Philippines eHealth Strategic Framework and Plan 2013-2017

Department of Health
Department of Science and Technology
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I. Introduction

The Department of Health (DOH) is mandated to be the over-all technical authority on health that provides national policy direction and develop national plans, technical standards and guidelines on health. It is also a regulator of all health services and products, and provider of special or tertiary health care services and of technical assistance to other health providers especially to local government units. The implementation of Kalusugan Pangkalahatan or Universal Health Care is directed towards ensuring the achievement of the *health system goals of better health outcomes, sustained health financing and responsive health system.*

The World Health Organization defines eHealth as the use of information and communication technologies for health. It supports the delivery of health services and management of health systems to become more efficient and effective. eHealth is described also as a means to ensure that "the right health information is provided to the right person at the right place and time in a secure, electronic form to optimize the quality and efficiency of health care delivery, research, education and knowledge. The application of information and communication technologies in health has rapidly increased for the past years and gained significance not only in the Department of Health but in the entire health sector. The DOH has continuously addressed the challenges and demands to further improve health care service deliveries and outcomes. Many countries have recognized the importance of adopting information and communication technology in health, also called as eHealth, to optimize processes and improve data collection, processing and analysis. The adoption of ICT has provided concrete foundation for health investments and innovations. Countries have formulated their own eHealth agenda to establish direction and plan the necessary steps to achieve their intended vision, mission, and goals.

The application of eHealth in the Philippines has continuously advanced and yielded considerable benefits to an individual and public health. ICT has been used to improve the timeliness and accuracy of health reporting to facilitate monitoring and surveillance of diseases and injuries, among others. As DOH learned from the results of experimentation and early adoption phase, it has moved to increasing development or building up of application or information systems, began to adopt the use of standards to address the weaknesses of experimentation and early adoption of ICT, started addressing the issues on enabling environment, and promoted increased awareness of ICT in the health sector. Further, the DOH is also in its scale up and mainstreaming phase where there is a broad uptake of ICT by the general public and health professionals as well. Critical challenges are faced by the DOH as the general public became more aware and exposed to different services using ICT, or e-services. There is greater demand for efficiencies and high expectation from the DOH to deliver quality care, services and outcomes. The DOH and different stakeholders of the health sector have recognized the important roles they play from planning to utilizing eHealth in the country.

The National Objectives for Health, 2005-2010 and the 2011-2016 prioritized the use of ICT in various reforms areas, critical health programs, and specific areas in health administration. In 2005 and 2013, the Philippines was signatory to the 58thand 66thWorld Health Assembly Resolution. The 58th World Health Assembly advocated the following:

- Draw up a long-term strategic plan for developing and implementing eHealth services in the various areas of health sectors including health administration which includes an appropriate legal framework and infrastructure and encourage public and private partnership;
- Develop the infrastructure for ICTs for health as deemed appropriate to promote equitable, affordable and universal access;
- Build on closer collaboration with private and non-profit sectors in ICTs;
- Reach communities, including vulnerable groups, with eHealth services appropriate to their needs;
- Mobilize multi-sectoral collaboration for determining evidence-based eHealth standards and norms and to share the knowledge of cost-effective models, thus ensuring quality, safety and ethical standards and respect for the principles of confidentiality of information, privacy, equity and equality;
- Establish national centers and networks of excellence for eHealth best practice, policy coordination, and technical support for health-care delivery, service improvement, information to citizens, capacity building, and surveillance; and
- Establish and implement national electronic public-health information systems and to improve, by means of information, the capacity for surveillance of, and rapid response to, disease and public-health emergencies.

The 66th World Health Assembly advocated the following:

- Consider, as appropriate, options to collaborate with relevant stakeholders, including national authorities, relevant ministries, health care providers, and academic institutions, in order to draw up a road map for implementation of ehealth and health data standards at national and subnational levels.

- Consider developing, as appropriate, policies and legislative mechanisms linked to an overall national eHealth strategy, in order to ensure compliance in the adoption of ehealth and health data standards by the public and private sectors, as appropriate, and the donor community, as well as to ensure the privacy of personal clinical data.
- Consider ways for ministries of health and public health authorities to work with their national representatives on the ICANN Governmental Advisory Committee in order to coordinate national positions towards the delegation, governance and operation of health-related global top-level domain names in all languages, including "health", in the interest of public health.

With this as input, together with the national development plans, government-wide ICT plans, assessments of ICT programs and health information systems, and priorities of the health sector, the DOH has updated its e-health framework to support Universal Health Care or Kalusugan Pangkahalatan. The National Objectives for Health 2011-2016 shows the commitment of the DOH to make KP works. It sets the health program goals, strategies, performance indicators and targets for the health sector to achieve KP by 2016, or transport the health sector to its desired outcomes or results. The said NOH includes the various roles that different stakeholders play in shaping the future of the health systems in the country and bringing better health outcomes to the Filipino people.

Reference is made to the introductory part of the NOH in terms of vital information about the Philippines, Philippine Health System at a glance, and the Universal Health Care or Kalusugan Pangkahalatan (KP). The Philippine Health Information System 2010-2016 Strategic Plan presented the major sources of health information; highlights of the assessment of the PHIS using the Health Metrics Network framework, assessment of the Field Health Services Information System and Vital Registry through a survey, and the National Statistics Office assessment of its Civil Registration System. By this point, the national eHealth vision, mission, priority focus areas or strategic goals/objectives, and strategies have been formulated by the DOH.

The Department of Science and Technology (DOST), through Executive Order 128, provides central direction, leadership and coordination of scientific and technological efforts and ensure that the result there geared and utilized in area of maximum economic and social benefits for the people. The functions and responsibilities of DOST expanded correspondingly to include the pursuit of declared state policy of supporting local scientific and technological effort, development of local capability to achieve technological self-reliance, and encouragement of greater private sector participation in research and development. There were e-health initiatives undertaken by the Philippine Council for Health Research and Development of the DOST, like the Health Research and Development Information Network(HERDIN) of the, eHealth Philippines (Philippine Electronic Health Information Village), eHealth portal and others.

To implement a national eHealth in the country for greater efficiency in health care, workforce productivity, and optimized use of resources, the DOH and DOST signed a Joint National Governance on eHealth. This shows the commitment of both national government agencies to unite towards finalization and implementation of the country's eHealth Strategic Framework and Plan or Roadmap.Activities, programs and/or projects shall be undertaken collaboratively to maximize government resources, achieve convergence of infrastructure, and deliver quality health care.

II. *e*Health in the Philippines

The DOH has learned from the results of experimentation and early adoption phase since 1988, the start of developing software for Field Health Services and Information System, and has continuously developed or built other application or information systems. The use of ICTs in the DOH has remarkably supported and improved some of the functions of the Department. ICTs have been used in the areas of innovative technological changes, networking and infrastructure, office automation, development and implementation of computer-based systems. From the limited resources in terms of ICT personnel and funds, the DOH Management has augmented the budget on ICT to fully accomplish and support the ICT strategic goals and direction.

Existing information systems and data sources are being integrated or harmonized to eventually address other challenges like establishment of the DOH data warehouse, quality database and establishment of a more responsive information system and access to and sharing of knowledge products. For remote and underserved areas and vulnerable populations, the DOH has implemented telemedicine in selected pilot areas through the National Telehealth Center, National Institute for Health, University of the Philippines, Manila. The DOH has also developed and implemented mobile technology solutions in reporting cases through the Health Emergency Management Staff's - Surveillance in Post Extreme Emergencies and Disasters (SPEED) with support from WHO. There are several mobile technology applications developed and for implementation, e.g. Text TB for reporting inventory of tuberculosis drugs, maternal and neonatal death reporting, and routine health data reporting.

The DOH has created networks for increased collaboration on health information systems and eHealth applications. These are the Philippine Health Information Network, Philippine Network for Injury Data Management System, and ICT4H The networks consist of representatives from the different government agencies, private firms or organizations, local government units, non-government organizations, academe, research institutions, international organizations, and others with varying roles and responsibilities as far as the health agenda is concerned. The networks have one common goal, i.e. to create a more reliable, timely, high quality and affordable health care and useful health information systems, promote continuous medical training, education, research, and others through the use of ICT with respect and compliance to security and protection of citizen's right to privacy. The networks vary from the degree of engagement like PNIDMS for injury related cases (DOH DPO No. 2011-0047), PHIN for health data collection, sharing and exchange, systems harmonization and other collective actions to improve health information systems (DOH DPO No. 2006-0452 - Creation of Management Structure for the PHIN), and ICT4H for the development of the health sector enterprise architecture, HIS/HIT standards and compliance and capacity building (DOH DPO No. 2010-5245 Technical Working Group on ICT for Health). There are some eHealth solutions or applications at various levels of maturity and/or stages of development and implementation.

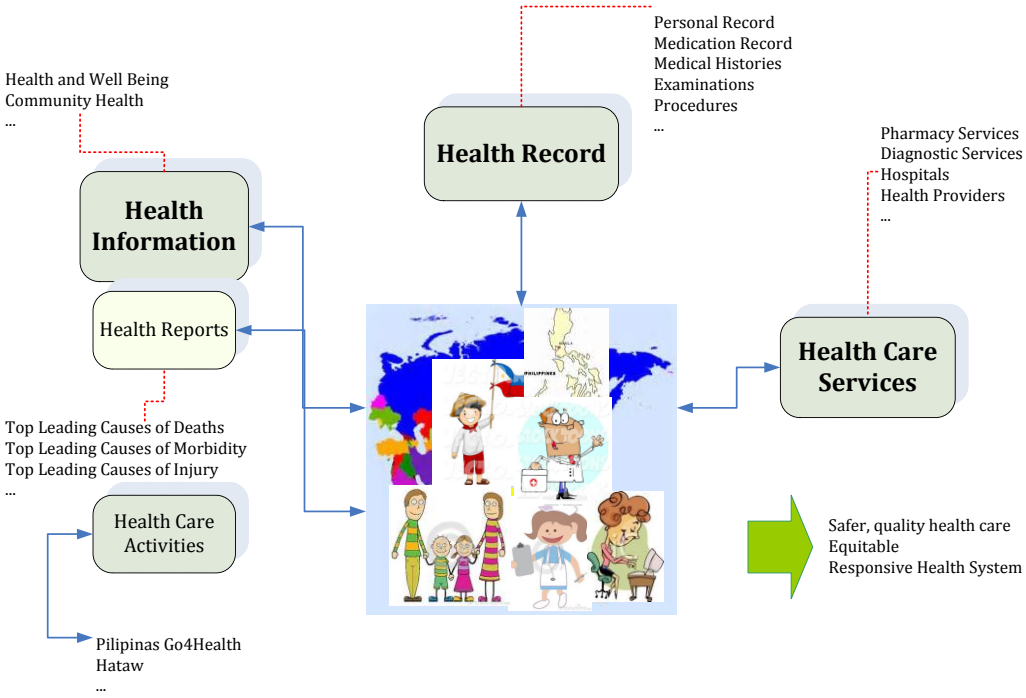
Several opportunities were identified from different undertakings and perspectives. In the case of Health Information System, a forum was conducted in Manila last June 2011 and participated by nine countries and development partners. Seven (7) priority gaps or opportunities were identified, i.e. government and multi-sectoral engagement, policy and regulation environment, strategic planning/financing, Human Capital Development, Systems and Data Interoperability, Infrastructure, and Information Use. The PHIN with WHO and USAID support have also brought down the interagency HIS Forum at sub-national levels in two DOH Operations cluster and hoping to cover the two others this 2013.

The DOH is also in its scale up and mainstreaming phase where there is a broad uptake of ICT by the general public and health professionals as well. Critical challenges are faced by the DOH as the general public became more aware and exposed to different services using ICT, or e-government services. There is greater demand for efficiencies and high expectation from the health sector to deliver quality care, services and outcomes. There are continuous development and build-up of eHealth systems like health information systems, telemedicine, adoption of electronic medical record systems, mHealth, knowledge management systems among others; and the scaling up and mainstreaming, as evidenced by the creation of the Philippine Health Information Network, ICT4H, Philippine Network for Injury Data Management System; development of the Information System Strategic Plan, Philippine Health Information System Plan, and Health Enterprise Architecture; development of health application and information systems; KM hubs and works done to define and implement national health data standards.. The health ICT industry is now active with new business models and competition, new businesses and economic opportunities, new platforms for innovation and services, integration or harmonization of health information systems, eHealth systems in hospitals, chronic disease management applications, among others.

Since efforts were already started in implementing ICT in health as well as developing and building up eHealth solutions, eHealth can now move to expansion and mainstream services to further improve consistency in the use of standards, efficiency and quality outputs. More focus will be on establishing health data standards for adoption for purposes of interoperability, software certification, innovating services and reporting systems to meet the expectations of the citizens for more people-centered, efficient, and effective services, and undertaking monitoring and evaluation to ensure that eHealth delivers as expected. The Philippines eHealth Strategic Framework and Plan (PeHSFP) is the result of comprehending what the Philippines needs to achieve in order to address its health goals and challenges. The contents can be regularly updated to remain applicable or appropriate. The key to keeping updated the PeHSFP, as well as success in implementing the national eHealth agenda, is the continuing collaboration and communication with the different stakeholders to gain their support, guidance, cooperation and commitment.

III. *e*Health Vision

By 2020 *e*Health will enable widespread access to health care services, health information, and securely share and exchange patients' information in support to a safer, quality health care, more equitable and responsive health system for all the Filipino people by transforming the way information is used to plan, manage, deliver and monitor health services.



The strategic vision describes the Philippines Health System that has been enabled by eHealth. It shows how eHealth will be used to address health system's priority goals and challenges to deliver health outcomes. The Aquino Health Agenda on achieving Universal Health Care or Kalusugan Pangkahalatan for all Filipinos is a continuing commitment to health sector reform and achieving the Millennium Development Goals. The National Objectives for Health 2011-2016 has set the health program goals, strategies, performance indicators and targets towards achieving KP. The overall goal is to achieve health system goals of *financial risk protection, better health outcomes, and responsive health system* for the Filipino people.

eHealth has proven to provide improvements in health care delivery and is at the core of responsive health system. eHealth will improve the quality and safety of the health system through empowerment of health consumers to better manage their health records; availability of information like single view of the patients' information at the point of care, decision support tools and knowledge based information thereby reducing medical errors, improved treatment and monitoring; and availability of information for efficient and effective surveillance and monitoring of diseases and management of health

eHealth will also support a more equitable health system through presence of information about the availability, location, expertise and services of health care providers. This will provide health consumers with ready information for reference purpose and health care providers for referral process. Electronic consultations in rural, remote and disadvantaged areas can be made accessible or available.

eHealth will provide a more responsive health system because information can be securely shared and exchanged without repeating effort and time in providing the same information to different health care providers; use of eHealth solutions to speed up processes like ordering system and results reporting; reduced time and cost of health consumers undergoing unnecessary or duplicated diagnostic tests; improved diagnosis and treatment activities; reduced travel time using telehealth services; and efficient and effective disease monitoring and response.

IV. Desired *e*Health Outcomes

The desired outcomes and impact from the stated eHealth vision are as follows:

Health System Goal or Challenge	Desired eHealth Outcomes
Health Consumers : Safer and quality health care	
- Increase ability to access, control and share their health information. - Minimize time and effort in providing the same health information to different health care providers.	○ Improved access to their health information and maintenance of their personal health record ➢ Controlled access to personal health information ➢ Improved management of their health care plans
- Minimize health inequalities of those living in remote or rural areas due to poor access to health care. - Address shortage of health human resource affecting those in remote or rural areas	○ Improved access to appropriate health care services for those in rural, remote and disadvantaged communities via electronic means ➢ Reduce travel time to access care ○ Improved access to knowledge, health care services and availability, and resources to assist in managing one's health ➢ Support early detection and treatment of diseases ➢ Better management of health conditions and adherence to medication and treatment regimes
Health Care Providers : Make more informed decisions	
- Improve ability to make informed decisions at the point of care. - Minimize time and effort in performing same or duplicate treatment services or performing unnecessary ones. - Improve ability to issue orders, prescribe medications, and refer individuals to other health care providers.	○ Improved access to an integrated/single view of the patients' health information at the point of care ➢ Improved reliability of patients' health information across different health care providers ➢ Improved sharing and exchanging of health information across different geographical locations and all parts of the health sector ➢ Reduced time and effort in providing and coordinating treatments, undergoing tests and generation of results ○ Improved access to systems and health information like clinical decision support tools, medications, clinical knowledge, skills development and others ➢ Improved access to doctors' ordering system, medicine prescription and referrals ○ Improved collaboration and coordination among health care providers, and interactions with health consumers ○ Improved reporting and monitoring of health care deliveries and/or outcomes
- Improve ability to monitor the effectiveness of health care services rendered like treatments and diagnosis, and outcomes.	Improved monitoring and tracking of patients
Health Care Managers, Policy Makers and Researchers : Effective program/research development, implementation and monitoring	
- Minimize or eliminate increasing incidence or spread of diseases in the country like HIV/AIDS, chronic diseases, and others.	○ Improved access to reliable health information like health statistics, disease prevention, treatment of diseases, decision support tools, clinical knowledge,

		planning, and delivery of health services ➢ Improved planning for the minimizing or eliminating spread of diseases ➢ Efficient and effective monitoring and response to outbreaks and emergencies ➢ Effective management of the supply and distribution system like availability of essential medicines and vaccines o Greater access to information to support decision making and treatment
-	Meet increasing demands or expectations brought about by new/emerging technologies.	o Improved access to reliable health information like eHealth innovations and solutions
-	Improve ability to make informed decisions like developing and implementing program interventions to address health issues and concerns, conducting surveillance activities, improving clinical practices and treatments, and monitoring.	o Improved access to reliable health information like health programs, activities, treatments, outcomes, fund management, and others. ➢ Improved monitoring of health activities and data sources ➢ Access to quality data for information and monitoring ➢ Improved access to medical literature, knowledge resources and networks o Strengthened capability building of the health workforce
-	Minimize time and effort in collecting, consolidating, and integrating information from different sources.	Improved sharing and exchange of reliable and quality information

V. *e*Health Strategy

A. Key Strategic Guiding Principles

Key strategic guiding principles in the development of Philippines eHealth Strategic Framework and Plan are as follows:

1. eHealth must serve the needs of the client or person.
2. Collaboration and partnerships with key health care stakeholders are critical in realizing the country's eHealth vision.
3. Users' must be involved at all phases of development and implementation to gain commitment for implementation.
4. A strategic approach in terms of phases enables more focus, and judiciously and efficiently make use of resources to achieve the eHealth vision.
5. eHealth activities must be aligned or harmonized, without controlling health care providers to implement local eHealth solutions.
6. The presence of entities that have already started eHealth must be recognized so as not to constraint their continuing advancement and gain their support.
7. Human resource can be made available by building capability to implement the eHealth agenda in the country and promote transparency and public accountability.
8. Implementation of eHealth must comply to relevant laws and regulations.
9. Investments must be made on areas that deliver the greatest benefits to health consumers, health care providers, and healthcare managers; and ensure no duplication in terms of time, effort and resources.

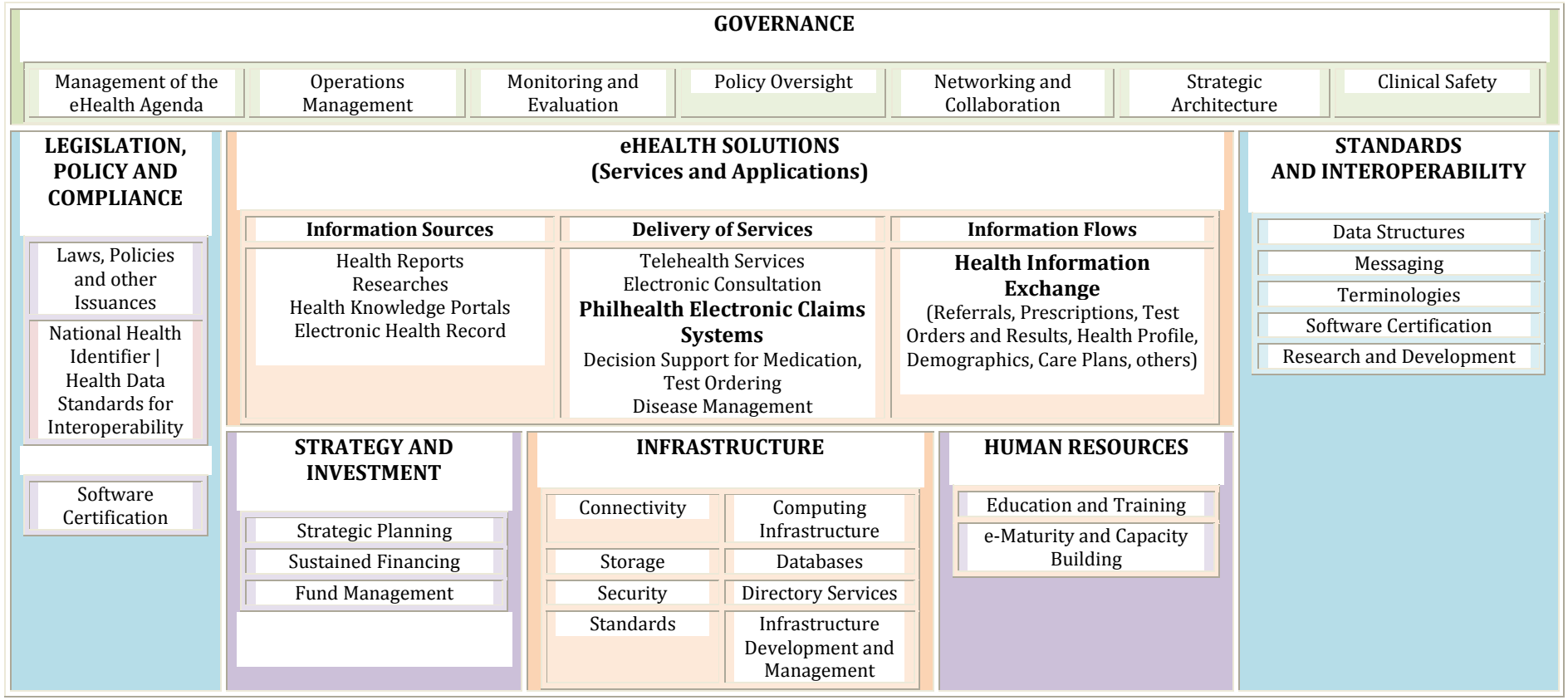
B. *e*Health Components

The components are the building blocks to achieve the stated vision. There were initial identified components to realize the outcomes of eHealth in the Philippines, i.e. enabling structures and resources, mission-critical health application systems, Philippine Health Information System, Knowledge Management for Health, and telemedicine/mHealth services. The groupings are more information or application systems based and were reviewed together with the National eHealthStrategy Toolkit. Updated components are governance, strategy and investment, eHealth solutions (services and applications), standards and interoperability, infrastructure, legislation/policy and compliance, and human resource.

	Components	Description
1	Governance	Directs and coordinates eHealth activities at all levels like hospitals and health care providers. Critical areas of governance are management of the eHealth agenda, stakeholders' engagement, strategic architecture, clinical safety, management and operation, monitoring and evaluation, and policy oversight.
2	Legislation, Policy and Compliance	Formulation of the required legislations, policies and compliance to support the attainment of the eHealth vision. Examples of these are the national legislations, policies, and regulations on how health information are stored, accessed and shared across geographical and health sector boundaries; implementation of unique health identifier; implementation of national health data standards; and software certification or accreditation.
3	Standards and Interoperability	Promotes and enables exchange of health information across geographical and health sector boundaries through use of common standards on data structure, terminologies, and messaging. One strategy to ensure compliance to health data standards for interoperability is the implementation of software certification or accreditation where eHealth solutions must comply in order to be certified as able to exchange health information.
4	Strategy and Investment	Develops, operates and sustains the national eHealth vision. These components support the development of a strategy and plans to serve as guide in the implementation of the eHealth agenda. Investment refers to the funding or amount needed for executing the strategies and plans.
5	Infrastructure	Establishes and supports health information exchange, i.e. the sharing of health information across geographical and health sector boundaries, and implementation of innovative ways to deliver health services and information. Infrastructure includes physical technology and software platforms, services and applications to support health information exchange. Examples of these are high-speed data connectivity and computing infrastructure, like computers and mobile devices for the collection, recording and exchange of electronic information, among others.
6	Human Resource	Workforce or manpower to develop, operate or implement the national eHealth environment such as the health workers who will be using eHealth in their line of works, health care providers, information and communication technology workers, and others.
7	eHealth Solutions	Required services and applications to enable widespread access to health care services, health information, health reports, health care activities, and securely share and exchange patient's information in support to health system goals. These address the needs of the various stakeholders like individuals, health care providers, managers, officials, and others. Examples of eHealth solutions are electronic health/medical/personal records, electronic referrals, medications management, distance learning and electronic resources, telemedicine, mobile health, adverse event monitoring, disease surveillance, among others.

C. eHealth Component Map

The eHealth components are presented in one map or diagram with its initial elements or sub-components to achieve the national eHealth environment in the country.



VI. *e*Health Implementation Roadmap

A. Phases of Implementation

The Department of Health has an existing eHealth Strategic Framework where the over-all goal, strategic objectives, indicators, targets, and strategies for 2011-2016 are defined under Chapter 6, Section 6.2 Health Information System of the National Objectives for Health – Philippines 2011-2016. There is a need to reinforce the framework, revitalize its contents, and strengthen the national plan to ensure greater success in achieving the eHealth vision. The National eHealth Toolkit was also used as reference in updating or refining the existing eHealth Strategic Framework. Methodology used to develop and/or update the eHealth Strategic Framework and Plan is as follows:

1. Review of the national health priorities of the country; current eHealth context; assessments, findings and recommendations; planned strategies and activities; and environment to gain better understanding and focus (Document Sources – Universal Health Care or Kalusugan Pangkahalatan, National Objectives for Health 2011-2016, DOH Health Enterprise Architecture Version 1.0, Philippine Health Information System Strategic Plan 2010-2016, Information System Strategic Plan 2011-2013, Information and Communication Technology for Health (ICT4H) Findings and Recommendations, and National Health Information System forum country commitments).
2. Review of the existing eHealth Framework - vision, mission, goals, and objectives and the National eHealth Toolkit.
3. Review of the existing priority focus areas and identification of activities required to deliver the national eHealth vision.
4. Hold series of focus group discussions to comment and provide recommendations on the existing eHealth Strategic Framework and Plan.
5. Review of the outputs of the focus group discussions.
6. Updating or refining of the existing eHealth Strategic Framework and Plan based on the review of outputs.

The eHealth vision is expected to be fully realized by 2020. The journey will be broken down into three (3) major phases, namely:

Phase		Time Frame	Description
Phase 1	Short-Term	2013 – 2014	**Standardize and Connect** – focus is on the establishment of governance and foundations, and provide basic connections to *start* information sharing across the health sector.
Phase 2	Medium-Term	2015 - 2016	**Transform** – Continuing innovations to develop and implement defined national eHealth solutions.
Phase 3	Long-Term	2017 - 2020	**Maintain and Measure** – By this time eHealth has been established and need to be maintained and sustained, continuously measured in terms of performance, and ongoing innovations and updates need to be managed.

B. Action Lines

The eHealth Action Plan describes how to attain the eHealth vision. The plan is formulated in such a way that it has action lines, required resources and strategic phases.The following are the action lines or areas where national activities of similarfocus and intent are grouped together:

Actions Lines		Description	Mapped eHealth Components
1	**Governance**	Establishment of governance structures, mechanisms and processes to provide effective leadership and oversight of the national eHealth agenda.	Governance | Strategy and Investment
2	**Foundations**	Establishment of infrastructures, standards, rules and protocols for effective implementation	Infrastructure | Standards and Interoperability | Legislation,

		of eHealth services, processes and solutions.	Policy and Compliance
3	**e-Health Solutions**	Computing services, processes, solutions, and/or tools to achieve the eHealth vision.	eHealth Solutions (Services and Applications)
4	**Change and Adoption**	Activities to motivate, encourage and require concerned users/stakeholders to adopt eHealth solutions and comply with the requirements.	Human Resource

C. *e*Health Targets

Significant progress is expected to be achieved in the way health information is shared and exchanged to support an efficient and effective health care delivery service in the country. eHealth activities will progress over time and the following deliverables are anticipated for each phases:

Phase		Time Frame	Description
1	**Short-Term**	**2013 – 2014**	**Standardize and Connect**
	GOVERNANCE		
-	**Signed Joint Department of Health and Department of Science and Technology Department Memorandum on the Creation of National Governance Steering Committee and Technical Working Group on eHealth**: To achieve synergy, the Secretary of the Department of Health and the Secretary of the Department of Science and Technology shall constitute the Steering Committee and Technical Working Group to finalize, implement, and monitor the development and implementation of a harmonized Philippines eHealth Strategic Framework and Plan, and align related eHealth initiatives, programs and/or projects in the country in the plan.		
-	**Department Order on the National Health Data Committee and its Implementing Policies, Procedures, and/or Guidelines - Release 001:** A group consisting of the Department of Health, Philippine Health Insurance Corporation, and health experts with the primary role of reviewing and assessing data definitions proposed for inclusion or exclusion in the National Health Data Dictionary, and make recommendations to the Secretary of Health on revisions and additions to each successive version of the dictionary. The creation of the National Health Data Committee supports the National Implementation of Health Data Standards for eHealth Standardization and Interoperability.		
-	**Department Order on Software Data Compliance Body for National Health Data Reporting and its Implementing Policies, Procedures, and/or Guidelines:** A group consisting of the Department of Health, Philippine Health Insurance Corporation and health experts who are authorized to conduct testing and issue software data compliance in accordance to the criteria adopted by the Department of Health. The creation of the Software Data Compliance Body supports the Implementation of Software Data Compliance to National Health Data Reporting.		
-	**Administrative Order on Institutionalizing the National Telehealth Services under the Department of Health – Release 001:** Telehealth is the use of information and communication technologies to deliver health related services and information. It encompasses technology solutions to address the preventive, promotive, and curative aspects of health care. The use of telehealth improves access to health services that are not available locally, minimize burden and cost of transportation, and enhance healthcare or economic empowerment. This Order institutionalizes the National Telehealth Services in the Department of Health as a means to achieve universal health care or *Kalusugan Pangkalahatan,* advance adoption, implementation, and integration of telehealth servicesin the country.		
	FOUNDATIONS		
-	**Administrative Order on the National Implementation of Health Data Standards for eHealth Standardization and Interoperability (eHSI Release 001)**: This Order sets the initial mandatory health data standards that shall be adopted or implemented by the entire health sector. The 66th World Health Assembly held in Geneva, Switzerland last May 2013 has urged member states to consider important actions to be taken on eHealth standardization and interoperability. The Philippines is one of the member states and has pledged to meet commitments in the resolution on		

	the actions to be taken. Item #2 of the resolution considers to develop as appropriate, policies and legislative mechanisms linked to an overall national eHealth strategy, in order to ensure compliance in the adoption of *ehealth and health data standards* by the public and private sectors, as appropriate, and the donor community, as well as to ensure the privacy of personal clinical data.
-	**Administrative Order on the Implementation of Software Data Compliance to National Health Data Reporting:** Accurate, reliable and timely information are needed to support the strategic thrusts on financial risk protection, improved access to quality hospitals and health care facilities, and attainment of health-related Millennium Development Goals. It is critical that quality data must be provided in a timely way for better health care and information technology has a lot to do on this. Standards must be agreed upon and used to achieve interoperability, and therefore use technological resources optimally. This Order promotes interoperability and facilitates the submission of quality data to the national health data reporting systems that comes from various systems that may be used by health facilities.
-	**Philippine Health Enterprise Architecture version 2.0:** An architecture that supports the country's health vision and goals by providing the technology and process structure for an information technology strategy. The health enterprise architecture provides a systematic approach to align information technology with the country's health goals and priorities.
-	**Minimum Data Sets for the Philippine Health Information Exchange Registries.** The Department of Health recognized that sharing and exchange of health information have to be interoperable across different information systems. The minimum data sets have to be agreed upon for mandatory collection and reporting to the Philippine Health Information Exchange. A consensus building activity needs to be undertaken to arrive at the minimum data sets.
-	**Operational Infrastructure.** Infrastructure needed to implement the Philippine Health Information Exchange is in place or operational. o Data Warehouse is available. o Connectivity is established down the barangays. o Registry Database Infrastructure is availabe. o Interoperability Layer Infrastructure is available.
	<u>eHEALTH SOLUTIONS</u>
-	**Telemedicine Pilot I, implemented in GIDA in the Philippines:** A strategy to address the shortage of healthcare providers like doctors and nurses in remote rural areas through information and communication technologies. Telemedicine allows doctors to diagnose and recommend treatment options to patients in geographically isolated and disadvantaged areas (GIDA). It makes possible for doctors to access and transfer medical records, images, and/or audio and visual transmissions.
-	**Developed and Implemented Philippine Health Information Exchange System Phase 1 (Identified Sites):** An integrated system solution that supports health information sharing and exchange of data using nationally defined interoperability standards. The system solution facilitates service delivery to patients by making available the updated information when and where needed to healthcare providers. It enables healthcare providers to easily coordinate care and securely share patient records. Specific deliverables are as follows: o Philippine Health Information Exchange System software version 1.0, a web-based system or service that enables electronic submission of patients' data from healthcare providers using different electronic medical record systems or hospital information systems to a secured location, and provides secured access to view and update the patient's record. o Integrated Clinic Information System (*i*ClinicSys) software of the Department of Health, an electronic medical record system for use by the rural health units and/or barangay health stations. *i*ClinicSys generates a digital copy of the traditional paper-based medical record of an individual, and provides the required data for submission to the national health data reporting, health information exchange, and Philhealth electronic claims and benefits' requirements. o Integrated Hospital Operations and Management Information System (*i*HOMIS) software of the Department of Health, an integrated information system for use by government

	hospitals to manage aspects of hospital operations like administrative, financial, medical and service processing. *i*HOMIS generates a digital copy of the traditional paper-based medical record of an individual, and provides the required data for submission to the national health data reporting, health information exchange, and Philhealth claims and benefits' requirements. o 53 DOH Hospitals using *i*HOMIS
-	**Implemented Philhealth Electronic Claims Systems in Identified Sites.** The updated version of the systems to streamline key processes like membership eligibility check, claims submission, verification, payment, packages like Z Benefits, Benefits for Primary Care Benefits, among others are implemented by all government and private hospitals and rural health units. o 70 DOH Hospitals implementing Philhealth Electronic Claims Systems
-	**Completed RxBox2 Research.** A multi-device biomedical appliance for physiological vital signs like electrocardiography, blood pressure, oxygen saturation measure (SpO2), and pulse rate acquisition, medical telemetry and remote consultation. This is also the redesigning of the RxBox telemedicine device to ensure compliance with medical device requirements of the Philippines based on regulations of the DOH; improve its size, usability, accuracy and flexibility; and increase its capacity to accommodate additional medical modules in a single device. o RxBox2 deployed in 140 RHUs/CHOs
-	**Conducted eHealth Researches.** Researches on eHealth are done and can be implemented. o eHealth applications: tele-parasitology and tele-dermatology
-	**Developed and implemented in phases the eHealth projects under the Department of Budget and Management's Medium-Term Information and Communication Technology Harmonization Initiative.** Projects are as follows: o Philippine Health Information Exchange (integrating/harmonizing health data coming from different electronic medical record systems and hospital information systems) o Development and Implementation of the Health Enterprise Data Warehouse o Integrated Health Goods Licensing Information System o Standards Training and Change Management o Implementation of DOHs Integrated Clinic Information System o Expansion of the DOHs Integrated Hospital Information System o System Enhancement and Implementation of the National Disease Registry
-	**Developed and implemented in phases the Interoperable Health Information System for CHD4A – Calabarzon of the Korea International Cooperation Agency.** Projects for five years are as follows: o Health Information Exchange o Implementation the DOHs Integrated Clinic Information System o Upgrading and Implementation of the Integrated Hospital Operations and Management Information System o Data Warehousing
	CHANGE AND ADOPTION
-	**Conduct of Awareness Activities.** These are activities to communicate the eHealth agenda in the Philippines, like fora, summits, among others.
2	**Medium-Term** | **2015 - 2016** | **Transform**
	GOVERNANCE
-	**Working National Health Data Committee.** Continuous reviewing and assessing the data definitions proposed for inclusion or exclusion in the National Health Data Dictionary, and make recommendations to the Secretary of Health on revisions and additions to each successive version of the dictionary.

-	**Working Software Data Compliance Body for National Health Data Reporting.** Continuous testing and issuance of software data compliance in accordance to the criteria adopted by the Department of Health.		
	FOUNDATIONS		
-	**Philippine Health Enterprise Architecture version 3.0:** An updated version of the previous architecture that supports the country's health vision and goals by providing the technology and process structure for an information technology strategy. The health enterprise architecture provides a systematic approach to align information technology with the country's health goals and priorities.		
-	**National Health Data Dictionary version 3.0.** The updated version of data elements, definitions and/or specifications which are standard in the health sector for national health data reporting and health information exchange.		
-	**Administrative Order on Information Protection:** An approach to data protection to ensure privacy and confidentiality of information being shared or exchanged across the health sector.		
	eHEALTH SOLUTIONS		
-	**Enhancement and Implementation of the Philippine Health Information Exchange System Phase 2 (Replication to Identified Sites):** An updated version of the integrated system solution that supports health information exchanges and sharing of data using nationally defined interoperability standards. Additional implementing sites are included in Phase 2. o 2,500 Rural Health Units/City Health Offices are using iClinicSys or other electronic medical record system		
-	**Implemented Philhealth Electronic Claims Systems in Expansion Sites.** Continuing implementation of the system in identified expansion sites. o 651 public hospitals implementing Philhealth Electronic Claims Systems o Philhealth Electronic Claims Systems are deployed in all hospitals and clinics (85 Million Filipinos covered by e-claims)		
-	**Implemented RxBox2 .** Continuing implementation of the device in identified sites. o RxBox deployed in 1,000 Rural Health Units/City Health Offices		
-	**Conducted eHealth Researches.** Continuing researches on eHealth are done and can be implemented. o Smart Diagnostic Devices		
-	**Developed and implemented proposed projects under the Department of Budget and Management's Medium-Term Information and Communication Technology Harmonization Initiative.** These are proposed projects for 2015.		
-	**Continuing implementation of the Interoperable Health Information System for CHD4A – Calabarzon of the Korea International Cooperation Agency.** Projects are as follows:		
	CHANGE AND ADOPTION		
-	**Conduct of Awareness Activities.** Continuous activities to communicate the eHealth agenda in the Philippines, like fora, summits, among others.		
-	**Enhanced Health Care Provider Licensing or Accreditation.** Adoption of eHealth solutions to promote national health data reporting is mandatory to facilitate changes and compliance.		
3	**Long-Term**	**2017-2020**	**Maintain and Measure**
	GOVERNANCE		

-	**Working National Health Data Committee.** Continuous reviewing and assessing the data definitions proposed for inclusion or exclusion in the National Health Data Dictionary, and make recommendations to the Secretary of Health on revisions and additions to each successive version of the dictionary.
-	**Working Software Data Compliance Body for National Health Data Reporting.** Continuous testing and issuance of software data compliance in accordance to the criteria adopted by the Department of Health.
	FOUNDATIONS
-	**Updated National Health Data Standards for eHealth Standardization and Interoperability**. Based on monitoring and evaluating the implementation of health data standards, there are possible inclusions or exclusions to the existing health data standards. The National Health Data Committee must continuously perform its roles and responsibilities to update the health data standards.
-	**Operations, Maintenance and Monitoring of DOH, Philhealth and DOST Systems**. Current systems or software must be kept updated and monitored by concerned offices to ensure continuing use and achieve intended objectives and benefits. Included in this is the Philippine Health Information Exchange.
	eHEALTH SOLUTIONS
-	**Continuous eHealth Innovations.** DOH, Philhealth, and DOST must continuously perform research and/or develop eHealth solutions to further improve health care delivery service.
	CHANGE AND ADOPTION
-	**Conduct of Awareness Activities.** Continuous activities to communicate the eHealth agenda in the Philippines, like fora, summits, among others.
-	**Continuing Implementation of Health Care Provider Licensing or Accreditation.** Adoption of eHealth solutions to promote national health data reporting is mandatory to facilitate changes and compliance.
-	**Education and Training.** Incorporation of vocational and tertiary training programs to increase the number of skilled practitioners on eHealth.

VII. *e*Monitoring and Evaluation

Monitoring and evaluation is a leadership and governance strategy to track and assess the results of implementing the eHealth roadmap or plan. It measures the performance of the desired ehealth outcomesand addresses the weaknesses or gaps encountered in actual implementation of the eHealth plan. The desired eHealth outcomes serve as indicators to assess the adoption and use of eHealth in the country.There are two (2) components of monitoring and evaluation, i.e. monitoring the execution of the plan (inputs, activities, and outputs as defined in the plan) to keep track of the status of implementation, and monitoring results if the plan delivers the desired outcomes, impact and level of change.

The deliverables from each action lines and activities are the output indicators and the desired eHealth outcomes are the outcome indicators. The output indicators shall be used to measure the adoption of eHealth and outcome indicators for the results of adoption. The indicators to monitor and evaluate the progressive results of implementing the eHealth roadmap or plan are presented in Figure 1.0.Issues, concerns, problems and/or challenges shall be identified and evaluated during monitoring and evaluation for appropriate actions. Regular status reporting and communication shall be provided to ensure delivery of required outputs and attainment of expected outcomes.

For the initial baseline measures for output and outcome indicators, a working group shall be formulated to determine the numbers or figures based on historical data or zero for none. The governance model and processes for national monitoring and evaluation shall be included in the establishment of the national eHealth governance structure to direct, implement, enforce, monitor, and evaluate the national adoption of eHealth in the country.

Indicators to monitor and evaluate the progressive results of implementing the eHealth roadmap or plan

Health System Goal or Challenge	Desired eHealth Outcomes	Indicators (Number and Percentage)
Health Consumers : Safer and quality health care		
- Increase ability to access, control and share their health information. - Minimize time and effort in providing the same health information to different health care providers.	○ Improved access to their health information and maintenance of their personal health record ➢ Controlled access to personal health information ➢ Improved management of their health care plans	○ Increase in the number of health consumers accessing their health information ○ Health consumers' rating of satisfaction (Includes evaluation like reduction in time for health consumers providing the same health information to different health care providers, system uptime, and ability to manage health care plans)
- Minimize health inequalities of those living in remote or rural areas due to poor access to health care. - Address shortage of health human resource affecting those in remote or rural areas	○ Improved access to primary care services for those in rural and remote locations ➢ Reduce travel time to access care ○ Improved access to knowledge, services and resources to assist in managing one's health ➢ Support early detection and treatment of diseases ➢ Better management of health conditions and adherence to medication and treatment regimes	○ Increase in the number of primary care consultations made via telemedicine ○ Increase in the number of rural and remote health consumers being able to access primary care services ○ Health consumers' rating of satisfaction (Includes evaluation like reduction in travel time, system uptime, and availability of quality information)
Health Care Providers : Make more informed decisions		
- Improve ability to make informed decisions at the point of care. - Minimize time and effort in performing same or duplicate treatment services or performing unnecessary ones. - Improve ability to issue orders, prescribe medications, and refer individuals to other health care providers.	○ Improved access to an integrated/single view of the patients' health information at the point of care ➢ Improved sharing and exchanging of health information across different geographical locations and all parts of the health sector ○ Improved access to systems and health information like clinical decision support tools, medications, clinical knowledge, skills development and others ➢ Improved access to doctors' ordering system, medicine prescription and referrals ○ Improved collaboration and coordination among health care providers, and interactions with health consumers	○ Increase in the number of accesses to services, systems, and health information ○ Health care providers' rating of satisfaction (Includes evaluation like decrease in time gathering health consumers' record or information like medical histories, increase in the number of discharges by health care providers)
- Improve ability to monitor the effectiveness of health care services	Improved monitoring and tracking of patients	○ Increase in the number of accesses to monitoring and tracking services

	rendered like treatments and diagnosis, and outcomes.		○ Health care providers' rating of satisfaction (Includes evaluation on the effectiveness of data for monitoring and evaluation)
-			
Health Care Managers, Policy Makers and Researchers : Effective program/research development, implementation and monitoring			
-	Minimize or eliminate increasing incidence or spread of diseases in the country like HIV/AIDS, chronic diseases, and others.	○ Improved access to reliable health information like health statistics, disease prevention, treatment of diseases, decision support tools, clinical knowledge, planning, and delivery of health services ➢ Improved planning for the minimizing or eliminating spread of diseases ➢ Efficient and effective monitoring and response to outbreaks and emergencies ➢ Effective management of the supply and distribution system like availability of essential medicines and vaccines ○ Greater access to information to support decision making and treatment	○ Increase in the number of accesses/visits to portals ○ End-users' rating of satisfaction (Includes evaluation like decrease in time to report occurrence of disease outbreaks to support decision-making and allocation or required resources, decrease in time to detect, intervene, analyze or address emerging disease outbreaks or threats)
-	Meet increasing demands or expectations brought about by new/emerging technologies.	○ Improved access to reliable health information like eHealth innovations and solutions	○ Increase in the number of accesses to services, systems, and health information ○ End-users' rating of satisfaction (Includes evaluation on usability or knowledge gained)
-	Improve ability to make informed decisions like developing and implementing program interventions to address health issues and concerns, conducting surveillance activities, improving clinical practices and treatments, and monitoring.	○ Improved access to reliable health information like health programs, activities, treatments, outcomes, fund management, and others. ➢ Improved monitoring of health activities and data sources ➢ Access to quality data for information and monitoring ➢ Improved access to medical literature, knowledge resources and networks ○ Strengthened capability building of the health workforce	○ Increase in the number of accesses to services, programs, activities and health information ○ Increase in the number of participants in eLearning training or electronic-based education or training programs ○ End-users' rating of satisfaction (Includes evaluation on accesses and training)

VIII. *e*Health Estimated Cost

National eHealth Estimated Cost is **Php 296,944,000.00**

Action Lines and Activities			Strategy	Quantity	Unit Cost	No. of Days	No. of Sessions	Transporta-tion	Amount
A. Foundation Strengthening									
1	**Governance**		Meetings	50	1,800.00	2	8		1,440,000.00
2	**Legislation, Policy and Compliance**		Meetings	50	1,800.00	5	8		3,600,000.00
			Public Hearings	500	900.00	4	2		3,600,000.00
3	**Human Resources**		Meetings	50	1,800.00	2	8		1,440,000.00
	-	eHealth Sustainability Plan to define mechanisms to sustain and/or provide resources and incentives for the adoption of ICT and health standards.	Consulting Services						1,500,000.00
	-	eHealth Comprehensive Capability Plan or Roadmap (framework/model, sustainability, setup of Training Center, among others).	Consulting Services						2,000,000.00
	-	Development and Implementation of eHealth Change and Adoption Plan (eHealth Awareness Campaigns and other communication programs or activities) towards change and adoption of eHealth.	Consulting Services						5,000,000.00
4	**Standards and Interoperability**								
	-	Review existing standards, finalize and formulate issuance on eHealth Data Standards like Unique National Health Identification Code, Electronic Health Record, Communication Standards, Health Information Protection, Confidentiality and Security, Data Sharing Policies and Protocols, among others and if available.	Meetings	50	1,800.00	2	8		1,440,000.00
			Workshops	100	900.00	3	4		1,080,000.00

Action Lines and Activities			Strategy	Quantity	Unit Cost	No. of	No. of	Transporta-	Amount
	-	Conduct regular Philippine HIS Fora/Health Information Technology (HIT) Fora, and health stakeholders meeting (Decision makers, researches, academe, politicians, others) to present the Health Enterprise Architecture, eHealth Framework, Plan, and existing eHealth Standards for Interoperability (Member ID, Provider ID, Facility ID, FDA Drug Codes, ICD-10, among others), use of ICT in health, and regular updates on DOH and stakeholders' respective initiatives or undertakings.	Forum	200	1,800.00	4	4		5,760,000.00
	-	Formulate Segment HEA.	Meetings	200	1,800.00	3	2		2,160,000.00
	-	Data Management Standards to define sources of data/information, needs, data flows, data sharing, use of health information and dissemination, protocols and policies at all levels.	Consulting Services						3,000,000.00
	-	Risk Management Standards to identify risks and how to address or manage accordingly at all levels in implementing the eHealth Plan.	Consulting Services						1,500,000.00
	-	eHealth Performance Monitoring and Evaluation Standards (model, indicators, criteria, processes, among others) to track and assess the implementation of the eHealth Plan.	Consulting Services						2,000,000.00
5	**Infrastructure**								
	-	Formulate Terms of Reference (TOR) for the Infrastructure Needs, Development of Data Connectivity Design, Capacity Planning, Cloud Computing, and Implementation to determine how data connectivity can be achieved by the entire health sector, and accommodate the eHealth knowledge repository.	Consulting Services						5,000,000.00
	-	Upgrade Central Office, CHDs, and DOH Hospitals' infrastructure to accommodate Data Warehousing and eHealth knowledge repository, and compliance to data reporting.	Based on Information System Strategic Plan for 2014-2016						20,000,000.00
B. Solutions Development and Harmonization									
-	-	<Refer to Terms of Reference for the cost>							

Action Lines and Activities				Strategy	Quantity	Unit Cost	No. of	No. of	Transporta-	Amount
		Identify and prioritize applicable applications and services to be developed and implemented, e.g Electronic Health Record.		Meetings	100	1,800.00	2	4		1,440,000.00
		-	Software Development of applications and services based on the List of Applicable eHealth Solutions.	Consulting Services	13	3,000,000.00				39,000,000.00
		-	Public Private Partnership/Consulting Services - Operation and Maintenance of eHealth Solutions	PPP/ Consulting Services						20,000,000.00
		-	DOH Data Warehouse and Mining							3,000,000.00
C. Implementation and Operations Management										
	-	Implement the eHealth Sustainability Plan, eHealth Comprehensive Capability Plan or Roadmap, and eHealth Change and Adoption Plan		Training	1,000	1,800.00	5	2		18,000,000.00
	-	Implement the Risk Management Standards | eHealth Performance Monitoring and Evaluation Standards | Health Data Reporting Protocol.		Training	1,000	1,800.00	5	2		18,000,000.00
	-	Implement the Infrastructure Needs, Data Connectivity Design, Capacity Planning, Cloud Computing, and Implementation.		Training	1,000	1,800.00	5	2		18,000,000.00
				Technology Implementation - Subscription Cost, e.g. Cloud, others	1	100,000.00	1	48		4,800,000.00
	-	Implement the softwares based on the List of Applicable eHealth Solutions, manage the Operation and Maintenance of eHealth Solutions, and implement the DOH Data Warehouse and Mining.		Training	1,000	1,800.00	20	1		36,000,000.00
	-	Implement the eHealth Plan, eHealth Governance Structure and designation of DOH Chief Information Officer		Meeting	100	1,800.00	1	1		180,000.00

Action Lines and Activities			Strategy	Quantity	Unit Cost	No. of	No. of	Transporta-	Amount
	-	Implement Implementing Policies, Guidelines and Procedures for the Execution and Management of the eHealth Plan, Implementing Policies, Guidelines and Procedures on eHealth Standards and use of ICT, Implementing Policies, Guidelines and Procedures on eHealth Standards and use of ICT, and System Integration Model and Implementing Policies and Guidelines	Training	500	1,800.00	2	2		3,600,000.00
	-	Implement Segment HEA.	Training	500	1,800.00	3	1		2,700,000.00
D. Monitoring and Evaluation									
	Monitor the implementation of the following:		Review of answered Monitoring Forms	30	1,800.00	3	16		2,592,000.00
			Onsite Monitoring	30	1,800.00	3	16	5,600,000.00	8,192,000.00
E. Maintenance and Integration			Hiring of Contractuals	20	30,000.00	12			7,200,000.00
	-	Update the HEA.	Meetings	50	900.00	1	4		180,000.00
	-	Update the DOH Information System Strategic Plan.	Meetings	50	900.00	1	3		135,000.00
	-	Make an inventory of health information to determine sources of health information in the country.	Meetings	50	900.00	3	3		405,000.00
	-	Establish a centralized library to serve as repository of all knowledge products and outputs harvested.	Consulting Services						5,000,000.00
	-	Harmonize existing information systems.	Consulting Services	5					15,000,000.00
	-	Expand knowledge management hubs.							15,000,000.00
F. RESEARCH AND DEVELOPMENT									

Action Lines and Activities			Strategy	Quantity	Unit Cost	No. of	No. of	Transporta-	Amount
	-	Conduct feasibility study on the establishment of National eHealth Research and Innovation Center in the DOH that will focus on how technology can contribute to a healthy lifestyle, improved or better disease management, cost effectiveness in health care, and other relevant subject matters.							3,000,000.00
	-	Establish the National eHealth Research and Innovation Center.							10,000,000.00
	-	Conduct eHealth researches.							5,000,000.00
		TOTAL AMOUNT							**296,944,000.00**