

# Philippines eHealth Strategic Framework and Plan 2014-2020

**Department of Health  
Department of Science and Technology  
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## I. Introduction

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 58<sup>th</sup> and 66<sup>th</sup> World Health Assembly Resolution. The 58<sup>th</sup> 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 66<sup>th</sup> 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. Purpose**

The Philippines eHealth Strategic Framework and Plan (PeHSFP) describes how the eHealth vision will be achieved to guide national coordination and collaboration, and sets clear direction and guidance to the ongoing and future eHealth activities in the country.

### III. Organization

The PeHSFP is organized into four (4) major sections, namely:

- eHealth Context in the Philippines
- eHealth Strategic Framework
- eHealth Action Plan
- eHealth Monitoring and Evaluation

### IV. Acronyms Used

DOH	Department of Health
DPO	Department Personnel Order
HEA	Health Enterprise Architecture
HIS	Health Information System
ICT	Information and Communication Technology
ICT4H	Information and Communication Technology for Health
KM	Knowledge Management
KP	Kalusugan Pangkahalatan
NOH	National Objectives for Health
PHIN	Philippine Health Information Network
PHIS	Philippine Health Information System
PNIDMS	Philippine Network for Injury Data Management System

### V. eHealth Context 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 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.

## **VI. eHealth Strategic Framework**

### **A. eHealth Plan Development Methodology**

The Department of Health has an existing eHealth Strategic Framework where the overall 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 Pangkalahatan, NOH 2011-2016, DOH HEA Version 1.0, PHIS Strategic Plan 2010-2016, Information System Strategic Plan 2011-2013, ICT4H Findings and Recommendations, and National HIS 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.

## **B. National Health System Goals**

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.*

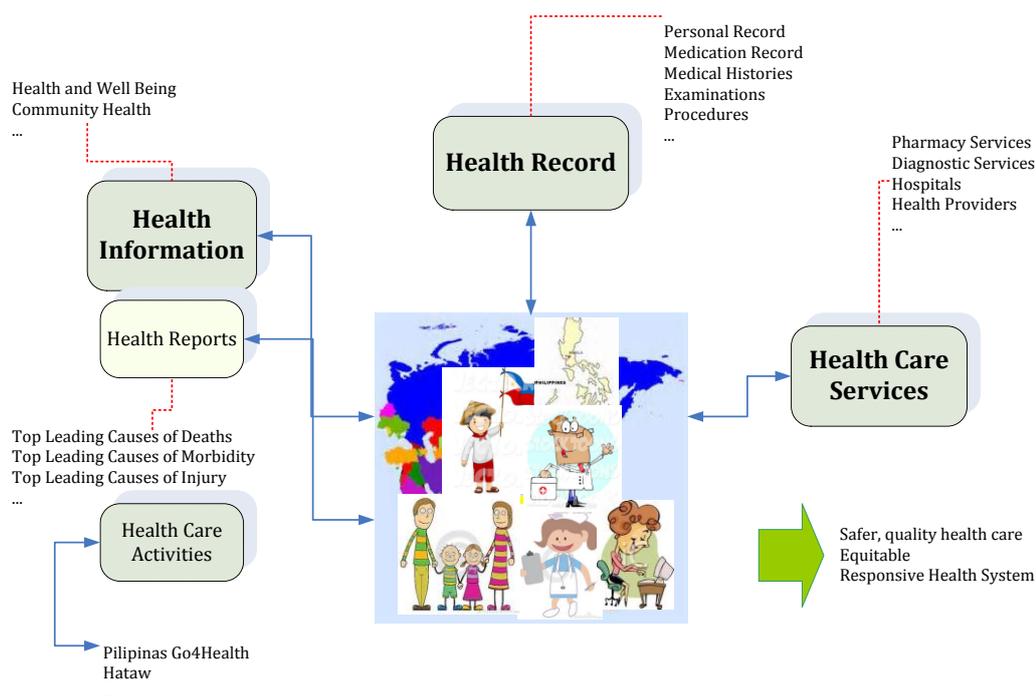
## **C. eHealth Strategic Guiding Principles**

The guiding principles in the development of Philippines eHealth Strategic Framework are as follows:

1. Client-focus or person centered information
2. Collaboration and/or partnerships with different stakeholders
3. Users' Involvement
4. Strategic approach in phases to achieve the eHealth vision so as to gain more focus, judiciously and efficiently use resources
5. Harmonization and Independence to guide alignment of eHealth activities at the national level without controlling health care providers to implement local eHealth solutions
6. Recognize the presence of entities that have already started eHealth so as not to constraint their continuing advancement and gain their support
7. Availability of human resource to implement the eHealth agenda in the country and promote transparency and public accountability
8. Compliance to laws and regulations
9. Optimize use of resources so as not to duplicate time, effort and investments

## D. eHealth Vision

**By 2020 eHealth** 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.

## E. Desired eHealth Outcomes

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

Health System Goal or Challenge	Desired eHealth Outcomes
<b>Health Consumers : Safer and quality health care</b>	
- Increase ability to access, control and share their health information.	○ Improved access to their health information and maintenance of their personal health record
- Minimize time and effort in providing the same health information to different health care providers.	➤ 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.	○ Improved access to primary care services for those in rural and remote locations ➤ Reduce travel time to access care
- Address shortage of health human resource affecting those in remote or rural areas	○ 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
<b>Health Care Providers : Make more informed decisions</b>	
- Improve ability to make informed decisions at the point of care.	○ Improved access to an integrated/single view of the patients' health information at the point of care
- Minimize time and effort in performing same or duplicate treatment services or performing unnecessary ones.	➤ Improved sharing and exchanging of health information across different geographical locations and all parts of the health sector
- Improve ability to issue orders, prescribe medications, and refer individuals to other health care providers.	○ 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

		<ul style="list-style-type: none"> <li>○ Improved collaboration and coordination among health care providers, and interactions with health consumers</li> </ul>
-	Improve ability to monitor the effectiveness of health care services rendered like treatments and diagnosis, and outcomes.	Improved monitoring and tracking of patients
-		
<b>Health Care Managers, Policy Makers and Researchers : Effective program/research development, implementation and monitoring</b>		
-	Minimize or eliminate increasing incidence or spread of diseases in the country like HIV/AIDS, chronic diseases, and others.	<ul style="list-style-type: none"> <li>○ 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 <ul style="list-style-type: none"> <li>➤ Improved planning for the minimizing or eliminating spread of diseases</li> <li>➤ Efficient and effective monitoring and response to outbreaks and emergencies</li> <li>➤ Effective management of the supply and distribution system like availability of essential medicines and vaccines</li> </ul> </li> <li>○ Greater access to information to support decision making and treatment</li> </ul>
-	Meet increasing demands or expectations brought about by new/emerging technologies.	<ul style="list-style-type: none"> <li>○ Improved access to reliable health information like eHealth innovations and solutions</li> </ul>
-	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.	<ul style="list-style-type: none"> <li>○ Improved access to reliable health information like health programs, activities, treatments, outcomes, fund management, and others. <ul style="list-style-type: none"> <li>➤ Improved monitoring of health activities and data sources</li> <li>➤ Access to quality data for information and monitoring</li> <li>➤ Improved access to medical literature, knowledge resources and networks</li> </ul> </li> <li>○ Strengthened capability building of the health workforce</li> </ul>
-	Minimize time and effort in collecting, consolidating, and integrating information from different sources.	Improved sharing and exchange of reliable and quality information

## F. eHealth Key Result Areas

Key result areas are identified to measure the success of the Philippines national eHealth strategy. The widespread access to health care services, health information, and secured sharing and exchange of patients' information are expected to bring improvements in

the way health information is used to support a safer, quality health care, more equitable and responsive health system for all the Filipino people.

### **Health Consumers: Safer and quality health care**

- There is a national health identifier that is unique for each person.
- There is access to quality and reliable health information.
- Health consumers have access to individual electronic health records.
- Health consumers can access and manage their personal health records.
- Health consumers can interact with their health care providers.
- Health consumers' health information can be shared and exchanged across the health sector in compliance to established standards, rules and protocols.
- Health consumers in remote areas can use electronic consultations or telehealth capabilities.
- Health consumers can experience high speed broadband connectivity.
- There are online health reporting systems to generate quality information as support to decision making and health care delivery.

### **Health Care Providers : Make more informed decisions**

- There is an identification that is unique for each health care provider.
- There is access to quality and reliable health information.
- Health providers have access to an integrated/single view of the patients' health information at the point of care.
- Health providers have access to health information like clinical decision support tools, medications, clinical knowledge, skills development and others.
- Health providers can collaborate or coordinate with other health care providers, and interact with health consumers.
- Health providers can securely share and exchange health information across different geographical locations and all parts of the health sector, as governed by information sharing and exchange protocols.
- Health providers can provide electronic consultations or telehealth services.
- There are online test/examination ordering system and results reporting, referrals, and prescriptions.
- Health providers can experience high speed broadband connectivity.

### **Health Care Managers, Policy Makers and Researchers : Effective program/research development, implementation and monitoring**

- There is access to quality and reliable health information for improved analysis, utilization, decision making and research purposes.
- Health care managers have available tools to support the monitoring of health system activities and outcomes.
- There are defined health data standards and processes for eHealth solutions' development and compliance.

## **VII. eHealth Action Plan**

### **A. eHealth 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

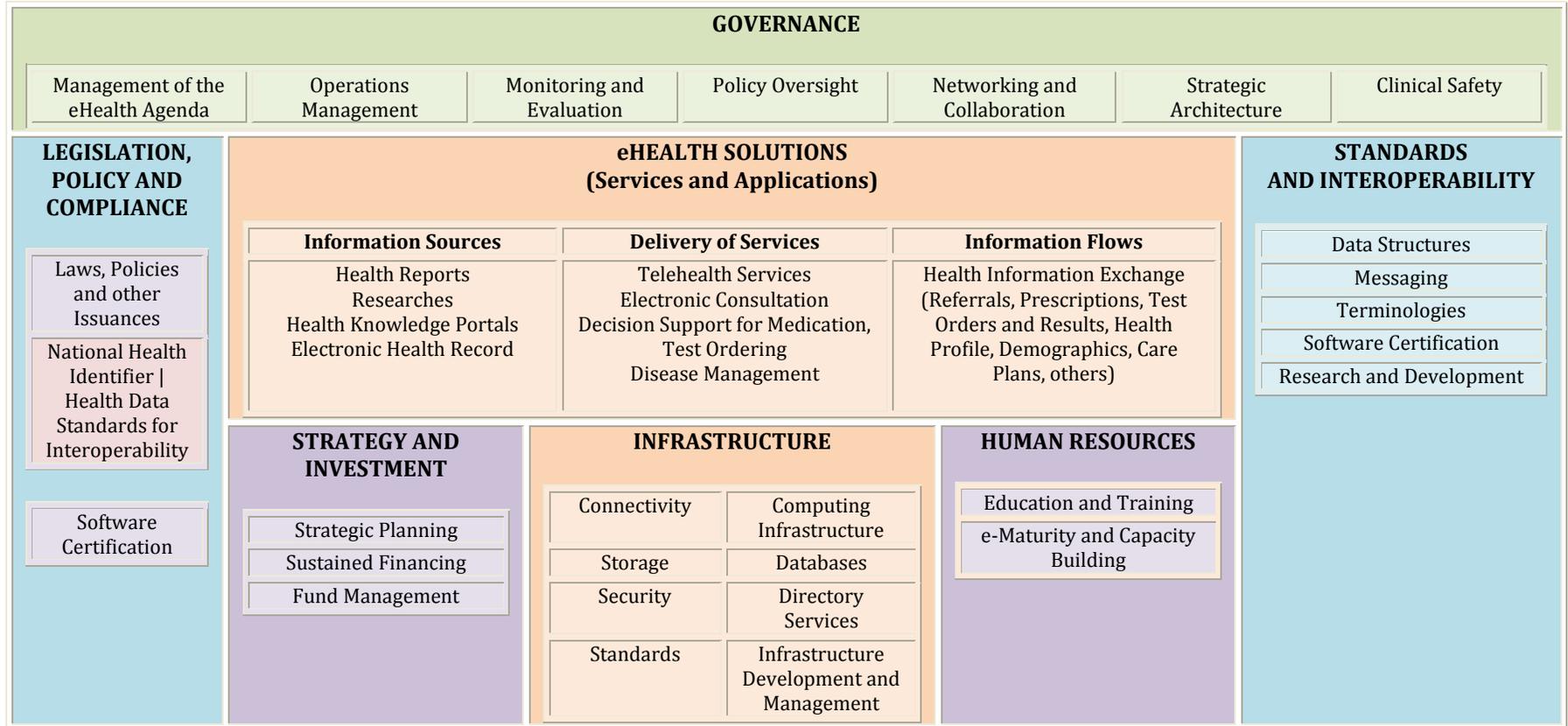
reviewed together with the National eHealth Strategy Toolkit. Updated components are governance, strategy and investment, eHealth solutions (services and applications), standards and interoperability, infrastructure, legislation/policy and compliance, and human resource.

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.
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## B. 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.



## C. Strategic Phases

A staged approach shall be done to realize the eHealth vision.

Phase		Time Frame	Description
Phase 1	Short-Term	2013 - 2014	<b>Standardize and Connect</b> – focus is on the establishment of governance and foundations, and provide basic connections to <i>start</i> information sharing across the health sector.
Phase 2	Medium-Term	2015 - 2016	<b>Transform</b> – Continuing innovations to develop and implement defined national eHealth solutions.
Phase 3	Long-Term	2017 - 2020	<b>Maintain and Measure</b> – 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.

## D. 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 similar focus 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 of eHealth services, processes and solutions.	Infrastructure   Standards and Interoperability   Legislation, 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

## E. Milestones and Deliverables

The Department of Health, Philippine Health Insurance Corporation, and Department of Science and Technology have identified the following major milestones:

#	Outputs	Target Number	Time Frame	Responsible Entities
1	Hospitals under the Department of Health are using the Philhealth eClaims System	70	By December 2014	Department of Health and Philhealth
2	Hospitals under the Department of Health are using the DOH Integrated Hospital Operations and Management Information System (iHOMIS) with Philhealth eClaims Systems	51	By December 2014	Department of Health and Philhealth
3	Rural health units are using the DOH electronic medical record system, i.e. Integrated Clinic System (iClinicSys) with Philhealth eClaims Systems	2,500	By 2015	Department of Health and Philhealth
4	Public Hospitals are using the Philhealth eClaims System	651	By December 2015	Philhealth
5	Rural Health Units and/or City Health Offices are using the Philhealth eClaims System	1,634	By December 2015	Philhealth
6	Filipinos covered by e-Claims (Philhealth e-Claims Systems are deployed in all hospitals and clinics)	85,000,000	By December 2016	Philhealth
7	eHealth Projects under the Medium Term Information and Communication Technology Initiative developed ( <sup>1</sup> Philippine Health Information Exchange, <sup>2</sup> National Disease Registry, <sup>3</sup> Philippine Health Enterprise Data Warehouse, <sup>4</sup> iHOMIS Partial Expansion, <sup>5</sup> Provision for interconnecting RHUs/Regional Hospitals, <sup>6</sup> Standards (SNOMED, HL7, Loinc, etc), Training, change management --	8 projects done	By December 2014	Department of Health, Philhealth, and Department of Science and Technology  (Department of Budget and Management Budget)

#	Outputs	Target Number	Time Frame	Responsible Entities
	Implementation of Health Data Standards for eHealth Standardization and Interoperability, and <sup>7</sup> Integrated Health Goods Licensing Information System (IHG-LIS) Phase 3, <sup>8</sup> iClinicSys – EMR Implementation			
8	Interoperable Health Information System for CHD4A – CALABARZON	All government hospitals and rural health units under CHD4A	2014-2018	Department of Health (Korea International Cooperation Agency Budget)
9	RxBox deployed in Rural Health Units and/or City Health Offices	140  1,000	By December 2014  By December 2015	Department of Science and Technology – Philippine Council for Health Research and Development
10	Tele-parasitology and tele-dermatology implemented	<# of sites to be determined>	By December 2014	Department of Science and Technology – Philippine Council for Health Research and Development
11	Smart diagnostic devices implemented	<# of sites to be determined>	By December 2015	Department of Science and Technology – Philippine Council for Health Research and Development
12	Tele-referrals and/or tele-consultations implemented	<# of sites to be determined>	By December 2014	Department of Science and Technology – Philippine Council for Health Research and Development
13	Government Data Warehouse Established (E.g. Cloud Computing)	1 Central Data Warehouse	By December 2014	Department of Science and Technology – Information and Communication Technology Office

#	Outputs	Target Number	Time Frame	Responsible Entities
14	Connectivity established down to the barangays	All rural health units & barangay health stations	By December 2014	Department of Science and Technology – Information and Communication Technology Office
15	Registry Database(s) Infrastructure and Interoperability Layer Established	1 Registry Database and Interoperability Layer	By December 2014	Department of Science and Technology – Advanced Science and Technology Institute

Expected deliverables or outputs for each phases is as follows:

Phase		Time Frame	Deliverables
Phase 1	Short-Term	2013 – 2014	<p><b>Standardize and Connect</b> – focus is on the establishment of governance and foundations, and provide basic connections to <i>start</i> information sharing across the health sector. By <b>2014</b>:</p> <p><b>a. Governance</b></p> <ul style="list-style-type: none"> <li>i. Creation of a Joint Department of Health and Department of Science and Technology National Governance Steering Committee and Technical Working Group on eHealth (For the Development of the eHealth</li> <li>ii. Creation and Operations of the National eHealth Governance (Public and Private Composition) and its Implementing Policies, Procedures and Guidelines</li> <li>iii. Creation and Operations of the National Health Data Committee and its Implementing Policies, Procedures, and/or Guidelines</li> <li>iv. Creation of the Software Data Compliance Body for National Health Data Reporting</li> </ul> <p><b>b. Standards Setting and Implementation</b></p> <ul style="list-style-type: none"> <li>i. Creation of the Administrative Order on the National Implementation of Health Data Standards for eHealth Standardization and Interoperability (eHSI Release 001 – First Release)</li> <li>ii. Creation of the Administrative Order on the National Implementation of Health Data Standards for eHealth Standardization and Interoperability (eHSI Release 002 for Health Information Exchange)</li> <li>iii. Creation of an Administrative Order on the Implementation of Software Data Compliance to National Health Data Reporting</li> <li>iv. Creation of an Administrative Order on the Implementation of the Philippine Health Information Exchange and its Implementing Policies, Procedures, and/or Guidelines</li> <li>v. Creation of Administrative, Legal, Ethics, Research and Finance Policies</li> <li>vi. Updating of the Health Enterprise Architecture to Version 2.0</li> </ul> <p><b>c. eHealth Solutions Development and Implementation</b></p> <ul style="list-style-type: none"> <li>i. Updating of the National Health Data Dictionary to Version 3.</li> <li>ii. Development and Implementation of the Philippine Health Information Exchange – Phase 1</li> </ul>

			<ul style="list-style-type: none"> <li>iii. Implementation of the DOH Integrated Clinic Information System (iClinicSys), an electronic medical record system for rural health units and barangay health stations (integrated with Philhealth Systems' eClaim Packages, Watching Over Mothers and Babies, Philhealth's Strengthening and Guaranteeing Insurance for the Poor (SAGIP), and the Department of Social Welfare and Development Sustaining Interventions in Poverty Alleviation and Governance (SIPAG) system)</li> </ul> <p><b>d. Infrastructure</b></p> <ul style="list-style-type: none"> <li>i. Assessment on existing infrastructure (connectivity, data warehouse, and others)</li> <li>ii. Completion of Fiber Optics Connection</li> <li>iii.</li> </ul> <p><b>e. Human Resource</b></p> <ul style="list-style-type: none"> <li>i. Needs Assessment on Human Resource (Information Technology, Engineering, Business Process Outsourcing, and others)</li> <li>ii. Development of Human Resource Training Plan (Requirements, Training Modules, Target Schedules, and others)</li> <li>iii. Training Implementation <ul style="list-style-type: none"> <li>i. Developed Health Information Exchange System Version 1.0 and updated/harmonized ClinicSys and Integrated Hospital Operations and Management Information System with Philhealth Systems and RxBox</li> <li>b. Identified Minimum Data Sets for Data Sharing and Exchange</li> <li>c. Identified Pilot 1 Implementing Sites</li> <li>d. Designed Workflows and Test Cases</li> <li>e. Developed software of the Health Information Exchange System Version 1.0</li> </ul> </li> <li>v. Implemented Health Information Exchange System Version 1.0 in Pilot 1 Sites <ul style="list-style-type: none"> <li>a. Trained Pilot 1 Sites in Implementing Health Information Exchange Version 1.0. Systems include: <ul style="list-style-type: none"> <li>i. Health Information Exchange System Version 1.0</li> <li>ii. ClinicSys, an Electronic Medical Record for Rural Health Units (Harmonized with Philhealth requirements on Primary Care Benefit, Z-Benefit Package, and others) – 1,000 Rural Health Units</li> <li>iii. ClinicSys + RxBox</li> <li>iv. Integrated Hospital Operations and Management Information System (Harmonized with Philhealth requirements on Z-Benefit Package, eClaims Processing, and others) – 70 DOH Hospitals</li> </ul> </li> </ul> </li> </ul>
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			<ul style="list-style-type: none"> <li>vi. Implemented Software Data Compliance to National Health Data Reporting</li> <li>vii. Monitored Pilot 1 Implementing Sites using Health Information Exchange System Version 1.0</li> <li>viii. Expanded Implementation of the Unified Multi-purpose Identification Card to Philhealth Members</li> <li>ix. Implemented Philhealth e-Claims to accredited health service providers</li> </ul>
Phase 2	Medium-Term	2015 - 2016	<p><b>Transform</b> – Continuing innovations to develop and implement defined national eHealth solutions. By <b>2016</b>:</p> <p><b>Standards Setting and Implementation</b></p> <ul style="list-style-type: none"> <li>i. Updating of Policies</li> </ul> <p><b>Infrastructure</b></p> <ul style="list-style-type: none"> <li>i. Operational Support and Maintenance of Infrastructure</li> </ul> <p><b>Human Resource</b></p> <ul style="list-style-type: none"> <li>i. Continuing Education and Evaluation</li> <li>ii.</li> </ul> <ul style="list-style-type: none"> <li>x. Updated Relevant National Implementation of Health Data Standards for eHealth Standardization and Interoperability</li> <li>xi. Enhanced Health Information Exchange System to Version 2.0 <ul style="list-style-type: none"> <li>a. Completed Data Sets for Data Sharing and Exchange</li> <li>b. Identified Replication Sites</li> <li>c. Updated Workflows and Test Cases</li> <li>d. Updated software of the Health Information Exchange System Version 2.0, ClinicSys, and Integrated Hospital Operations Management and Information System with Philhealth Systems and RxBox</li> </ul> </li> <li>xii. Implemented Health Information Exchange System Version 2.0 in Pilot 1 and Replication Sites <ul style="list-style-type: none"> <li>a. Trained Pilot 1 and Replication Sites in Implementing Health Information Exchange Version 2.0. Systems include:</li> </ul> </li> </ul>

			<ul style="list-style-type: none"> <li>i. Updated ClinicSys, an Electronic Medical Record for Rural Health Units (Harmonized with Philhealth requirements on Primary Care Benefit, Z-Benefit Package, and others) – 1,000 existing Rural Health Units and additional 1,000 Replication Sites</li> <li>ii. Updated Integrated Hospital Operations and Management Information System (Harmonized with Philhealth requirements on Z-Benefit Package, eClaims Processing, and others – Existing 70 DOH Hospitals</li> <li>xiii. Implemented Software Data Compliance to National Health Data Reporting</li> <li>xiv. Monitored Pilot 1 and Replication Sites using Health Information Exchange System Version 2.0</li> <li>xv. Continuing Implementation of the Unified Multi-purpose Identification Card to Philhealth Members</li> <li>xvi. Continuing Implementation of the Philhealth e-Claims to accredited health service providers (New accredited private health services providers)</li> </ul>
Phase 3	Long-Term	2017 - 2020	<p><b>Maintain and Measure</b> – 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. By <b>2020:</b></p> <ul style="list-style-type: none"> <li>xvii. Updated Relevant National Implementation of Health Data Standards for eHealth Standardization and Interoperability</li> <li>xviii. Enhanced Health Information Exchange System to Version 3.0 <ul style="list-style-type: none"> <li>a. Identified enhancements based on monitoring Pilot 1 and Replication Sites</li> <li>b. Updated Workflows and Test Cases</li> <li>c. Updated software of the Health Information Exchange System Version 3.0, ClinicSys, and Integrated Hospital Operations Management and Information System with Philhealth Systems and RxBox</li> </ul> </li> <li>xix. Expanded implementation of Health Information Exchange System Version 3.0 to cover the entire country <ul style="list-style-type: none"> <li>a. Trained sites in Implementing Health Information Exchange Version 3.0. Systems include: <ul style="list-style-type: none"> <li>i. Updated ClinicSys, an Electronic Medical Record for Rural Health Units (Harmonized with Philhealth requirements on Primary Care Benefit, Z-Benefit Package, and others) – Remaining Sites</li> <li>ii. Updated Integrated Hospital Operations and Management Information System (Harmonized with Philhealth requirements on Z-Benefit Package, eClaims Processing, and others) – Existing 70 DOH Hospitals</li> </ul> </li> </ul> </li> <li>xx. Implemented Software Data Compliance to National Health Data Reporting</li> <li>xxi. Monitored sites using Health Information Exchange System Version 3.0</li> <li>xxii. Full Coverage of the Unified Multi-purpose Identification Card to Philhealth Members</li> </ul>

			xxiii. Continuing Implementation of the Philhealth e-Claims to accredited health service providers (New accredited private health services providers)
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## F. eHealth Roadmap

The identified activities in the eHealth Plan are **high-level** in nature. The detailed activities and tasks can be defined later as part of planning the individual action lines. Activities are defined as to the scope, time frame, and dependencies.

**S** = Standardize and Connect | **T** = Transform | **M** = Maintain and Measure

Action Lines and Activities		S		T		M				Deliverables / Outputs
		2013	2014	2015	2016	2017	2018	2019	2020	
Governance	1	x								Joint Department of Health and Department of Science and Technology National Governance Steering Committee and Technical Working Group on eHealth
	2	x								Created Administrative Order on the Implementation of Software Data Compliance to National Health Data Reporting
	4	x								Updated Health Enterprise Architecture to Version 2.0
	5	x	x	x	x	x	x	x	x	Established operating structures for eHealth governance, software compliance, eHealth fund management and health enterprise architecture
Foundations	1	x								Created Administrative Order on the National Implementation of Health Data Standards for eHealth Standardization and Interoperability (eHSI Release 001)
			x							Created Administrative Order on the

Action Lines and Activities		S		T		M				Deliverables / Outputs
		2013	2014	2015	2016	2017	2018	2019	2020	
										National Implementation of Health Information Exchange for eHealth Standardization and Interoperability (eHSI Release 002)
2	Define priority eHealth services, processes and/or solutions.	x								Approved priority eHealth services/processes/solutions like health information exchange, referrals, prescribing, care planning, diagnosis, national electronic health records, and others.
3	Establish incentive mechanism(s) to encourage health care providers and other concerned stakeholders to invest in computing infrastructure for eHealth and adopt use of eHealth solutions.	x	x							Approved order/Issuance in the Implementation of Incentive Mechanism for Adoption of eHealth
4	Implement and enhance eHealth data standards, services, processes and/or solutions.	x	x	x	x	x	x	x	x	Established implementation, monitoring and evaluation of eHealth data standards, services, processes and/or solutions
5	Develop new standards, services, and/or processes.			x	x	x	x	x	x	Approved updates on new standards, services, and/or processes
6	Collaborate with concerned government and telecommunication companies to expand/upgrade broadband services even to remote areas for upgrading infrastructure (network/broadband/devices specifications and coverage).	x	x	x	x					<ul style="list-style-type: none"> <li>o Established data/telecommunication connectivity or access infrastructure to rural and remote areas</li> <li>o Deployed computing/mobile devices to rural and remote areas</li> </ul>
7	Maintain infrastructure.					x	x	x	x	Operational infrastructure

Action Lines and Activities		S		T		M				Deliverables / Outputs	
		2013	2014	2015	2016	2017	2018	2019	2020		
	8	Implement software compliance certification.	x	x	x	x	x	x	x	x	Certified eHealth software
eHealth Solutions	1	Establish fund.	x								Approved order/Issuance on fund allotment
	2	Develop eHealth services, processes, and/or solutions.	x	x	x	x	x	x	x	x	<ul style="list-style-type: none"> <li>○ Replicated/expanded National telemedicine service</li> <li>○ Established National Electronic Health Record</li> <li>○ Developed relevant SMS applications like support to health knowledge, education and awareness; surveillance applications, and others</li> <li>○ Provided awareness, training and education on telemedicine</li> <li>○ Established/expanded appropriate portals for health knowledge, health care providers, mobile knowledge, systems/applications, e-learning and others</li> <li>○ Enhanced national disease management and reporting system</li> </ul>
	3	Maintain eHealth services, processes, and/or solutions.		x	x	x	x	x	x	x	Operational eHealth services, processes, and/or solutions
Change & Adoption	1	Conduct awareness campaign, fora, symposia, conferences, and/or workshops to strengthen the adoption of eHealth.	x	x	x	x	x	x	x	x	Delivered awareness programs, campaigns, fora, symposia, conferences, workshops and other relevant activities
	2	Implement incentives.			x	x	x	x	x	x	Operational incentives

Action Lines and Activities		S		T		M				Deliverables / Outputs
		2013	2014	2015	2016	2017	2018	2019	2020	
3	Update educational programs to increase the number of health care providers or practitioners knowledgeable or skilled in eHealth.	x	x	x						Approved updated Educational Program Plan
4	Implement educational programs.			x	x	x	x	x	x	Operational educational programs
5	Incorporate in the accreditation or licensing requirement of health care providers the adoption of and use of eHealth solutions.		x	x	x	x	x	x	x	Approved accreditation/licensing requirement for the adoption of and use of eHealth solutions

## G. MAPPING OF OUTPUTS TO DESIRED EHEALTH OUTCOMES

The activities and outputs defined in the roadmap are mapped or linked to the desired eHealth outcomes. The outputs can be delivered progressively whereas others have definite time frame.

		Action Lines and Activities	Deliverables / Outputs	Desired eHealth Outcomes
<b>Governance</b>	1	Establish a national eHealth governance structure to direct, implement, enforce, monitor, and evaluate the national adoption of eHealth in the country.	Approved order/issuance in the creation of the National eHealth Governance structure	Support to all eHealth desired outcomes
	2	Establish the eHealth software compliance certification structure (functions, policies, processes, procedures, and/or guidelines).	Approved order/Issuance in the creation of the eHealth Software Compliance Certification structure	Improved coordination between health care providers through information exchange
	3	Establish a national eHealth fund and management structure (functions, policies, processes, procedures, and/or guidelines).	Approved order/issuance in the creation of the eHealth Fund Management structure	Support to all eHealth desired outcomes
	4	Establish the health enterprise architecture structure (functions, policies, processes, procedures, and/or guidelines).	Approved order/issuance in the creation of the Health Enterprise Architecture structure	<ul style="list-style-type: none"> <li>○ Improved coordination between health care providers through information exchange</li> <li>○ Improved sharing and exchange of reliable and quality information</li> </ul>
	5	Implement the structures on national eHealth governance, eHealth software compliance, eHealth fund and management, and health enterprise architecture.	Established operating structures for eHealth governance, software compliance, eHealth fund management and health enterprise architecture	Support to all eHealth desired outcomes
<b>Foundations</b>	1	Define and formulate issuances on eHealth standards.  <i>Note: National Implementation of Health Data Standards for eHealth Standardization and Interoperability (eHSI Release 001) is currently</i>	<ul style="list-style-type: none"> <li>○ Orders/Issuances in the National Implementation of Health Data Standards for eHealth Standardization and Interoperability like:               <ul style="list-style-type: none"> <li>➢ Unique health identifiers for health consumers and health care providers</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>○ Improved coordination between health care providers through information exchange</li> <li>○ Improved sharing and exchange of reliable and quality information</li> </ul>

Action Lines and Activities		Deliverables / Outputs	Desired eHealth Outcomes
	<i>being routed for signature.</i>	<ul style="list-style-type: none"> <li>➤ eHealth data and messaging</li> <li>➤ information protection and privacy</li> <li>➤ information standards for sharing and exchange</li> </ul>	
2	Define priority eHealth services, processes and/or solutions.	Approved priority eHealth services/processes/solutions like health information exchange, referrals, prescribing, care planning, diagnosis, national electronic health records, and others.	<ul style="list-style-type: none"> <li>○ Improved access to primary care services for those in rural and remote locations</li> <li>○ Improved access to knowledge, services and resources to assist in managing one's health</li> <li>○ Improved coordination between health care providers through information exchange</li> <li>○ Improved sharing and exchange of reliable and quality information</li> <li>○ Improved access to systems and health information like clinical decision support tools, medications, clinical knowledge, skills development and others</li> </ul>
3	Establish incentive mechanism(s) to encourage health care providers and other concerned stakeholders to invest in computing infrastructure for eHealth and adopt use of eHealth solutions.	Approved order/Issuance in the Implementation of Incentive Mechanism for Adoption of eHealth	<ul style="list-style-type: none"> <li>○ Improved coordination between health care providers through information exchange</li> <li>○ Improved sharing and exchange of reliable and quality information</li> </ul>
4	Implement and enhance eHealth data standards, services, processes and/or solutions.	Established implementation, monitoring and evaluation of eHealth data standards, services, processes and/or solutions	<ul style="list-style-type: none"> <li>○ Improved coordination between health care providers through information exchange</li> <li>○ Improved sharing and exchange of reliable and quality information</li> </ul>
5	Develop new standards, services, and/or processes.	Approved updates on new standards, services, and/or processes	
6	Collaborate with concerned government and telecommunication companies to expand/upgrade broadband services even to remote areas for upgrading infrastructure (network/broadband/devices specifications and coverage).	<ul style="list-style-type: none"> <li>○ Established data/telecommunication connectivity or access infrastructure to rural and remote areas</li> <li>○ Deployed computing/mobile devices to rural and remote areas</li> </ul>	<ul style="list-style-type: none"> <li>○ Improved access to primary care services for those in rural and remote locations</li> <li>○ Improved access to knowledge, services and resources to assist in managing one's health</li> <li>○ Improved coordination between health care providers through information exchange</li> <li>○ Improved coordination between health care providers through information exchange</li> <li>○ Improved access to systems and health</li> </ul>

Action Lines and Activities		Deliverables / Outputs	Desired eHealth Outcomes
			information like clinical decision support tools, medications, clinical knowledge, skills development and others
	7	Maintain infrastructure.	Operational infrastructure Support to all eHealth desired outcomes
	8	Implement software compliance certification.	Certified eHealth software <ul style="list-style-type: none"> <li>○ Improved coordination between health care providers through information exchange</li> <li>○ Improved sharing and exchange of reliable and quality information</li> </ul>
<b>eHealth Solutions</b>	1	Establish fund.	Approved order/Issuance on fund allotment Support to all eHealth desired outcomes
	2	Develop eHealth services, processes, and/or solutions.	<ul style="list-style-type: none"> <li>○ Replicated/expanded National telemedicine service</li> <li>○ Established National Electronic Health Record</li> <li>○ Developed relevant SMS applications like support to health knowledge, education and awareness; surveillance applications, and others</li> <li>○ Provided awareness, training and education on telemedicine</li> <li>○ Established/expanded appropriate portals for health knowledge, health care providers, mobile knowledge, systems/applications, e-learning and others</li> <li>○ Enhanced national disease management and reporting system</li> </ul> <ul style="list-style-type: none"> <li>○ Improved access to primary care services for those in rural and remote locations</li> <li>○ Improved access to knowledge, services and resources to assist in managing one's health</li> <li>○ Improved coordination between health care providers through information exchange</li> <li>○ Improved sharing and exchange of reliable and quality information</li> <li>○ Improved access to systems and health information like clinical decision support tools, medications, clinical knowledge, skills development and others</li> </ul>
	3	Maintain eHealth services, processes, and/or solutions.	Operational eHealth services, processes, and/or solutions

Action Lines and Activities		Deliverables / Outputs	Desired eHealth Outcomes
<b>Change &amp; Adoption</b>	1	Conduct awareness campaign, fora, symposia, conferences, and/or workshops to strengthen the adoption of eHealth.	Delivered awareness programs, campaigns, fora, symposia, conferences, workshops and other relevant activities
	2	Implement incentives.	Operational incentives
	3	Update educational programs to increase the number of health care providers or practitioners knowledgeable or skilled in eHealth.	Approved updated Educational Program Plan
	4	Implement educational programs.	Operational educational programs
	5	Incorporate in the accreditation or licensing requirement of health care providers the adoption of and use of eHealth solutions.	Approved accreditation/licensing requirement for the adoption of and use of eHealth solutions
			<ul style="list-style-type: none"> <li>○ Improved access to primary care services for those in rural and remote locations</li> <li>○ Improved access to knowledge, services and resources to assist in managing one's health</li> <li>○ Improved coordination between health care providers through information exchange</li> <li>○ Improved sharing and exchange of reliable and quality information</li> <li>○ Improved access to systems and health information like clinical decision support tools, medications, clinical knowledge, skills development and others</li> </ul>
			<ul style="list-style-type: none"> <li>○ Improved coordination between health care providers through information exchange</li> <li>○ Improved sharing and exchange of reliable and quality information</li> <li>○ Improved access to systems and health information like clinical decision support tools, medications, clinical knowledge, skills development and others</li> </ul>

## **H. 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 outcomes and 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.

Figure 1.0 - 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)
<b>Health Consumers : Safer and quality health care</b>		
- Increase ability to access, control and share their health information.	○ Improved access to their health information and maintenance of their personal health record	○ Increase in the number of health consumers accessing their health information
- Minimize time and effort in providing the same health information to different health care providers.	<ul style="list-style-type: none"> <li>➤ Controlled access to personal health information</li> <li>➤ Improved management of their health care plans</li> </ul>	○ 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.	○ Improved access to primary care services for those in rural and remote locations	○ Increase in the number of primary care consultations made via telemedicine
- Address shortage of health human resource affecting those in remote or rural areas	<ul style="list-style-type: none"> <li>➤ Reduce travel time to access care</li> <li>○ Improved access to knowledge, services and resources to assist in managing one's health</li> <li>➤ Support early detection and treatment of diseases</li> <li>➤ Better management of health conditions and adherence to medication and treatment regimes</li> </ul>	<ul style="list-style-type: none"> <li>○ Increase in the number of rural and remote health consumers being able to access primary care services</li> <li>○ Health consumers' rating of satisfaction (Includes evaluation like reduction in travel time, system uptime, and availability of quality information)</li> </ul>
<b>Health Care Providers : Make more informed decisions</b>		
- Improve ability to make informed decisions at the point of care.	○ Improved access to an integrated/single view of the patients' health information at the point of care	○ Increase in the number of accesses to services, systems, and health information
- Minimize time and effort in performing same or duplicate treatment services or performing unnecessary ones.	<ul style="list-style-type: none"> <li>➤ Improved sharing and exchanging of health information across different geographical locations and all parts of the health sector</li> </ul>	○ 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 issue orders, prescribe medications, and refer	○ Improved access to systems and health information like clinical decision support tools, medications,	

	individuals to other health care providers.	<p>clinical knowledge, skills development and others</p> <ul style="list-style-type: none"> <li>➤ Improved access to doctors' ordering system, medicine prescription and referrals</li> <li>○ Improved collaboration and coordination among health care providers, and interactions with health consumers</li> </ul>	
-	Improve ability to monitor the effectiveness of health care services rendered like treatments and diagnosis, and outcomes.	Improved monitoring and tracking of patients	<ul style="list-style-type: none"> <li>○ Increase in the number of accesses to monitoring and tracking services</li> <li>○ Health care providers' rating of satisfaction (Includes evaluation on the effectiveness of data for monitoring and evaluation)</li> </ul>
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<b>Health Care Managers, Policy Makers and Researchers : Effective program/research development, implementation and monitoring</b>			
-	Minimize or eliminate increasing incidence or spread of diseases in the country like HIV/AIDS, chronic diseases, and others.	<ul style="list-style-type: none"> <li>○ 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 <ul style="list-style-type: none"> <li>➤ Improved planning for the minimizing or eliminating spread of diseases</li> <li>➤ Efficient and effective monitoring and response to outbreaks and emergencies</li> <li>➤ Effective management of the supply and distribution system like availability of essential medicines and vaccines</li> </ul> </li> <li>○ Greater access to information to support decision making and treatment</li> </ul>	<ul style="list-style-type: none"> <li>○ Increase in the number of accesses/visits to portals</li> <li>○ 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)</li> </ul>
-	Meet increasing demands or expectations brought about by new/emerging technologies.	<ul style="list-style-type: none"> <li>○ Improved access to reliable health information like eHealth innovations and solutions</li> </ul>	<ul style="list-style-type: none"> <li>○ Increase in the number of accesses to services, systems, and health information</li> <li>○ End-users' rating of satisfaction (Includes evaluation on usability or knowledge gained)</li> </ul>

-	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.	<ul style="list-style-type: none"> <li>○ Improved access to reliable health information like health programs, activities, treatments, outcomes, fund management, and others. <ul style="list-style-type: none"> <li>➤ Improved monitoring of health activities and data sources</li> <li>➤ Access to quality data for information and monitoring</li> <li>➤ Improved access to medical literature, knowledge resources and networks</li> </ul> </li> <li>○ Strengthened capability building of the health workforce</li> </ul>	<ul style="list-style-type: none"> <li>○ Increase in the number of accesses to services, programs, activities and health information</li> <li>○ Increase in the number of participants in eLearning training or electronic-based education or training programs</li> <li>○ End-users' rating of satisfaction (Includes evaluation on accesses and training)</li> </ul>
-	Minimize time and effort in collecting, consolidating, and integrating information from different sources.	Improved sharing and exchange of reliable and quality information	<ul style="list-style-type: none"> <li>○ Increase in the number of accesses to health reports/information</li> <li>○ End-users' rating of satisfaction (Includes evaluation on availability of reports/health info)</li> </ul>

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