existing platforms for disease surveillance and response		√	√	√	√
		2. Procure required ICT services, equipment and logistics for disease surveillance and Response.	• Number of ICT services, equipment and logistics for disease surveillance procured	• ICT –driven disease surveillance system	√	√	√	√	√

Objective	Strategies	Main Activities	Indicators	Targets	Timelines				
					Year 1	Year 2	Year 3	Year 4	Year 5
		3. Provide ICT technical support for the maintenance of all Public Health Emergency Operation Centres	• Availability of completed maintenance log sheet for ICT technical support	• Functional Public Health Emergency Operation Centres	√	√	√	√	√
	4.2 Improve service data management	1. Develop and implement a data governance policy based on the existing Standard Operating Procedures (SOPs) for Health Information Management	• Availability of data governance policy informed by SOPs for Health Information Management	• One data governance • policy	√	√	√	√	√
			• Status report on implementation of data governance policy	• Sixteen status reports		√	√	√	√
	4.3 Improve digital solutions for promotion of health and safety practices	1. Review and upgrade existing applications for health promotion and safety practices	• Availability of upgraded platforms for health promotion and safety practices	• ICT-driven health promotion and safety practices	√	√	√	√	√
Objective 5: Improve the Security of health ICT infrastructure and data	5.5 Enhance physical security to safeguard eHealth infrastructure	1. Assess existing digital infrastructure to identify gaps	• Number of times assessment is carried out on the existing digital infrastructure.	• Verified digital infrastructure gaps	√	√	√	√	√
			• Number of gaps identified on the existing digital infrastructure						

Objective	Strategies	Main Activities	Indicators	Targets	Timelines				
					Year 1	Year 2	Year 3	Year 4	Year 5
		2. Procure appropriate equipment and technology for safeguarding digital infrastructure	• Number or quantities of appropriate technological equipment procured	• Procurement of appropriate technological equipment for safeguarding digital infrastructure	√	√	√		
	5.2 Enhance data security and integrity	1. Develop health information security policy for the Service	• Availability of health information security policy for the Service	• Existence of health information security policy	√	√			
		2. Develop and review existing protocols for managing data at rest and in transit	• Availability of protocols for managing data at rest and in transit	• Existence of updated protocols for managing data at rest and in transit	√	√			
	5.3 Enhance digital privacy mechanisms to protect data from unauthorised access	1. Develop and review protocols for access to levels of all digital platforms	• Availability of protocols for access levels of all digital platforms	• Existence of updated protocols for access levels of all digital platforms	√	√			

Objective	Strategies	Main Activities	Indicators	Targets	Timelines				
					Year 1	Year 2	Year 3	Year 4	Year 5
	5.4 Enhance organizational information security awareness	1. Organize sensitization meetings to create awareness at all levels through physical and virtual means	• Number of sensitisation meetings held to create awareness at all levels	• Eight sensitization Meetings carried out through physical and virtual means		√	√	√	√
Objective 6: Improve Interoperability and connectivity of all silos IT systems	6.1 Establish an integrated information architecture of interoperability for effective sharing of health information across health systems and services	1. Develop and operationalize interoperability framework, standards and guidelines for digital health platforms. 2. Monitor interoperability and ensure compliance to standards and guidelines	• Availability of interoperability framework, standards and guidelines for digital health platforms. • Number of existing digital health platforms interoperable.	• Existence of interoperability framework for digital health platforms for operationalization •	√	√	√	√	√
				• All Service digital platforms are interoperable	√	√	√	√	√
Objective 7: Build a productive health workforce using digital technologies	7.1 Ensure continuous education, sensitization and technical support for users of digital health platforms for the Service	1. Conduct scheduled sensitization on use of digital tools for service delivery	• Number of sensitizations carried out on the use of digital tools for service delivery	• Ten sensitization meetings carried out	√	√	√	√	√
		2. Develop operational manuals and visual aids for all digital platforms deployed	• Availability of operational manuals and visual aids for all digital platforms deployed	• Existence of developed manuals and visual aids for deployed all digital platforms	√	√			

Objective	Strategies	Main Activities	Indicators	Targets	Timelines				
					Year 1	Year 2	Year 3	Year 4	Year 5
	7.2 Mainstream eLearning in capacity building for service providers	1. Develop and operationalize an eLearning platform for the service	• Availability of eLearning platform for the Service	• Existence of functional eLearning platform	√	√	√	√	√
	7.3 Strengthen ICT infrastructure and resources to support institutionalization of eLearning	1. Set up digital learning resource centre for the Service at the national level.	• Availability of digital learning resource centre at the National level	• Existing of a fully operational eLearning resource centre	√	√			
		2. Establish support services for eLearning and related platforms for capacity building.	• Number of support service channels operationalized	• Five functional support service channels	√				
		3. Develop a training programme for eFacilitators or eCoaches to support deployment of online courses.	• Availability of training programme for eFacilitators or eCoaches to support deployment of online courses	• Institutionalised training programme for eFacilitators or eCoaches	√	√			
		4. Recruit and train eFacilitator or eCoaches to support deployment of online courses	• Number of eFacilitators • or eCoaches trained to support deployment of online courses	• Fifty (50) eFacilitators • or eCoaches trained	√	√			

Objective	Strategies	Main Activities	Indicators	Targets	Timelines				
					Year 1	Year 2	Year 3	Year 4	Year 5
		5. Train ICT staff to manage, support and maintain the Learning Management System for eLearning for GHS.	• Number of ICT staff trained to manage, support and maintain the Learning Management System for eLearning for GHS.	• Ten (10) ICT staff trained	√	√			
		6. Conduct scheduled audit of established eLearning resource center, Learning Management System and related support Services	• Number of schedules audits conducted on eLearning resource center, Learning Management System and related support • Services	• Five (5) scheduled audits done	√	√	√	√	√
		7. Develop communication strategy to create demand for eLearning.	• Availability communication strategy to create demand for eLearning.	• Communication strategy to create demand for eLearning	√	√			
		8. Train courseware developers, graphic and web designers to support eLearning	• Number of courseware developers, graphic and web designers trained to support eLearning	• Twenty (20) courseware developers, graphic and web designers trained	√	√			
		9. Organise quarterly bootcamp to design online lessons	• Number of bootcamps carried out to design online lessons	• Twenty (20) quarterly bootcamps to design online lessons	√	√	√	√	√

Objective	Strategies	Main Activities	Indicators	Targets	Timelines				
					Year 1	Year 2	Year 3	Year 4	Year 5
		10. Conduct a multisectoral committee meetings to review eLessons prior to upload	• Conduct a multisectoral committee meetings to review eLessons prior to upload	• Twenty (20) quarterly multisectoral committee meetings held	√	√	√	√	√
Objective 8: Promote collaboration and advance the transfer of knowledge among IT Personnel	8.1 Institute peer learning communities among ICT staff for continuous capacity building and Education	1. Conduct in-person and virtual trainings or Workshops for capacity building	• Number of trainings or workshops carried out for capacity building	• 20 training sessions carried out for ICT personnels	√	√	√	√	√
			• Number of ICT personnels participated in trainings or workshops	• 100% of ICT • personnels Participated in trainings or workshops	√	√	√	√	√
	8.2 Establish knowledge sharing hubs and fora to identify and share good practices, knowledge about implementation of new methods and techniques, evidence and lessons learned on digital health	1. Conduct scheduled webinars and workshops for knowledge sharing	• Number of webinars and workshops carried out for knowledge sharing	• Ten (10) webinars and workshops conducted for knowledge sharing	√	√	√	√	√

Objective	Strategies	Main Activities	Indicators	Targets	Timelines				
					Year 1	Year 2	Year 3	Year 4	Year 5
	across regions and districts	2. Create peer learning communities among ICT staff for continuous professional development and education	• Number of peer learning communities established	• Existence of fully operational peer learning communities amongst ICT staff	√	√	√		
	8.3 Strengthen collaboration with ICT Service providers	1. Explore and implement memorandum of understanding with relevant service providers for knowledge sharing including exchange program	• Availability of signed memorandum of understanding with service providers	• Existence of memorandum of understanding with service providers	√	√			
Objective 9: Promote Public-Private Partnerships	9.1 Optimize the use ofresources by sharing costs and risks in addressing health issues and initiatives at all levels	1. Co-create initiatives with relevant private sector players for mutual benefits	• Number of collaborative initiatives with private sector players	• Four (4) collaborative initiatives	√	√	√	√	√
Objective 10: Mobilize resources for digital health	10.1 mobilize internal and external resources for digital health	1. Develop a costed implementation plan for the policy and strategy on digital health	• Availability of costed implementation plan for policy and strategy on digital health	• Existence of costed implementation plan for the policy and strategy on digital health	√	√			

Objective	Strategies	Main Activities	Indicators	Targets	Timelines				
					Year 1	Year 2	Year 3	Year 4	Year 5
		2. Develop and operationalize a resource mobilization plan	• Availability of an operationalised resource mobilization plan	• Existence of an operationalised resource mobilization plan	√	√	√		
	10.2 Improve accountability and transparency in the management of resources mobilised	1. Prepare yearly expenditure report for audit	• Number of audits carried out on financial investment in ICT • Availability of audit report on expenditure	• Five (5) scheduled audit conducted • Existence of annual expenditure reports	√	√	√	√	√
		2. Implement recommendations from audit	• Number of audit recommendations implemented	• Evidence of actions taken on audit recommendations	√	√	√	√	√

CHAPTER SIX

6

CHAPTER SIX

6.0 MANAGEMENT ARRANGEMENT (ROLES AND RESPONSIBILITIES)

There shall be four (4) functional management arrangement structures with clear roles and responsibilities that shall be made up of:

a. Office of the Director General (ODG)

b. National Digital Health Steering Committee (NDHSC)

c. Digital Health Technical Working Group (DHTWG)

d. Regional Digital health Technical Committee (RDHTC

6.1. Office of the Director General

At the apex of the management arrangement lies the position of the Director General who shall:

a. Establish and oversee standards and guidelines to govern issues of ownership, compliance and security in the digital health ecosystem of Ghana Health Service.

b. Mobilize resources for strategic investment in digital health initiatives for the Ghana Health Service.

6.2. National Digital Health Steering Committee

The National Digital Health steering committee would be reconstituted to perform the following roles:

a. Oversee the implementation of the policy and strategy on digital health.

b. Provide leadership and strategic guidance to all digital health initiatives in Ghana Health Service to ensure that they are well aligned with the policy and strategy as well as defined standards and guidelines.

c. Guide engagement of stakeholders in the implementation of the policy and stategy on Digital Health.

d. Review and approve digital health initiatives for the Ghana Health Service

e. Submit a quarterly report to the Office of the Director General.

The Director General would chair the National Digital Health Steering Committee.
The ICT unit would serve as the secretariat for the steering committee.

6.3. Digital Health Technical Working Group

The Digital Health Technical Working Group shall be constituted to perform the following functions as specified below:

a. Provide a system-level perspective and technical guidance on digital health initiatives
b. Monitor and evaluate the implementation of digital health initiatives.
c. Establish task teams to implement specific digital health tasks.
d. Make recommendations on digital health issues to the NDHSC.
e. Oversee the day-to-day operations of the policy and strategy on digital health.
f. Develop costed annual action plans for digital health activities.
g. Ensure proper use of allocated resources for implementing digital health initiatives.
h. Develop and enforce compliance with digital health standards and guidelines.
i. Providing technical support, mentorship, and supportive supervision of digital health activities.
j. Compile and submit reports on the policy and strategy on digital health on implementation to the NDHSC.

The Head of ICT unit for GHS shall chair the Digital Health Technical Working Group.

6.4. Regional Digital Health Technical Committee

- Oversee the implementation of digital health initiatives in the region.
- Enforce compliance with digital health standards and guidelines in the region.
- Provide technical support to districts on the implementation of digital health initiatives.
- Coordinate stakeholders in the region in the implementation of digital health initiatives.
- Conduct supportive supervision and mentorship on the implementation of the policy and strategy on higital health.
- Submit quarterly reports to the DHTWG.
- The Regional Director of Health Service shall chair the RDHTCs.

The ICT unit at the region would serve as the secretariat for the RDHTC.

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