

**TOOLKIT:**

# Assessing the Enabling Environment for Establishing a Contextualized National Digital Health Strategy

PREPARED FOR



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## ACKNOWLEDGEMENTS

The United Nations Foundation would like to thank the Government of Nigeria, Federal Ministry of Health, Federal Ministry of Communication Technology, Saving One Million Lives Initiative and Norwegian Agency for Development Cooperation for their visionary leadership in shoring up the enabling environment for the use of digital health tools to improve health outcomes and strengthen the health system. We also thank the many individuals and partners who helped design, adapt, and implement the various approaches and tools presented and the reports generated that has led to the development of Nigeria's National Health ICT Strategic Framework as well as this toolkit. We express our appreciation to the ICT4SOML team without whom this work would not be possible, namely Ime Asangansi, Emeka Chukwu, Olasupo Oyedepo, Salama Achi, Jonathan Payne, Carolyn Florey, and Abby Manz. Many thanks to the designers at We Are How who have worked their magic on the reports as well as on this toolkit and to colleagues from other countries who provided insights, quotes, and additional case studies to be highlighted.

These efforts will not only empower Nigerian citizens, health workers, and the health system but populations throughout the world who will benefit from these tools and the lessons learned in undertaking this sort of a comprehensive assessment process. In Nigeria and elsewhere, we hope the process of establishing nationally scaled and integrated digital health systems will truly help achieve universal health coverage.

## ACRONYMS

|                      |   |
|----------------------|---|
| <b>DoH</b>           | Department of Health (Tanzania)                               |
| <b>eHealth</b>       | Electronic Health   |
| <b>FMOH</b>          | Federal Ministry of Health                                    |
| <b>FMCT</b>          | Federal Ministry of Communication Technology                  |
| <b>GoN</b>           | Government of Nigeria   |
| <b>HIS</b>           | Health Information System                                     |
| <b>HMN</b>           | Health Metrics Network  |
| <b>ICT</b>           | Information Communication Technologies                        |
| <b>ITU</b>           | International Telecommunications Union                        |
| <b>LGA</b>           | Local Government Area   |
| <b>LMICs</b>         | Low and middle-income countries                               |
| <b>mCCT</b>          | Mobile Conditional Cash Transfers                             |
| <b>mHealth</b>       | Mobile Health   |
| <b>mSCM</b>          | Mobile Supply Chain Management                                |
| <b>MoHSW</b>         | Ministry of Health and Social Welfare                         |
| <b>MRC</b>           | Medical Research Council (South Africa)                       |
| <b>NDoH</b>          | The National Department of Health (South Africa)              |
| <b>NGO</b>           | Non-governmental organization                                 |
| <b>NHISSA</b>        | National Health Information Systems Committee of South Africa |
| <b>NHMIS</b>         | National Health Management Information System                 |
| <b>NORAD</b>         | Norwegian Agency for Development Cooperation                  |
| <b>RMNCH</b>         | Reproductive, maternal, newborn, and child health             |
| <b>SOML</b>          | Saving One Million Lives Initiative                           |
| <b>UHC</b>           | Universal Health Coverage                                     |
| <b>UN Foundation</b> | United Nations Foundation                                     |
| <b>WHO</b>           | World Health Organization                                     |

# Introduction

The aim of this toolkit is to provide a systematic and structured approach to assessing the enabling environment for digital health.

Over the last decade, governments, international donors and organizations have invested in innovative programs and solutions that improve health outcomes and strengthen public health systems in low- and middle-income countries (LMICs). Digital health technologies, an umbrella term reflecting the maturity and integration of mobile health (mHealth) and electronic health (eHealth) technologies, have emerged as a critical part of health systems strengthening programs. There has been tremendous progress in establishing the evidence base for digital health technologies along with a supportive ecosystem of policy makers, technologists, donors, and public health professionals.

To build on the growing momentum of scaled implementation of digital health tools, governments in LMICs require support to transition from an environment of isolated pilots and large-scale programs, to establishing national integrated digital health systems. This support includes assessing current environments, and using that context to develop pragmatic, evidence-based national strategies and frameworks that provide an overarching vision and rationale for digital health, in addition to establishing policies that enable investments in key foundational elements.

The World Health Organization (WHO) and the International Telecommunications Union (ITU) have developed a toolkit to guide countries through the process of establishing a national digital health vision, action plan and monitoring framework. The seven core components of the framework are leadership and governance; strategy and investment; legislation, policy and compliance; standards and interoperability; workforce; infrastructure, and services and applications (*See Table 1*).

Between 2012 and 2015, the Federal Ministry of Health (FMOH) and the Federal Ministry of Communication Technology (FMCT) in the Government of Nigeria (GoN), in collaboration with the United Nations Foundation (UN Foundation), with support from the Norwegian Agency for Development Cooperation (NORAD), used the WHO/ITU eHealth strategy toolkit to guide a three-phase assessment of the digital health environment. This process was designed to evaluate the current state of digital health in Nigeria, to ensure that the national digital health strategy built on existing efforts and was informed and grounded in sector realities.<sup>1</sup> As part of this process, a set of assessment tools were developed and used to implement the various research phases. As more countries engage in the process of establishing, revising or revitalizing their national digital health strategies, these tools can be used and adapted to conduct baseline digital health assessments.

**TABLE 1: SEVEN CORE COMPONENTS OF THE WHO/ITU EHEALTH STRATEGY TOOLKIT**

| DIGITAL HEALTH COMPONENT                  | DEFINITION   |
|---|--|
| <b>Leadership and Governance</b>          | The act of overseeing and coordinating digital health activities at the national level, ensuring alignment with national health goals and priorities |
| <b>Strategy and Investment</b>            | The act of aligning stakeholders and procuring financing for digital health  |
| <b>Legislation, Policy and Compliance</b> | The act of developing, implementing and regularly reviewing national policies and legislation governing digital health                               |
| <b>Infrastructure</b>                     | The physical infrastructure that forms the foundation for digital health systems   |
| <b>Services and Applications</b>          | The digital health software and tools utilized by end users to collect, transmit, access and maintain health information                             |
| <b>Workforce</b>                          | The act of educating and training the health workforce to adopt and use digital health software and tools  |
| <b>Standards and Interoperability</b>     | The act of developing, introducing and governing standards and guidelines to enable interoperability and integration between digital health systems  |

Digital health is an inclusive term that includes eHealth, mHealth, Health ICT, and the broad range of uses of information and communication technology to improve health outcomes and strengthen health systems. The terms are used interchangeably in this report, depending on the context.

## TARGET AUDIENCE

This toolkit is designed for governments as well as technical and implementing partners and non-governmental organizations (NGOs) supporting LMICs to conduct a systematic assessment of the current state of its digital health system, using the experience of the GoN as the primary case study. Additional experiences from other LMICs have been included from secondary research and publically available information. The data collected from the activities outlined in this toolkit inform the development of an evidence-informed and pragmatic national digital health strategy. It is intended to compliment the WHO/ITU eHealth strategy toolkit, specifically in providing practical support to completing steps 2, 3, 4, 7 and 8 in engaging with stakeholders, establishing the strategic context, learning from trends and experiences, gathering information on the digital health environment and assessing opportunities and gaps in the digital health environment. Technical working groups supporting the development of national digital health strategies may want to reference this toolkit, use and/or adapt the tools included to support their efforts.

## TOOLKIT OVERVIEW

This toolkit outlines a three-phase framework for conducting an assessment of a country's digital health system. This is followed by a description of each phase in the framework and its objectives and key activities. For each phase, tools are provided, which range from suggested qualitative interview questions to survey templates. These tools can be used as is or adapted for the specific context and/or the stage of maturity of a country's digital health system. Guidance on how to use each of the tools is outlined. This toolkit consists of three parts:

**PART 1:** An overview of the assessment framework

**PART 2:** A description of Phase 1 and Phase 2 of the assessment framework, and an introduction to each of the tools, and their application

**PART 3:** An overview of Phase 3 of the assessment framework, including a guide for using the data collected in Phases 1 and 2 to inform the development of a national digital health strategy



**“** Assessing the enabling environment for digital health is the most important first step to understand how healthcare can be ‘digitally’ transformed.

**HANI ESKANDER**

INTERNATIONAL TELECOMMUNICATIONS UNION

# PART 1: Assessment Framework

A clearly articulated digital health strategy is essential to maximizing the impact of digital health technologies in LMICs. In the absence of a national strategy, digital health technologies risk being fragmented, small-scale, and short-term, minimizing the potential impact on improving health outcomes.

A sound national digital health strategy presents a set of interventions that a country's health sector can use to guide priorities and facilitate the efficient and effective delivery of services using technology. Policies, information architectures, frameworks and guidelines for data and privacy standards, and a health information system (HIS) support a national digital health strategy.

In Nigeria, several enabling factors came together to set the stage for establishing and applying a systematic process to develop a national Health ICT strategic framework. This included:

- Strong government champions at the highest levels of leadership in the FMOH and FMCT: Dr. Mohammad Pate, Minister of State for Health and Mrs. Johnson, Minister of Communication Technology
- Catalytic funding from a donor with a strong focus on innovation and mHealth: NORAD
- A neutral broker, invited by the FMOH, to facilitate the process: UN Foundation
- A critical mass of Health ICT implementations in the country leading to government interest in scaling select ones
- Existing efforts by the government to develop Health ICT standards and policies, but realizing it required an overarching framework

This led to designing a three-phase assessment framework, in collaboration with the GoN, to inform the development of a National Health ICT Strategic Framework. The strategic framework aims to strengthen the enabling environment needed to facilitate the scale and sustainability of digital health technologies that would support the achievement of targeted health priorities namely reproductive, maternal, newborn, and child health (RMNCH) and Universal Health Coverage (UHC).

The goal of the assessment is to cultivate a deep understanding of the current utilization of digital health technologies in a country, and assess the social, cultural, technological, and political environments in which projects operate in, to establish requirements for strengthening the enabling environment. This includes identifying, understanding and addressing policy gaps, and introducing regulation by developing and advocating for the adoption of standards and guidelines, and addressing capacity and training needs. In alignment with the WHO/ITU eHealth strategy toolkit, the assessment is designed to evaluate these needs across the seven foundational components of a national digital health strategy, namely leadership and governance; strategy and investment; legislation, policy and compliance; standards and interoperability; workforce; infrastructure, and services and applications.

The assessment consists of three phases: (1) a situational analysis, (2) an in-depth baseline assessment and (3) a systematic application of the data. The first phase focuses on setting the stage for the assessment process by mapping the key stakeholders, programs

and objectives of the system, and articulating a clear rationale and vision for digital health in a country. The data from this phase is used to prepare a project proposal to initiate engagement with government stakeholders, donors, and partners. The second phase is geared towards collecting data through primary and secondary research on the current state of digital health in a country to directly inform the development of a national strategy. The third phase is aimed at sharing the data and recommendations with stakeholders for feedback and consensus building followed by charting a path for applying the data to drive decision-making and priority setting. *Figure 1* outlines the key activities and data collected from each phase in the framework.

**FIGURE 1: OVERVIEW OF DIGITAL HEALTH ASSESSMENT FRAMEWORK**



**“** ‘*In order to know where you are going, you have to know where you have been and where you are...*’

While cliche, it is extremely relevant and applicable to digital health.

Comprehensively assessing the enabling environment serves as a compass. It not only allows us to identify existing health system goals, health system gaps and stakeholder needs and recommendations, it also uncovers barriers and opportunities for digital health that would otherwise go unrecognized. Through assessing the enabling environment, we are able to take an informed and educated approach to digital health, thus increasing our odds of success and impact on health outcomes.

**NADI KAONGA**

HealthEnabled

# **PART 2:** Overview of Phase 1 and Phase 2

The following section outlines the key research activities in Phase 1 and Phase 2 of the assessment framework. These phases occur in succession, and are designed to build upon each other. In Phase 1, a rapid diagnostic is conducted to collect the data to inform the design of the in-depth baseline assessment.



## PHASE 1: SITUATIONAL ANALYSIS

The first phase of the baseline assessment aims to lay the foundation for conducting a more in-depth baseline assessment of the digital health environment.

### THE KEY OBJECTIVES OF THIS PHASE ARE TO:

- Map the key stakeholders and digital health programs, and engage them in designing the in-depth baseline assessment
- Establish the rationale for investing in a national digital health strategy based on the countries health sector goals, key challenges, and evidence from current and historical programs
- Gain a high-level understanding of key challenges to scaling digital health tools
- Develop an approach and strategy for conducting an in-depth baseline assessment, and national digital health strategy
- Inaugurate a supportive organizational structure to lead efforts over the duration of the engagement

### TO ACHIEVE THESE OBJECTIVES, THERE ARE THREE KEY ACTIVITIES IN PHASE 1:

1. Conducting a rapid diagnostic
2. Developing a roadmap for executing the in-depth baseline assessment and developing the national digital health strategy
3. Establishing a supportive organizational structure



## ACTIVITY 1: CONDUCTING A RAPID DIAGNOSTIC

**TIME:** 4-6 weeks

**RESOURCES REQUIRED:**

Research Guide  
Interviewers  
Target Interviewee List  
Invitation  
**RESEARCH APPROACH:**  
Exploratory research

**RESEARCH METHODS:**

Key Informant Interviews  
Group Interviews  
Snowball sampling

**TOOLS:**

Sample Interview List  
Sample Research Guide

The rapid diagnostic is a 2-4 week in-country activity led by researchers or program managers to gain a high-level understanding of the current state of digital health. This is followed by 2 weeks of synthesis and analysis, in order to prepare for an in-depth baseline assessment and strategic planning process. The rapid assessment allows an organization to introduce the intention of establishing a national digital health strategy to stakeholders, and gain inputs into designing a process that systematically takes into account a country's context, constraints and national health system goals. Further, the rapid diagnostic helps identify key programs and platforms, early hypotheses on digital health opportunities (e.g., establishing a national HMIS) and challenges to validate through the in-depth baseline assessment.

The process for developing a digital health strategy incorporates stakeholders from across the government, private sector, academia, international donor and development agencies. As a result, rapid diagnostics should be designed to include one-on-one and group interviews with stakeholders from each of these sectors. It is important to secure a senior government official as a champion to facilitate interviews with key stakeholders and serve as a sounding board as findings are analyzed and synthesized. The rapid diagnostic can take place over a 2-4 week period, depending on the nature of the relationship between the government and lead implementation partner. The lead implementation partner should plan to schedule interim meetings with government champion(s) to discuss real-time findings, and iterate questions or hypotheses appropriately.

Following the completion of the rapid diagnostic, findings should be analyzed and synthesized into a report to use as part of the planning process and to begin mobilizing stakeholder engagement and support throughout the health system.



The rapid diagnostic led to identification of early opportunities for scaling digital health tools.

## EXAMPLE: LEADING A RAPID DIAGNOSTIC IN NIGERIA

In 2013, two senior technical advisors were invited to conduct an initial diagnostic to set the stage for establishing a national Health ICT strategic framework as part of the GoN's Saving One Million Lives (SOML) initiative.

The mission was led by the Federal Ministry of Health (FMOH) under the leadership of the Minister of State for Health and launched in collaboration with the Federal Ministry of Communication Technology (FMCT). Utilizing a snowball sampling methodology, government, international donors and development partner stakeholders were interviewed. The rapid diagnostic led to the identification of four digital health tools that had the political will, technology preparedness and potential impact quotient to introduce at scale.

High-level insights into the seven components of the WHO/ITU eHealth strategy toolkit were also assessed. Lastly, high-level challenges to scaling digital health programs were identified, and included limited digital technology capacity and know-how within the health system, weak standards and guidelines for utilizing data captured within digital health programs, and reliable network connectivity. These insights were fed into the design of the qualitative and quantitative surveys used for the in-depth baseline assessment. The two key outputs from this phase were a situational analysis report and a 3-page memorandum of the findings and recommendations to members of the GoN (i.e. Aide Memoire) which was critical for mobilizing support and stakeholder engagement for Phase 2 and Phase 3.



TABLE 2: FOUR EARLY DIGITAL HEALTH OPPORTUNITIES IDENTIFIED IN NIGERIA'S RAPID DIAGNOSTIC

| EARLY DIGITAL HEALTH OPPORTUNITIES  | DEFINITION  |
|---|---|
| <br><b>National Health Information Management System (NHMIS)</b> | In 2013, the Nigeria National Council on Health approved the District Health Information System Version 2.0 (DHIS2) as the NHMIS for health service data reporting. This platform is being rolled out nationally.   |
| <br><b>Mobile Conditional Cash Transfers (mCCT)</b>              | mCCT was explored to more effectively enable the deployment of cash incentives for pregnant women as part of a conditional cash transfer program to increase uptake of maternal, newborn, and child health services.  |
| <br><b>Mobile Supply Chain Management (mSCM)</b>                 | A technical working group was established to harmonize existing supply chain management (SCM) tools. The working group aims to identify uniform indicators and develop requirements for an electronic logistics management information system (eLMIS) to improve the efficiency and reliability of delivering health commodities. |
| <br><b>Demand generation</b>                                   | The design and implementation of mobile messaging is underway to generate demand and awareness for improved uptake of health services by pregnant women and new mothers, and identify and follow up with women for routine care as well as when they identify pregnancy risk factors.   |



## TOOL: **SAMPLE INTERVIEW LIST**

The table below outlines the interview list for the rapid diagnostic led in Nigeria. The list is reflective of the hybrid nature of digital health, requiring insight from health and technology sector experts.

**TABLE 3: NIGERIA RAPID DIAGNOSTIC KEY INFORMANTS**

| SECTOR                                   | EXAMPLES   |
|--|--|
| <b>Government / Public</b>               | <ul style="list-style-type: none"> <li>• Federal Ministry of Health (FMOH)</li> <li>• National Primary Health Care Development Agency (NPHCDA)</li> <li>• Subsidy Reinvestment and Empowerment Program (SURE-P)</li> <li>• National Aids Control Agency (NACA)</li> <li>• National Agency for Food and Drug Administration and Control (NAFDAC)</li> <li>• Ministry of Communication Technology (FMCT)</li> <li>• National Identity Management Commission (NIMC)</li> <li>• Nigeria Population Commission (NPC)</li> </ul> |
| <b>Private</b>                           | <ul style="list-style-type: none"> <li>• Intel</li> <li>• GSMA</li> <li>• Private Sector Health Alliance</li> </ul>  |
| <b>Academia</b>                          | N/A  |
| <b>International and National Donors</b> | <ul style="list-style-type: none"> <li>• USAID</li> <li>• World Bank</li> <li>• Children's Investment Fund Foundation (CIFF)</li> </ul>  |
| <b>Development Partners</b>              | <ul style="list-style-type: none"> <li>• Clinton Health Access Initiative</li> <li>• Abt &amp; Associates</li> <li>• UNICEF</li> <li>• Pathfinder</li> <li>• Nigeria Centre for Disease Control and Prevention (CDC)</li> <li>• Futures Group</li> </ul>   |



## TOOL: **SAMPLE RESEARCH GUIDE**

The following outlines sample interview questions to use when conducting the rapid diagnostic in-country. Research teams should continue to iterate and update their research guide as new information becomes available and hypotheses are developed, validated or rejected.

### **SAMPLE QUESTIONS**

1. Please describe the role and objectives of your organization
2. What are your organization's core competencies (e.g. technology development, policy development etc.)?
3. Which health challenges is your organization trying to address? (e.g. HIV/AIDS, MNCH)
4. How do your organization's goals align with federal and state health sector priorities and initiatives?
5. How is your organization using digital health technologies to address these health challenges?
6. Please describe the rationale for your technology choice and approach?
7. What has been your experience in using digital health technologies to meet your organization's goals?
8. How does your organization's digital health initiatives integrate with federal and state level systems?
9. What challenges have you faced in implementing, scaling up and sustaining your organization's digital health initiatives?
10. What support is required from the public and private sectors to achieve scale and sustainability of digital health technologies and programs?
11. Where should the health sector invest capacity and financing to improve the environment for digital health?
12. What are some promising opportunities in digital health that the government should prioritize?
13. What is your vision for digital health in this country?
14. Who else do you think we should speak with?
15. Do you have any additional thoughts or questions?



## ACTIVITY 2: DEVELOP A ROADMAP AND ORGANIZATIONAL STRUCTURE

Findings from the rapid diagnostic are used to develop a roadmap that outlines the approach and planned outputs and outcomes from conducting an in-depth baseline assessment. This includes developing a project proposal to secure funding for the in-depth baseline assessment, outlining the key partners involved, and establishing a suggested timeline.

To execute on the planned outcomes and outputs, a supportive organizational structure is established to drive efforts across the duration of the project plan. This organizational structure takes into account the diverse nature of digital health and therefore includes stakeholders across government departments, especially career civil servants, as well as partners and donors from the public and private health and technology sectors. Further, the leader of this organizational structure has a balanced view of the diverse needs required to introduce a national digital health strategy, such as broadband infrastructure and health outcomes research and can drive consensus and priority setting across these varying interests. Lastly, given the lengthy nature of developing a national digital health strategy, the organizational structure, specifically core committee members, are committed for the long term to ensure continuity across the process. However, the organizational structure also has the flexibility to adapt as the process unfolds and additional skillsets and advisory services are required.

Lead implementation partners advocating for the development of a national digital health strategy should plan to collaborate with government champions to design an organizational structure that includes a core steering committee to drive strategy, an advisory council to provide impartial advice and input, and relevant working groups to drive execution.



## EXAMPLE:

### **ESTABLISHING AN ORGANIZATIONAL STRUCTURE TO LEAD THE DEVELOPMENT OF NIGERIA'S NATIONAL HEALTH ICT STRATEGIC FRAMEWORK**

A governance structure to lead the development of Nigeria's national Health ICT strategic framework was established shortly after conducting the rapid assessment in-country. An inter-ministerial steering committee between the FMOH and the FMCT was set up to kick off the process and represent the dual interests and intersection of digital health.

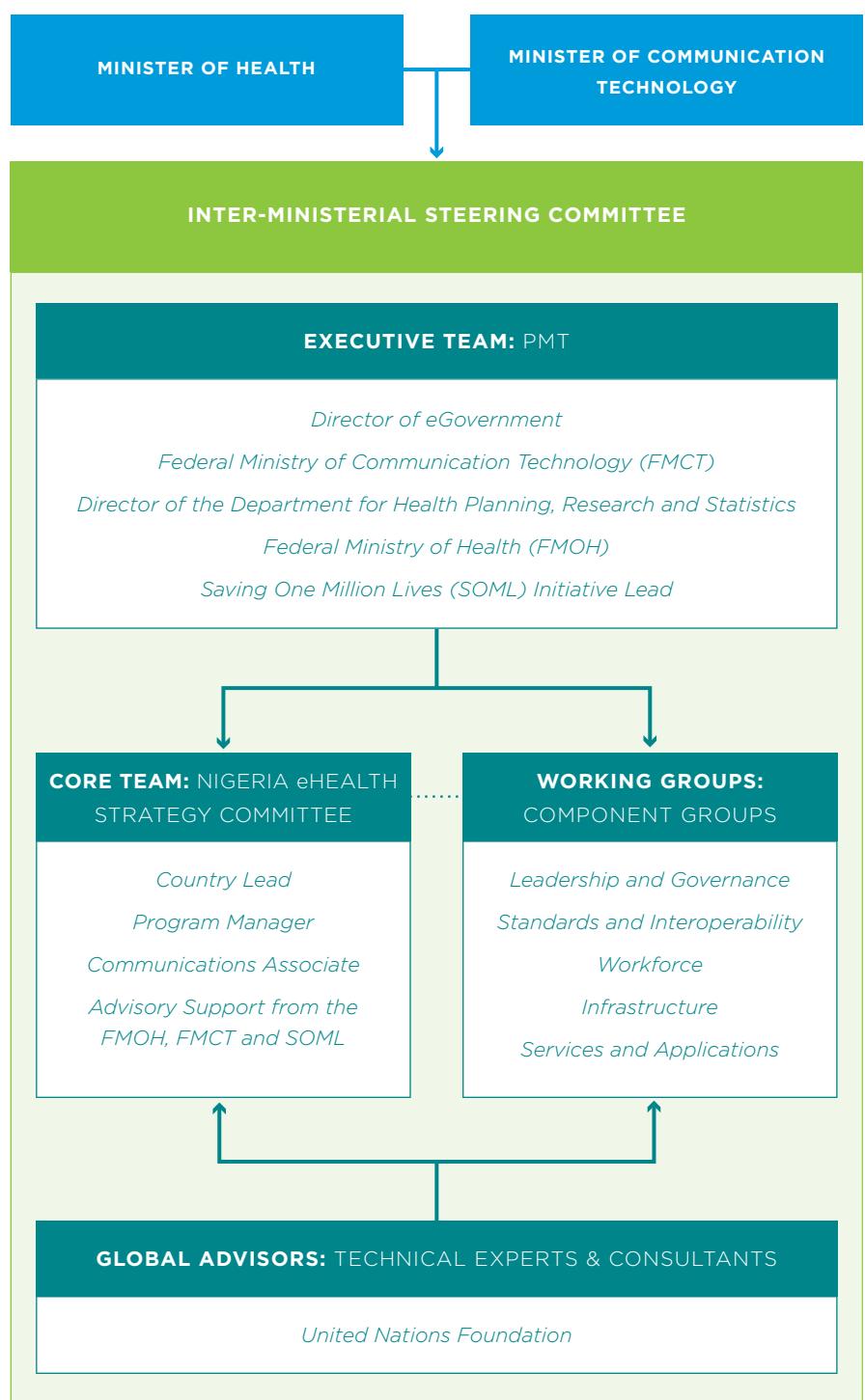
The steering committee consisted of an executive team, a core team, working groups, and global advisors. The executive team was comprised of the Director of eGovernment, Federal Ministry of Communication Technology (FMCT), the Director of the Department for Health Planning, Research and Statistics, Federal Ministry of Health (FMOH), and the Saving One Million Lives (SOML) initiative lead. This executive team was representative of the diverse interests of Health ICT in Nigeria. Under the executive team was the core Nigeria eHealth strategy team, which consisted of a country lead, a program manager and communications associate, in addition to advisory support from the FMOH, FMCT and SOML. Working groups were organized by the components outlined in the WHO/ITU eHealth strategy toolkit and designed to support the core committee. These working groups included: leadership and governance, standards and interoperability, workforce, infrastructure and services and applications. Lastly, a team of global experts supported the core team and working groups with technical and tacit knowledge from experiences setting up national digital health strategies in other LMICs.

The following diagram outlines the organizational structure established to support the in-depth baseline assessment, followed by the development of Nigeria's national Health ICT strategic framework.

An inter-ministerial steering committee between the FMOH and the FMCT was set up to kick off the process and represent the dual interests and intersection of digital health.



FIGURE 2: NIGERIA ORGANIZATIONAL STRUCTURE





## EXAMPLE:

### SOUTH AFRICA'S eHEALTH STRATEGY ORGANIZATIONAL STRUCTURE

In 2009, South Africa commenced the process of establishing its national eHealth strategy. This process was driven by the recognition that large investments into ICT and Health Information Systems (HIS) were not producing the data and information to improve the management and monitoring and evaluation of its health system due to the lack of technology regulations and policy frameworks that enabled integration. The environment was fraught with a lack of an eHealth strategy and corresponding enterprise architecture, widely differing levels of eHealth maturity across and within provinces, disparate systems with little to no interoperability or communication, inequity in eHealth services provided and financing across provinces and national health departments, an absence of a national master patient index and unique patient identifier system, and limited capacity for implementation in the public sector. In 2012, following several iterations, South Africa's National Council of Health, National and Provincial Heads of Health, endorsed the national eHealth strategy.

The National Department of Health (NDoH) and the National Health Information Systems Committee of South Africa (NHISSA) in collaboration with the Medical Research Council (MRC) and Provincial Departments of Health led the process. The team decided to not involve the private sector in the development of the eHealth strategy, preferring to establish a strong national framework on which to build more inclusive strategies on in the future.<sup>2</sup>

An external review of South Africa's eHealth strategy development process noted that the process benefited from the ongoing support of the chairperson of the NHISSA, but the engagement was limited to quarterly meetings, leading to long periods without engagement. The review also found that the process could have benefited from more formalized governance structures and mechanisms, including project plans and timelines.<sup>3</sup>

The environment was  
fraught with a lack of  
an eHealth strategy  
and corresponding  
enterprise architecture.

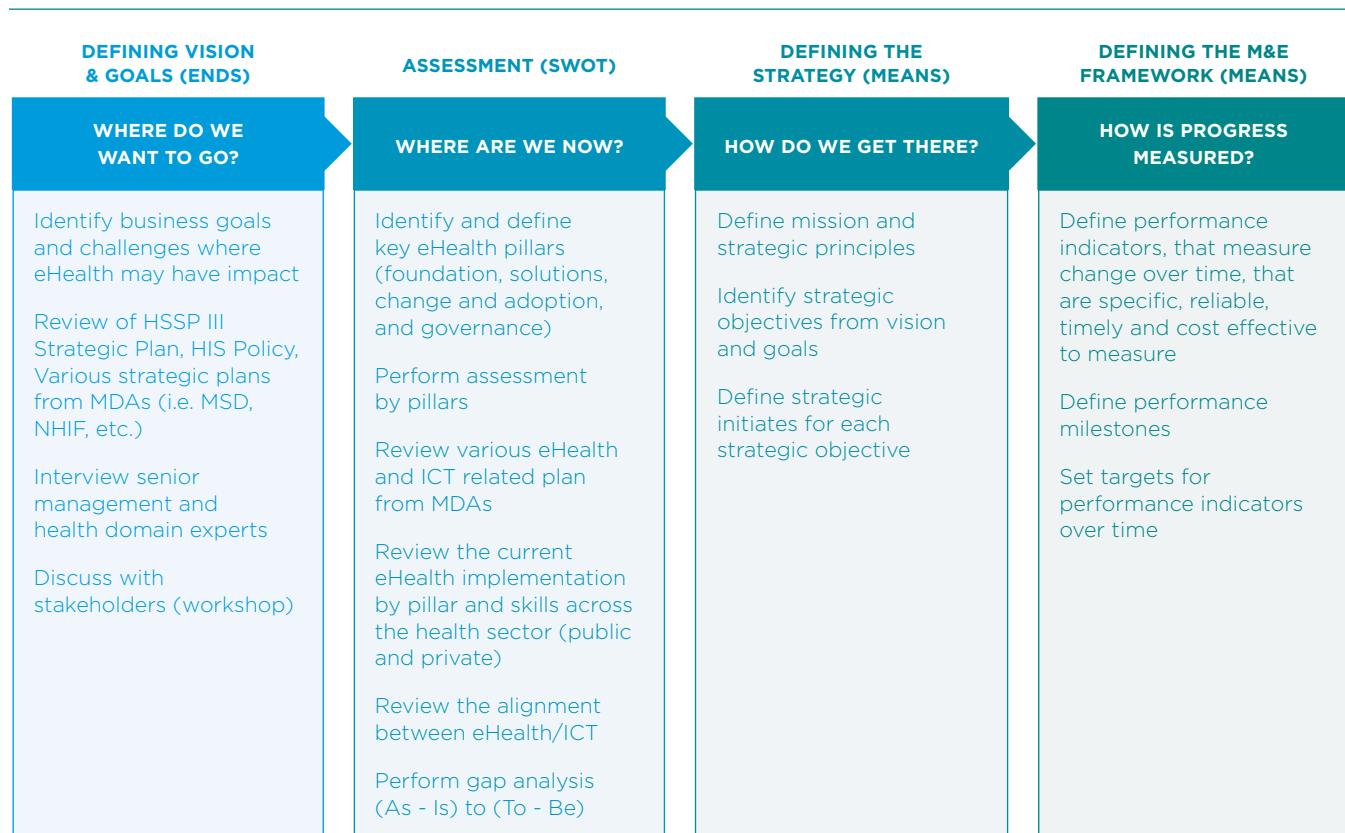


## EXAMPLE

### CASE STUDY: DEVELOPING TANZANIA'S 2013-2018 eHEALTH STRATEGY<sup>4</sup>

Between 2008-2009, the Tanzanian Ministry of Health and Social Welfare (MoHSW) appointed a steering committee to oversee a participatory process to develop its national eHealth strategy. After five formal stakeholder meetings, and numerous informal and technical consultations, a draft eHealth strategy was developed. However, the MoHSW did not adopt the strategy. This setback led Tanzania to taking a revised approach in August 2012. The revised approach drew from various frameworks, including the WHO/ITU eHealth strategy toolkit, a Telehealth Strategy Development Framework, the Business Motivation Model, and the Ishikawa Fishbone Diagram, to establish an eHealth strategy development framework unique to Tanzania. A core eHealth strategy development team was established, which included the MoHSW ICT, telehealth and health staff, and other eHealth and monitoring and evaluation advisors. The alternative eHealth strategy framework was established and applied through a 1-week workshop with follow-up discussions over a 12-month period.

FIGURE 3: eHEALTH STRATEGY DEVELOPMENT PROCESS





The first two phases in Tanzania's eHealth strategy development process shares similarities with Nigeria's Health ICT strategic framework development process. The first phase in Tanzania included a desk review of existing policies including the Health Sector Strategic Plan III (HSSP III), and conducting informal interviews with senior management and health domain experts. This research ensured that the eHealth strategy was rooted in health sector priorities. The findings from the research were presented at a stakeholder workshop that led participants through a process to define the business goals, challenges and vision for eHealth in Tanzania, to determine how eHealth could support the achievement of health system goals. At the workshop, the eHealth visions and missions from select reference countries were reviewed. These reference countries included Canada and Australia as examples of mature eHealth strategies, and Kenya, Ghana and Rwanda, as examples of countries aiming to harmonize their respective eHealth strategies. The second phase of the eHealth strategy development process was an assessment of the strengths, weaknesses, opportunities and threats (SWOT) of Tanzania's key eHealth pillars. These pillars included: foundation, solutions, change and adoption, and governance to understand Tanzania's current eHealth environment. An eHealth gap analysis was also completed, which compared the "as-is" state with the "to-be" state, to ensure that gaps were well understood. In October 2013, the Government of Tanzania formally adopted the eHealth strategy. The participatory approach with key stakeholders involved in all stages of development led to national adoption and ownership of the eHealth strategy. An appraisal of the process found that the following skill sets were critical to achieving the desired outcome:

- Leading and facilitating participatory workshops
- Collaborating with the Ministry and host country partners to identify key stakeholders
- Understanding how ICT can transform the delivery of health services
- Translating technology terms in accessible language to successfully engage with senior health leaders

The stakeholders engaged in the process found the approach to be both systematic and pragmatic. Stakeholders appreciated the opportunity to see immediate results from their work through iterations of the eHealth strategy, which was found to be easy to understand and have clear linkages to national health priorities, and situational analysis findings. The full Tanzania eHealth strategy can be accessed here: <http://goo.gl/Gy4oLG>

The stakeholders engaged in the process found the approach to be pragmatic and appreciated seeing immediate results.



## PHASE 2: IN-DEPTH BASELINE ASSESSMENT

Phase 2 of the assessment seeks to inform the development of the national digital health strategy by collecting the data to establish a baseline to track future progress.

### THE KEY OBJECTIVES OF PHASE 2 ARE TO:

- Map the landscape of existing digital health technologies and programs to identify trends, gaps, and opportunities for scale
- Review existing in-country and international policies that enable digital health technologies and programs to identify strengths and gaps
- Conduct a field assessment across multiple levels of the health system to evaluate the environment and experience with digital health technologies, in addition to identifying key challenges and gaps
- Establish a baseline for the current digital health environment to use when measuring progress against the national digital health strategy

To achieve these objectives, there are three key activities in Phase 2, including:

1. Landscape and Inventory Analysis
2. Policy Review
3. Field Assessment



## ACTIVITY 1: CONDUCT A LANDSCAPE AND INVENTORY ANALYSIS

**TIME:** 4 months

**RESOURCES REQUIRED:**

Research Team  
Database

**RESEARCH APPROACH:**

Descriptive and Exploratory Research

**RESEARCH METHODS:**

Key Informant Interviews  
Literature Review  
Online Survey/Form

**TOOLS:**

Desk Review Parameters  
Database Fields

The landscape and inventory analysis is designed to assess trends, gaps and opportunities in the ICT infrastructure landscape, such as the scope of network availability and mobile phone penetration, and map the digital health tools and interventions available across the country. This ensures that national digital health strategies build on existing efforts and infrastructure and supports prioritizing interventions that will drive the achievement of health system goals. In addition, the analysis serves as a baseline to track and monitor the introduction, scale, and impact of digital health technologies for the duration of the national strategy and beyond.

Given the fragmented nature of digital health technologies in most countries, the research approach is designed to capture and corroborate data from multiple sources to provide a comprehensive and accurate view of the environment. This includes conducting key informant interviews, reviewing peer-reviewed and grey literature from online databases , and crowdsourcing submissions through an online form. An online form is developed and used to crowd source submissions from the broader digital health community, supported by a living database that is updated annually to continue cataloging and tracking in-country digital health programs.

As a part of the inventory process, each digital health program is evaluated against a criterion, and validated for being “active” through direct communication with the relevant organization. There are various types of digital health technologies and programs to consider in the landscape and inventory analysis, including government systems, programs led by development partners and academic institutions, and private sector deployments.



## EXAMPLE: CONDUCTING A LANDSCAPE AND INVENTORY ANALYSIS IN NIGERIA

Between March and September 2014, a landscape and inventory analysis of digital health tools in Nigeria was conducted to help prioritize interventions that would improve MNCH efforts, and serve as a baseline. Technology platforms and projects were evaluated across the six SOML target areas and the ten types of mHealth applications drawn from the WHO's classification system. This framing provided the basis for analyzing the findings and making recommendations (*See Tool on Page 34 for more information*).

The following search terms were used in five existing databases to identify relevant projects: "Information Communication Technology and Health", "mHealth", eHealth", "Health Initiatives in Nigeria", "ICT Health in Nigeria" and "ICT Initiatives in Medicine Nigeria". The databases used were: Google Scholar, the WHO's eHealth publications website, UNICEF, Health Market Innovations, and mHealth Info. A Google form was developed and sent to various stakeholders and online groups to serve as a living inventory to continue cataloging digital health projects in Nigeria.

The review identified 84 projects throughout the country. The data was analyzed to identify trends across key program areas (e.g. MNCH, nutrition, malaria etc.), geographic coverage, technologies (e.g. SMS, data application etc.), health system functions, and levels of scale, amongst others. The research helped uncover key challenges for Nigeria's health sector to consider. This included the need for sustainable financing mechanisms to support investment in improved ICT infrastructure for reliable network coverage and ICT equipment, including mobile phones, tablets and computers for health workers. Further, improving the digital health capacity of health workers and co-designing solutions to ensure workload efficiency is enhanced, not increased, emerged as a key recommendation to overcome resistance to adopting digital health technologies. Lastly, the lack of an overarching policy governing digital health, including client/patient security, standards and interoperability, and coordination to improve integration into national systems was found to be a challenge to scaling the digital health programs identified in the inventory. The findings were analyzed and synthesized into a report, which was shared with government and development partners.



UNITED NATIONS  
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### Assessing the Enabling Environment for ICTs for Health in Nigeria: A Landscape and Inventory

Prepared by the United Nations Foundation in Support of ICT4SOML  
SEPTEMBER 2014

**REPORT:** *Assessing the Enabling Environment for ICTs for Health in Nigeria: A Landscape and Inventory*



## EXAMPLE:

### HEALTH INFORMATION SYSTEM ASSESSMENT WORKSHOP IN SOUTH AFRICA

In March 2009, Statistics South Africa, in collaboration with the national, provincial, district and facility departments of health, the department of home affairs, the hospital association of South Africa, the Medical Research Council, the World Health Organization Country Office and selected non-governmental, academic and private sector organizations, led a national workshop to assess the HIS in the country.

The assessment was intended to provide a description and analysis of the state of HIS components, in addition to identifying strengths and weaknesses, gaps and opportunities, and barriers to using health information. Further, the assessment aimed to provide a baseline status of the country's HIS to enable progress monitoring against the standards outlined in the Health Metrics Network (HMN) framework<sup>5</sup> and promote a comprehensive understanding of HIS amongst all stakeholders. The data from this report was eventually used to inform the development of South Africa's national eHealth strategy.

The assessment adapted HMN's assessment tool version 4.0 to suit South Africa's HIS, followed by a selection of questions matched to eight stakeholder groups developed using HMN's Group Builder Tool. Questions on chronic non-communicable diseases, which were not standard to the assessment tool, were also added.

A two-day workshop was held with approximately 200 participants in attendance, all of whom received background information on the HMN framework and existing reviews of the HIS in South Africa. The eight groups scored six HIS components, as it applied to their expertise on a four-point scale from highly adequate to not adequate. The six components included: HIS resources, indicators, data sources, data management, information products, and dissemination and use. The findings from this assessment can be found at: <http://goo.gl/8mTlzM>



TOOL:  
**SAMPLE DATABASE FIELDS FROM NIGERIA LANDSCAPE AND INVENTORY ANALYSIS**

The following table outlines the database fields used to structure and capture the data for digital health programs identified through key informant interviews, desk research, and online submissions for the landscape and inventory analysis conducted in Nigeria. These fields provided the parameters for comparison and analysis of digital health programs identified. The design of this inventory was built off of the work led by mRegistry.org, a multi-partner effort to establish a global repository for mHealth implementations and develop a systematic method and standardized taxonomy for describing mHealth projects.

TABLE 4: **SAMPLE DATABASE FIELDS FOR DIGITAL HEALTH LANDSCAPE AND INVENTORY ANALYSIS**

| VALUE                               | DEFINITION   | INVENTORY RULE  |
|-------------------------------------|--|---|
| <b>CATEGORY: Name of Project</b>    |  |   |
| Free text                           | Most common name(s) used to refer to the digital health project                                  | One name per value. Standardize name if multiple uses.                        |
| <b>CATEGORY: Organization</b>       |  |   |
| Free text                           | Company(-ies) or organization(s) that are primary point of contact for the project.              | List all of the company(-ies)/organization(s) involved, separated by a comma. |
| <b>CATEGORY: Name of Tool</b>       |  |   |
| Free text                           | Most common name(s) used to refer to the digital health tool used in the project.                | One name per value. Standardize name if multiple uses.                        |
| <b>CATEGORY: Vendor / Developer</b> |  |   |
| Free text                           | Company(-ies) or organization(s) that are the vendor(s)/developer(s) of the digital health tool. | List all of the vendor(s) / developer(s) involved, separated by a comma.      |



| VALUE                                 | DEFINITION  | INVENTORY RULE  |
|---------------------------------------|---|---|
| <b>CATEGORY: Description</b>          |   |   |
| Free text                             | Describe the digital health tool in 100 words or fewer.   | 100 word maximum.   |
| <b>CATEGORY: Project Approach</b>     |   |   |
| Registration and Vital Events         | Data collection tool, registering patients into a database and/or tracking vital events (i.e., births, deaths).   | One type of tool per project. If multiple tools are relevant, select most prominent type. |
| Health Information System             | System that captures, stores and transmits individual or aggregate health information. Inclusive of electronic health records.                          | One type of tool per project. If multiple tools are relevant, select most prominent type. |
| Scheduling and Reminders              | Aids in scheduling appointments and reminders either direct-to-client or to the health worker for patient follow-up.                                    | One type of tool per project. If multiple tools are relevant, select most prominent type. |
| Decision-support                      | Used by health care providers at the point-of-care to guide patient's treatment, disease management and care. May concurrently be used to collect data. | One type of tool per project. If multiple tools are relevant, select most prominent type. |
| Patient Education and Behavior Change | Direct-to-client service that provides education and/or guides behavior change.   | One type of tool per project. If multiple tools are relevant, select most prominent type. |
| Provider Training                     | Distance learning for health workers using mobile phone (mLearning).  | One type of tool per project. If multiple tools are relevant, select most prominent type. |
| Resource Management                   | Commodities and human resources management. Inclusive of supply chain monitoring.   | One type of tool per project. If multiple tools are relevant, select most prominent type. |



| VALUE                              | DEFINITION   | INVENTORY RULE  |
|------------------------------------|--|---|
| Health Financing                   | Mobile phone-based payment system used to disperse payments to health workers or pay for health services.        | One type of tool per project. If multiple tools are relevant, select most prominent type.                   |
| Communication                      | Permits and/or enhances communication between health care providers and/or between providers and their patients. | One type of tool per project. If multiple tools are relevant, select most prominent type.                   |
| Disease Surveillance and Reporting | Indicator reporting in 'real-time', potentially coupled with GIS mapping.  | One type of tool per project. If multiple tools are relevant, select most prominent type.                   |
| <b>CATEGORY: SOML Target Area</b>  |  |   |
| MNCH                               | The project generally focuses on maternal, neonatal and child health (MNCH).                                     | One target area per project. If multiple target areas are relevant, select most prominent as main function. |
| Essential Commodities              | The project primarily focuses on childhood essential commodities and medicine.                                   | One target area per project. If multiple target areas are relevant, select most prominent as main function. |
| Nutrition                          | The project primarily focuses on childhood nutrition.  | One target area per project. If multiple target areas are relevant, select most prominent as main function. |
| PMTCT                              | The project primarily focuses the prevention of mother-to-child transmission of HIV/AIDS.                        | One target area per project. If multiple target areas are relevant, select most prominent as main function. |
| Immunizations                      | The project primarily focuses on routine immunizations or immunization coverage.                                 | One target area per project. If multiple target areas are relevant, select most prominent as main function. |



| VALUE   | DEFINITION   | INVENTORY RULE  |
|---------|--|---|
| Malaria | The project primarily focuses on malaria prevention and control. | One target area per project. If multiple target areas are relevant, select most prominent as main function. |

#### CATEGORY: State

|                                 |  |  |
|---------------------------------|--|--|
| Any state(s) in Nigeria.        | Nigerian state(s) in which implementation is taking place. | New row per state. Only applies to Nigeria inventory.  |
| <b>CATEGORY: Country</b>        |  |  |
| Any country(-ies) in the world. | Country(-ies) of implementation for digital health tool.   | New row per country. Only applies to global inventory. |

#### CATEGORY: Geographic Spread

|                  |   |   |
|------------------|---|---|
| Sub-Regional     | The tool is being implemented at the institution, town or city level.                                   | Select one geographic distribution per tool. Reach of health ICT tool implementation is limited to country-level.     |
| Regional         | The tool is being implemented at a state, district or regional level within a particular country.       | Select one geographic distribution per tool. Reach of digital health tool implementation is limited to country-level. |
| Multiple Regions | The tool is being implemented across multiple states, districts or regions within a particular country. | Select one geographic distribution per tool. Reach of health ICT tool implementation is limited to country-level.     |
| Nationwide       | The tool is being implemented throughout a particular country.  | Select one geographic distribution per tool. Reach of health ICT tool implementation is limited to country-level.     |

**VALUE****DEFINITION****INVENTORY RULE****CATEGORY: Level of Scale**

|                  |  |   |
|------------------|--|---|
| Proof-of-Concept | The tool is undergoing short-term feasibility testing in a limited or controlled environment.                    | Select one of the options. Add comment if additional explanation is needed. |
| Pilot            | The tool is undergoing feasibility testing and initial implementation in a time-limited and defined environment. | Select one of the options. Add comment if additional explanation is needed. |
| Scale-up         | The tool is being scaled-up after initial piloting.  | Select one of the options. Add comment if additional explanation is needed. |
| At-scale         | The tool has reached intended scale and is on-going.   | Select one of the options. Add comment if additional explanation is needed. |

**CATEGORY: Technology**

|                        |  |  |
|------------------------|--|--|
| Pre-loaded Application | Software application that is either downloaded and stored on mobile phone's memory storage or accessed through a memory card. Use of application does not require data connectivity. | One technology per tool based on the predominant and/or most used feature. |
| Data Application       | Software application that requires data connectivity (i.e., WAP, 2G, 3G) to run on a mobile phone.   | One technology per tool based on the predominant and/or most used feature. |
| IVR                    | Information delivered or accessed through an interactive voice response (IVR) system.  | One technology per tool based on the predominant and/or most used feature. |



| VALUE                     | DEFINITION  | INVENTORY RULE   |
|---------------------------|---|--|
| Text SMS                  | Information delivered or accessed through text-based messages (SMS) on the mobile phone.  | One technology per tool based on the predominant and/or most used feature.         |
| Rich-media SMS            | Information delivered or accessed through audio-visual based SMS messages on the mobile phone.  | One technology per tool based on the predominant and/or most used feature.         |
| Pre-loaded Video          | Videos that are either downloaded and stored on a mobile phone's memory or accessed through a memory card. Does not require data connectivity to access the videos. | One technology per tool based on the predominant and/or most used feature.         |
| Data Video                | Videos that require data connectivity (i.e., WAP, 2G, 3G) to operate on a mobile phone.   | One technology per tool based on the predominant and/or most used feature.         |
| Voice                     | Utilize live voice (calls) to support the performance of health workers.  | One technology per tool based on the predominant and/or most used feature.         |
| Pre-loaded Audio          | Audio that is either downloaded and stored on a mobile phone's memory or accessed through a memory card. Does not require data connectivity to access the audio.    | One technology per tool based on the predominant and/or most used feature.         |
| Web-based Portal          | Application can be accessed using a web page. Requires Internet connectivity.   | One technology per tool based on the predominant and/or most used feature.         |
| <b>CATEGORY: Platform</b> |   |  |
| Free text                 | Infrastructure used to build, store and/or deliver the application.   | All platforms used should be on one row. Separate multiple platforms using commas. |



| VALUE                                   | DEFINITION   | INVENTORY RULE  |
|---|--|---|
| <b>CATEGORY: Platform Compatibility</b> |  |   |
| Basic                                   | Mobile phone capability limited to SMS and Voice.  | Multiple values allowed. Separate multiple values using commas. |
| Java-enabled                            | Mobile phone equipped with WAP browser, SMS, Voice and a Memory Card.  | Multiple values allowed. Separate multiple values using commas. |
| Android Smartphone                      | Mobile phone enabled with data connectivity and audio-visual capabilities operating on the Android platform.                   | Multiple values allowed. Separate multiple values using commas. |
| Personal Digital Assistant (PDA)        | Mobile phone with data connectivity and audio-visual capabilities.   | Multiple values allowed. Separate multiple values using commas. |
| Blackberry                              | Mobile phone with data connectivity and audio-visual capabilities operating on the blackberry.                                 | Multiple values allowed. Separate multiple values using commas. |
| iPhone/iOS                              | Mobile phone or tablet with data connectivity and audio-visual capabilities operating on the iOS platform.                     | Multiple values allowed. Separate multiple values using commas. |
| Windows Smartphone                      | Mobile phone with data connectivity and audio-visual capabilities operating on the Windows platform.                           | Multiple values allowed. Separate multiple values using commas. |
| Other Smartphone                        | Use in cases where type of smartphone is not indicated and/or type is not inclusive of Android, Blackberry, iPhone or Windows. | Multiple values allowed. Separate multiple values using commas. |



| VALUE              | DEFINITION  | INVENTORY RULE  |
|--------------------|---|---|
| [Mac] OS X         | Computer running OS X. Typically Apple computers.   | Multiple values allowed. Separate multiple values using commas. |
| Windows OS         | Computer or tablet running the Windows OS.  | Multiple values allowed. Separate multiple values using commas. |
| Linux/GNU OS       | Computer running Linux/GNU OS.  | Multiple values allowed. Separate multiple values using commas. |
| Unix OS            | Computer running Unix OS.   | Multiple values allowed. Separate multiple values using commas. |
| Google Chromium OS | Computer or other device running Google Chromium OS. Device must be able to access the web. | Multiple values allowed. Separate multiple values using commas. |
| All                | Compatibility with two or more platforms.   | Multiple values allowed. Separate multiple values using commas. |

| CATEGORY: Open Source |   |   |
|-----------------------|---|---|
| Yes                   | The tool and/or its components are open source.     | Select one of the options. Add comment to denote which aspects of mobile tool are available open-source, if applicable. |
| No                    | The tool and/or its components are not open source. | Select one of the options. Add comment to denote which aspects of mobile tool are available open-source, if applicable. |
| N/A                   | Information not available.                          | Select one of the options. Add comment to denote which aspects of mobile tool are available open-source, if applicable. |



| VALUE | DEFINITION | INVENTORY RULE |
|-------|------------|----------------|
|-------|------------|----------------|

**CATEGORY: Business Model**

|           |   |                   |
|-----------|---|-------------------|
| Free text | Describe the funding sources for the project in 100 words or fewer. | 100 word maximum. |
|-----------|---|-------------------|

**CATEGORY: Governance Structure**

|           |  |                   |
|-----------|--|-------------------|
| Free text | Describe the mechanisms put in place to provide oversight, direction, etc. for the project's sustained progress in 100 words or fewer. | 100 word maximum. |
|-----------|--|-------------------|

**CATEGORY: Funders / Stakeholders**

|           |  |   |
|-----------|--|---|
| Free text | List all of the funders and stakeholders of the project. | Multiple values allowed. Separate multiple values using commas. |
|-----------|--|---|

**CATEGORY: Source Data**

|           |  |                     |
|-----------|--|---------------------|
| Free text | Reports or guidelines about the tool or used to inform the tool. | One source per row. |
|-----------|--|---------------------|

**CATEGORY: Website**

|           |                              |                           |
|-----------|------------------------------|---------------------------|
| Free text | Primary website of the tool. | One website link per row. |
|-----------|------------------------------|---------------------------|

**CATEGORY: Contact**

|           |   |                          |
|-----------|---|--------------------------|
| Free text | Contact details, such as email or phone number, for a primary point of contact for project. | Email address preferred. |
|-----------|---|--------------------------|



## ACTIVITY 2: CONDUCT A POLICY REVIEW

**TIME:** 4 months

**RESOURCES REQUIRED:**

Research Team  
WHO/ITU eHealth Strategy Toolkit  
Source Policy Documents

**RESEARCH APPROACH:**

Exploratory Research

**RESEARCH METHODS:**

Key Informant Interviews  
Literature Review  
Document Review

**TOOLS:**

Analysis Framework  
Sample Source Document List

The policy review examines policies relevant to digital health to evaluate the nature of current legislation and regulations and identify gaps and needs. This exercise is critical to developing a national digital health strategy that is reflective of a country's standing political landscape to ensure it builds on existing work rather than increasing fragmentation or duplicating previous efforts. In addition, the policy review includes an analysis of digital health policies from select benchmark countries to highlight different approaches and draw from emerging best practices.

In this activity, key informants are interviewed to map and explore the structure, interaction and role of the key entities in the health system and the information communication technology system. Source policy documents are identified through literature searches and recommendations from key informants. Analysis of the source documents is based on identifying the themes related to the WHO/ITU eHealth strategy toolkit, including leadership and governance, strategy and investment, legislation, policy and compliance, standards and interoperability, workforce, infrastructure and services and applications. Further, the analysis provides additional context on the country's health system goals and priorities.

Benchmark countries are chosen because: 1) their approach and structure has been recognized as exemplary by technical experts or 2) their approach to strengthening their enabling environment is relevant to the country and aligns in terms of geography, demography and health indicators. Lastly, as part of the policy review, an evaluation of a country's current stage of developing an enabling environment for digital health is conducted using the WHO/ITU eHealth strategy toolkit framework, which describes four stages: a) experimentation to early adoption, b) early adoption to developing and building up, c) developing and building up to scale-up, and d) scale-up to mainstreaming.



## EXAMPLE: LEADING A POLICY REVIEW IN NIGERIA

A comprehensive review of existing digital health policies was led between May and September 2015 as part of the assessment process in Nigeria. Based on recommendations by key informants, 13 policy documents were reviewed, of which 9 were reviewed in their entirety, and 4 had specific sections reviewed.

Seventeen key informants were interviewed to understand the relationship between the various health and ICT ministries, departments and agencies. These key informants included government agencies, international donors and implementing partners.

Seven benchmark countries/regions were selected, based on their excellence in establishing an enabling environment for digital health and/or shared alignment with the Nigerian context in terms of economy, geography, demographics and health indicators. These seven countries/regions were: United Kingdom, Philippines, European Union, South Africa, Ghana, Kenya and Rwanda. Each country/region's eHealth [digital health] strategy was reviewed to capture examples and best practices to learn and draw from. An evaluation of Nigeria's current stage of developing an enabling environment for digital health found its in transition from "experimentation and early adoption" to "developing and building up."

The review identified fragmentation amongst twelve relevant digital health policies and an absence of an overarching inter-ministerial governing body to lead implementation, resulting in weak coordination, communication and clearly delineated roles and responsibilities. This fragmentation was partly due to the lack of a national eHealth framework in Nigeria, which the initiative aimed to address. The review was critical in highlighting the need to harmonize policies, so the FMOH and FMCT could advance national goals by progressing in the same direction. A full report of the findings can be accessed at <http://goo.gl/gpKJhy>



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### Assessing the Enabling Environment for ICTs for Health in Nigeria: A Review of Policies

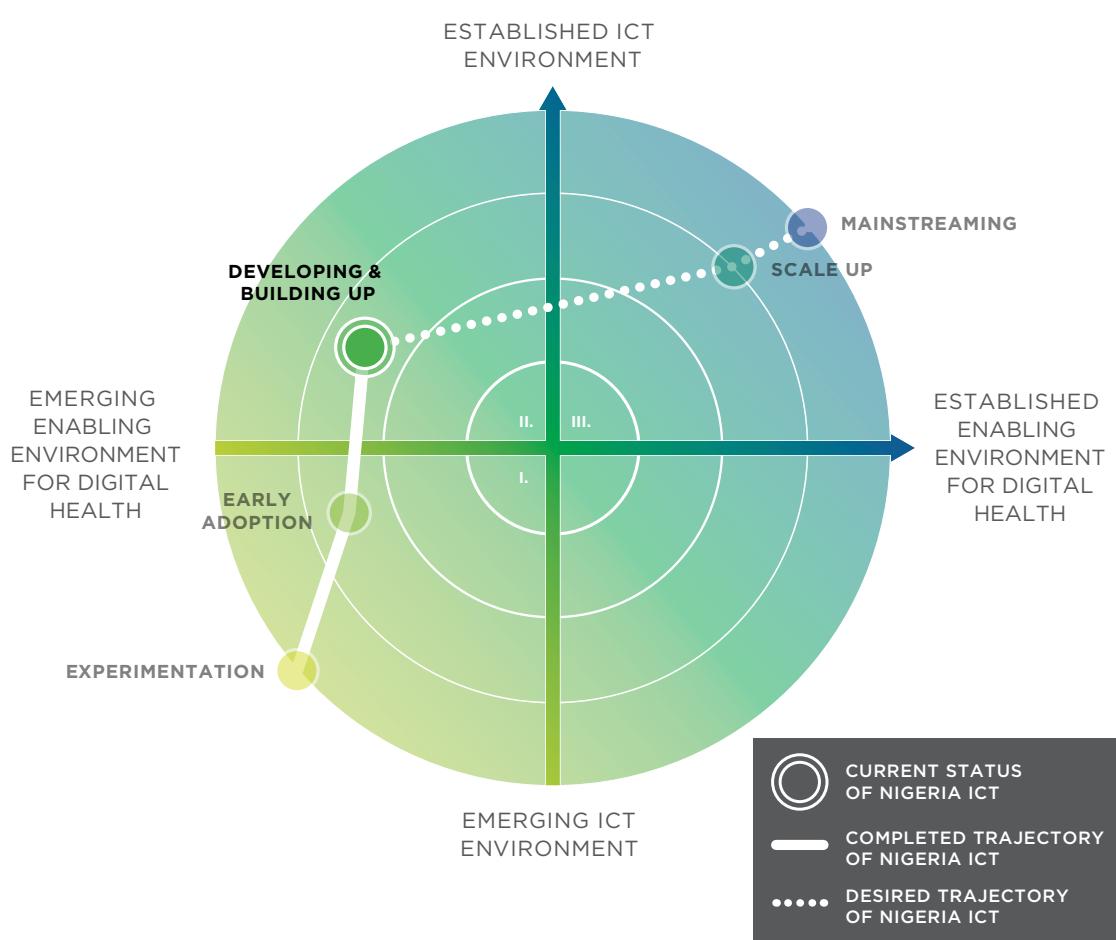
Prepared by the United Nations Foundation in Support of ICT4SOML

SEPTEMBER 2014

**REPORT:** *Assessing the Enabling Environment for ICTs for Health in Nigeria: A Review of Policies*



**FIGURE 5: CURRENT STATUS OF THE NIGERIA DIGITAL HEALTH ENABLING ENVIRONMENT ACCORDING TO THE WHO-ITU STAGES/EXTENT OF DEVELOPMENT**





## EXAMPLE:

### **REVIEWING NATIONAL HEALTH PRIORITIES AND THE CURRENT EHEALTH CONTEXT IN THE PHILIPPINES**

Between 2013 and 2014, the Department of Health (DoH) and the Department of Science and Technology (DoST) in the Philippines engaged in developing its eHealth strategic plan and framework, following a series of advocacy consultations by the ICT for Health Technical Working Group established in 2010, by Secretary of Health, Enrique Ona.<sup>6</sup> The first step of its six-step process included a review of the countries national health priorities and current eHealth context.

The following documents were reviewed:

- Universal Health Care or Kalusugan Pangkalahatan
- National Objectives of Health 2011-2016
- DOH Health Enterprise Architecture Version 1.0
- Philippine HIS Strategic Plan 2010-2016
- Information System Strategic Plan 2011-2013
- ICT4H Findings and Recommendations,
- National HIS forum country commitments

The DoH had been actively applying ICT to improve health services and outcomes in the country, and learned important lessons during its experimentation phase. This led to increasing the development and scale of health information systems and investing in the enabling environment for digital health, including establishing and adopting standards. The Philippines had a strong enabling environment to draw from when it began to establish its strategic eHealth framework. For instance, the Philippines Health Information System 2010-2016 strategic plan outlined the key sources of health information in the country and outlined the eHealth vision, mission, strategic goals and objectives and priority focus areas. Further, the Philippine Council had undertaken significant eHealth initiatives for Health Research and Development under the DoST, including the Health Research and Development Information Network (HERDIN) and Philippine Electronic Health Information Village. The country is part of a strong regional network called the Asia eHealth Information Network (AeHIN). In October 2015, assessment tools developed in Philippines, Thailand, Indonesia, Malaysia, Lao and Myanmar, as part of their respective eHealth strategic development processes will be released, and available at: <http://www.aehin.org/>.



## TOOL: **POLICY REVIEW ANALYSIS QUESTIONS**

TABLE 5: WHO/ITU EHEALTH STRATEGY COMPONENT POLICY ANALYSIS QUESTIONS

| DIGITAL HEALTH<br>COMPONENT                       | POLICY ANALYSIS QUESTIONS  |
|---|--|
| <b>Leadership<br/>and<br/>Governance</b>          | <ul style="list-style-type: none"><li>• What is the structure of the health system (e.g. levels, departments, agencies)?</li><li>• What are the roles and responsibilities of each level in the health system?</li><li>• What is the structure of the information and communication technology ministry (e.g. departments, agencies)?</li><li>• What are the roles and responsibilities of the information and communication technology stakeholders relevant to healthcare?</li><li>• Which entities are responsible for setting national health priorities and goals, engendering consensus, approving policies and funding?</li><li>• Under which government departments is digital health managed, and in what capacity?</li><li>• Is there a clear governance and management structure to support the national digital health strategy?</li><li>• What key indicators are driving the decision-making framework adopted by the highest governing bodies in health and information communication technology (e.g. MDGs, National Strategic Plans)?</li><li>• What are the priority areas identified by the highest governing body for the implementation of digital health?</li><li>• What are good governance practices formally adopted by the highest governing body?</li></ul> |
| <b>Strategy and<br/>Investment</b>                | <ul style="list-style-type: none"><li>• Is there an existing national digital health (or related) strategy? When was it developed and approved?</li><li>• What are the key strategic drivers of digital health in relation to the country's overall goals and priorities?</li><li>• How is healthcare currently financed in the country?</li><li>• What are existing mechanisms that can support financing digital health?</li></ul>   |
| <b>Legislation,<br/>Policy and<br/>Compliance</b> | <ul style="list-style-type: none"><li>• In how many policy documents is digital health represented? How many of these documents have been approved?</li><li>• How do these policy documents align with the national health plan?</li><li>• What kinds of overlap or contradictions exist between the policy documents, if any?</li><li>• How have the policy documents evolved over the last 5 years?</li></ul>  |

**Legislation,  
Policy and  
Compliance  
*continued***

- How do the policies support an enabling environment for digital health? Where are there gaps?
- What patient and data privacy policies exist, if any?
- What mechanisms or platforms exist for compliance with digital health related policies?

**Standards and  
Interoperability**

- Are there health informatics standards established? Is yes, are they consistent and aligned?
- Which international standards does the country government refer to for guidance?
- What local standards have been developed and adopted?
- Has guidance on these standards been shared/posted publicly?
- What compliance mechanisms are in place for the enforcement of standards?
- Is there a centralized body coordinating health informatics standards?
- Has the country developed or adopted a digital health system architecture?
- Which components of the architecture have been implemented?
- Which platforms or registries has it prioritized as part of the architecture?

**Workforce**

- What training has been provided in digital health to doctors, nurses, and community health workers and other health cadres either as part of their initial education, in-service or continuing education?
- What plans and financing mechanisms are in place to support on-going digital health capacity building?
- How is digital health capacity building carried out?
- What training programs are there for Health IT professionals?
- Is there a career path for Health IT professionals within the national health system?

**Infrastructure**

- What is the current environment for available and reliable electricity and connectivity to support digital health tools?
- What investments are being made to improve the availability and reliability of electricity and connectivity across the health system?
- What is the current availability of infostructure<sup>7</sup> – including, computers, mobile phones, tablets and Internet, at different levels of the health system?
- What investments are being made to equip the health system with infostructure?

**Services and  
Applications**

- What digital health tools have been approved and rolled out at the national level?
- What protocols exist for digital health tools to integrate into national systems?
- What types of digital health tools has the government prioritized to support national health system goals?



**TOOL:**  
**SAMPLE LIST OF POLICY DOCUMENTS  
REVIEWED IN NIGERIA**

TABLE 6: **POLICY DOCUMENTS REVIEWED IN NIGERIA**

| DOCUMENT TITLE  | TYPE OF DOCUMENT | RELEVANT SECTION          |
|---|------------------|---------------------------|
| <b>ICT4SOML Highlights Report</b>                               | Report           | Background                |
| <b>ICT4SOML Aide Memoire</b>                                    | Informal Report  | Background                |
| <b>ICT4SOML Situational Analysis</b>                            | Report           | Background                |
| <b>WHO-ITU National eHealth Strategy Toolkit</b>                | Guidelines       | Entire Document           |
| <b>National Health Policy</b>                                   | Policy           | Nigeria Policies          |
| <b>National Human Resources for Health</b>                      | Policy           | Nigeria Policies          |
| <b>FMOH Integrated Disease Surveillance and Response Policy</b> | Policy           | Nigeria Policies          |
| <b>National Strategic Health Development Plan Framework</b>     | Framework        | Nigeria Policies          |
| <b>Nigeria Global Health Initiative Strategy</b>                | Strategy         | Nigeria Policies          |
| <b>Nigeria ICT Policy</b>                                       | Policy           | Nigeria Policies          |
| <b>FMOH Equipment Policy</b>                                    | Policy           | Nigeria Policies          |
| <b>FMOH Guidelines on Medical Equipment</b>                     | Guidelines       | Nigeria Policies          |
| <b>FCT eHealth Policy Draft</b>                                 | Policy           | Nigeria Policies          |
| <b>mHealth Support Tools for Frontline Health Workers</b>       | Report           | Global Benchmark Policies |



| DOCUMENT TITLE                           | TYPE OF DOCUMENT    | RELEVANT SECTION          |
|--|---------------------|---------------------------|
| UK/Scotland                              | Strategy/<br>Report | Global Benchmark Policies |
| Philippines                              | Strategy            | Global Benchmark Policies |
| European Union eHealth Strategies Report | Report              | Global Benchmark Policies |
| South Africa eHealth Strategy            | Strategy            | Global Benchmark Policies |
| Ghana eHealth Strategy                   | Strategy            | Global Benchmark Policies |
| Kenya eHealth Strategy                   | Strategy            | Global Benchmark Policies |
| Rwanda eHealth Strategy                  | Strategy            | Global Benchmark Policies |
| GSMA mHealth Feasibility Report: Nigeria | Report              | Other Relevant Documents  |
| Trustlaw Report on Privacy and Security  | Report              | Other Relevant Documents  |
| Standards and Interoperability           | Report              | Other Relevant Documents  |
| Sustainable Financing                    | Report              | Other Relevant Documents  |



## ACTIVITY 3: LEAD A FIELD ASSESSMENT

**TIME:** 3-6 months

**RESOURCES REQUIRED:**

Survey

Field Staff

Trainers

Data Analysts

**RESEARCH METHODS:**

Service Delivery Questionnaire

Health Administration Questionnaire

Field Assessment Analysis Framework

**TOOLS:**

Sample Survey

**RESEARCH APPROACH:**

Descriptive Research

The field assessment aims to take stock of the current status of select ICT components at each level of a country's health system to validate findings from the landscape and inventory analysis and policy review, map the digital health capacity at different levels of the health system, and test the feasibility of scaling up select digital health tools. The ICT foundational components evaluated in the field assessment include:

- **INFRASTRUCTURE:** The availability, source and support for ICT infrastructure (i.e. electricity and connectivity) and infostructure (i.e. computers, mobile phones, tablets etc.)
- **SERVICES AND APPLICATIONS:** The types of digital health tools being used, and the availability and nature of support
- **WORKFORCE:** The availability of various health cadres, and status of digital health skills
- **STANDARDS AND INTEROPERABILITY:** The systems that support capturing, delivering, storing, analyzing and utilizing patient and service delivery data
- **STRATEGY AND INVESTMENT:** The availability and approval of budgets dedicated to investing in digital health tools and capacity building
- **PLATFORMS FOR SCALE:** The current status of prioritized digital health tools and platforms poised for national scale in a country

The field assessment is structured to evaluate the current status of the ICT foundational components from service delivery and health administration perspectives, recognizing that digital health tools require a coordinated systems-based approach to achieve scale, sustainability and utility. Service delivery includes surveying leadership at healthcare institutions (i.e., clinics, hospitals), and health administration includes surveying leadership at government offices.

The geographical scope of the survey depends upon the resources available and the goals of the national government. However, to achieve an accurate depiction of the current status of ICT foundational components in the country, the scope is structured to understand regional differences across every level of the health system. This includes conducting health administration questionnaires at the federal/national, state and local level and service delivery questionnaires at primary, secondary and tertiary healthcare facilities.



There are three key stages of the field assessment. The first stage focuses on planning for the field assessment, the second stage focuses on executing the field assessment, and the third stage focuses on analyzing and reporting on the findings from the field assessment. Each stage is described in further detail.

## 1. PRE-ASSESSMENT: PLANNING AND ORGANIZATION

- Design the scope, sample size, plan and timeline for executing the study. This may include identifying and contracting an agency with experienced field enumerators.
- Define the roles and responsibilities for the duration of the assessment
- Sensitize key stakeholders at every level in the health system, introducing the aim and goals of the assessment and mobilizing buy-in
- Obtain necessary approvals from regulatory bodies at the national and state levels (e.g. national health research ethics board)<sup>8</sup>
- Develop and test assessment tools
- Set up and test database based on survey parameters to capture and store data
- Recruit, select and train research assistants, field enumerators, in addition to supervisors, and staff to perform telephone and email questionnaires, where required. A ratio of 1:4 supervisors to field enumerators is recommended
- Prepare field manual outlining assessment protocols, and lead 1-2 training(s) with all staff members to outline aims and objectives of the assessment and review assessment tools and field manual

## 2. ASSESSMENT: DEPLOYMENT OF FIELD STAFF AND MONITORING

- Prepare for the study to take between six to ten weeks, depending on its scope
- Organize four levels of management to support the implementation of the assessment:
  - LEAD TEAM oversees the study processes from design to data collection to reporting.
  - FIELD ASSESSMENT CORE TEAM provides technical input to the study design, assessment tools, and recruitment and training of field staff. It also supports the provision of broader coordination and administrative support to team leaders and team supervisors during data collection, data cleaning and data analysis.
  - TEAM LEADERS support coordination and supervision of the study at various geographical locations (e.g. state). They provide second level data cleaning and validation services and are responsible for the collation of completed questionnaires and final dispatch to the field assessment core team.
  - TEAM SUPERVISORS are directly responsible for managing a team of field enumerators, providing oversight to the face-to-face administration of questionnaires. They are also involved in data collection and data validation.



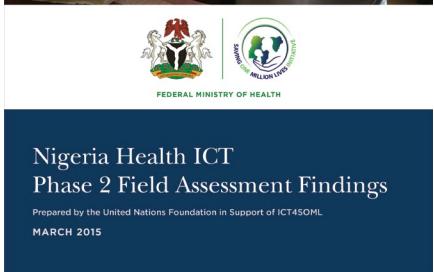
### 3. POST-ASSESSMENT: DATA ANALYSIS AND REPORTING

- Data cleaning and validation is conducted at several levels.
  - › TEAM LEADERS AND SUPERVISORS clean and validate data collected by their immediate teams before sending to the field core team.
  - › FIELD CORE TEAM conducts second level data cleaning and data validation before sending to data entry clerks. A final level of cleaning is conducted following the completion of data entry, by randomly selecting 10% of questionnaires and re-entering the data for validation.
  - › LEAD TEAM oversees the quality and accuracy of the data.



## EXAMPLE: CONDUCTING A FIELD ASSESSMENT IN NIGERIA

A field assessment was led in Nigeria between December 2014 and February 2015, drawing from the Health Information Systems (HIS) assessment and readiness tools developed by the Health Metrics Network. The core team contracted a local research institution to lead the data collection efforts, which included the administration of questionnaires through face-to-face interviews, telephone and email correspondence.



**REPORT: Nigeria Health ICT  
Phase 2 Field Assessment Findings**

The specific objectives of the field assessment were to:

1. Assess the gap between the current status and full implementation of early digital health opportunities (i.e. NHMIS, mSCM, mCCT, and Demand Generation)
2. Map the health system's current experience with digital health tools
3. Assess the current capacity and human resource needs for current and scaled implementation of digital health tools
4. Use the data collected to set a baseline to monitor and evaluate digital health activities
5. Identify and assess digital health success factors for high performing states, local government areas (LGAs), facilities and users
6. Provide recommendations to support the scale up of digital health interventions from its current state to coverage targets

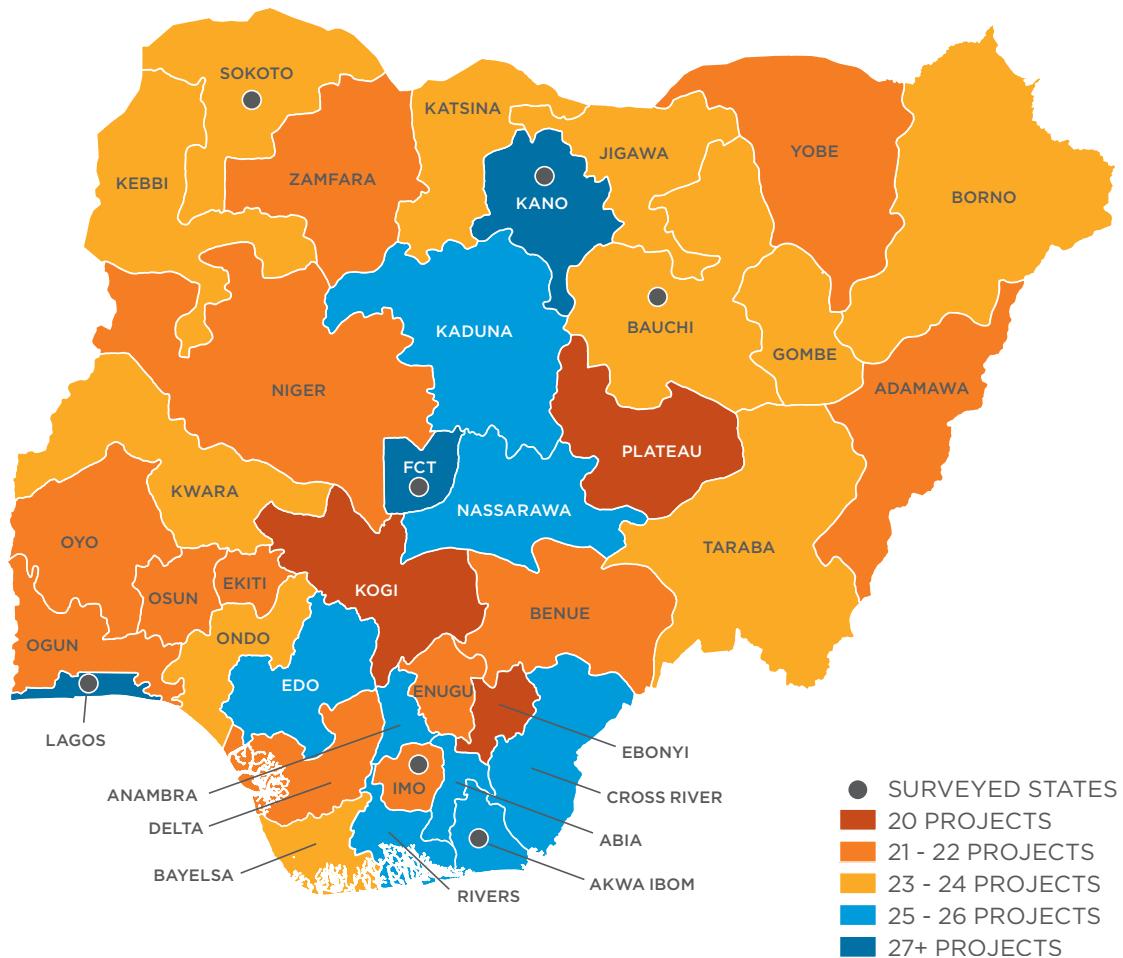
### METHODOLOGY

Face-to-face interviews were conducted with stakeholders at the federal government level in Abuja and at implementing partner's head offices. To ensure coverage of the entire geo-political spread of Nigeria, and accurately represent the scope of the health system, one state per geo-political region was selected for in-depth interviews with representation of states with high, moderate, and low digital health activity. In addition, the state with the most digital health initiatives was chosen to allow for rich discussions on the strengths, weaknesses, gaps, and needs to scale up digital health tools. This data was referenced from the landscape and inventory analysis.

In each state, interviews were conducted with state-level stakeholders in addition to healthcare workers at the Local Government Area (LGA), the next level of government authority in Nigeria. One LGA per senatorial zone was chosen, for a total of 3 LGAs per state, with the exception of one state, where 4 LGAs were included. Finally, leadership was interviewed at the facility level. Seven facilities per LGA that represented a cross-section of those geographically located in urban and rural areas, and operated both publicly and privately, were chosen for a total of 126 facilities.



FIGURE 7: DIGITAL HEALTH ACTIVITY AT THE STATE LEVEL IN NIGERIA





## DATA ANALYSIS



The cleaning and analysis of the data was conducted in alignment with the WHO/ITU eHealth strategy framework from the federal, state, LGA and facility level perspectives. The preliminary data was presented as tables and as a written report to the core team and technical advisors from the UN Foundation. Both teams collaborated with the research partner to refine the analysis and recommendations from the field assessment. The findings were shared at a workshop, and developed into a report, which can be accessed at: <http://goo.gl/FE36P1>

TABLE 7: OVERVIEW OF NIGERIA FIELD ASSESSMENT SAMPLE

| HEALTH SYSTEM LEVEL | SAMPLE SIZE | METHOD  | KEY INFORMANT  | DATA COLLECTOR  | LIMITATION  |
|---------------------|-------------|---|--|---|---|
| <b>Federal</b>      | 9           | Structured qualitative key informant interviews | MOH & implementing partners                                | Principal Investigator                                      | Few interviews with federal agencies                            |
| <b>State</b>        | 7           | Structured qualitative key informant interviews | State Director of Planning and Research Statistics         | State Supervisor (ICT4SOML)                                 | No data on workforce from Bauchi; 1 week delay in Lagos         |
| <b>LGA</b>          | 22          | Structured qualitative key informant interviews | LGA M&E Officer  | State Supervisor (ICT4SOML)                                 |   |
| <b>Facility</b>     | 126         | Structured qualitative key informant interviews | Facility head, M&E Officer or Nurse Facility Administrator | Data collectors guided by PRS Director / State HMIS Officer | NUAHP strike, some interviews led over phone, Kano not included |



TOOL:  
**SAMPLE IN-DEPTH FIELD ASSESSMENT  
ANALYSIS FRAMEWORK**

TABLE 8: KEY INDICATORS UNDER EACH DIGITAL HEALTH COMPONENT

| DIGITAL HEALTH COMPONENT         | KEY INDICATORS   |
|----------------------------------|--|
| <b>Infrastructure</b>            | <ul style="list-style-type: none"><li>• Availability of working infostructure (e.g. computers, mobile phones, tablets, internet, email) at health administration offices and service delivery facilities interviewed</li><li>• Number of available infostructure items at each health administration office and service delivery facility interviewed</li><li>• Predominant operating systems of mobile phones and computers used at health administration offices and service delivery facilities interviewed</li><li>• Main providers of infostructure items at each health administration office and service delivery facility interviewed</li><li>• Availability of ICT infrastructure at health administration offices and service delivery facilities interviewed</li><li>• Reliability of ICT infrastructure at health administration offices and service delivery facilities</li><li>• Source of electricity at health administration offices and service delivery facilities interviewed</li><li>• Provider of network connectivity used at health administration offices and service delivery facilities interviewed</li><li>• Availability of support for ICT infostructure maintenance at health administration offices and service delivery facilities</li><li>• Availability of paper-based health data reporting tools at service delivery facilities interviewed</li></ul> |
| <b>Services and Applications</b> | <ul style="list-style-type: none"><li>• Availability of key digital health platforms, either prioritized or approved by the national government in health administration offices and service delivery facilities interviewed</li><li>• Availability of technical support for key digital health platforms, either prioritized or approved by the national government in health administration offices and service delivery facilities interviewed</li><li>• List of all digital health tools used in health administration offices and service delivery facilities interviewed</li><li>• Details of the key technologies and/or platforms that the digital health tool utilizes (e.g. SMS, mobile)</li><li>• Appraisal of utility of digital health tools used in health administration offices and service delivery facilities interviewed</li><li>• Perception of immediate digital health tools needed in health administration offices and service delivery facilities interviewed</li></ul>   |

**Workforce**

- Availability of cadres trained on developing, managing, using, or supporting digital health tools in health administration offices and service delivery facilities interviewed
- Availability of cadres specifically dedicated towards developing, managing or supporting digital health tools in health administration offices and service delivery facilities
- Frequency of capacity building activities related to using and supporting digital health tools in health administration offices and service delivery facilities
- Perception of the immediate digital health skill needs in health administration offices and service delivery facilities interviewed

**Standards and  
Interoperability**

- Formats that routine reporting data is either sent or received by health administration offices and service delivery facilities interviewed
- Frequency that routine reporting data is either sent or received by health administration offices and service delivery facilities interviewed
- Availability and adoption of NHMIS in health administration offices and service delivery facilities to facilitate routine reporting
- Process and/or platforms to analyze, share and utilize routine reporting data to inform strategic planning at health administration offices and service delivery facilities interviewed
- Availability of Standard Operating Procedures (SOPs) outlining data management guidelines across the health system

**Strategy and  
Investment**

- Availability of budgets dedicated to ICT infrastructure, ICT infrastructure and digital health tools at health administration offices and service delivery facilities interviewed
- Percentage of budgets dedicated to ICT infrastructure, ICT infrastructure and digital health tools at health administration offices and service delivery facilities interviewed that were approved

**Challenges**

- Prioritizing the top challenges hindering digital health tools to achieve scale and sustainability at health administration offices and service delivery facilities: inadequate number of trained personnel, lack of digital health skills and capacity, lack of available ICT infrastructure and infrastructure, lack of reliable ICT infrastructure and infrastructure, lack of adequate training opportunities, lack of supportive tools, including reporting forms and guidance manuals, lack of SOPs, lack of transportation, lack of funding allocated to digital health



## TOOL: **SAMPLE QUESTIONNAIRES**

The most important consideration when structuring the field assessment is to align the questionnaire across the various levels of the health system and be clear about whether the respondent is referring to **health administration offices** or **service delivery facilities**. Understanding the current status of support structures for digital health in both health administration offices and service delivery facilities is important to sustain the flow and feedback loops of health data captured through digital health tools.

The data collected in the field assessment provides a snapshot of the ICT and digital health environment across the health system, in order to identify key gaps and needs, and inform geographic priorities and planning. The following tool outlines sample questionnaires to use in the field assessment. Organizations leading field assessments are advised to adapt the questionnaire based on the structure of a countries health system, the goals of a countries national health plan, available resources to lead the field assessment, and the data captured from the landscape and inventory analysis and policy review.



The health administration survey is designed for government-level officials, and central staff amongst external partners, such as donors, development organizations and academic institutions. The questionnaire evaluates the availability of support systems for digital health tools that compliment frontline service delivery tools and operations.

### **SECTION 1: ORGANIZATION INFORMATION**

Name of government ministry or organization: \_\_\_\_\_

Name of department: \_\_\_\_\_

Number of people in department: \_\_\_\_\_

Respondents name: \_\_\_\_\_

Job role of respondent: \_\_\_\_\_

Do you directly participant in your organization's work with developing, managing, deploying, monitoring or evaluating digital health tools?

Yes

No

### **SECTION 2: INFRASTRUCTURE**

Does your department have the following working ICT infostructure available?  
*(Repeat question for each item)*

Computers

100% of department

Landline telephones

75% of department

Mobile phones

50% of department

Tablets

25% of department

Internet

Does your organization provide department staff with mobile phones or tablets?

Yes

No

If yes, how would you classify majority of the type of mobile phones or tablets provided?

Basic phone

Smartphone

Feature phone

Other

If yes, what operating system do the provided mobile phones or tablets use?

iOS

Symbian

Android

Microsoft Windows

Blackberry

Other

Java



If yes, do the majority of the provided mobile phones or tablets have Internet available?

- Yes       No

Does your department have support for maintaining the ICT infostructure available?

- Great support available       Limited support available  
 Sufficient support available       No support available

If ICT infostructure support is available, who does your organization receive it from?

- ICT staff in the MOH       External consultants  
 Staff from the ICT ministry       Other (specify):  
 Internal organization staff

What is the main working source of electricity in your department?

- Central supply of electricity (e.g. national or community grid)       Solar power  
 Generator       Inverter power  
 Solar power       Other (specify):

If a working secondary source of power is available in your department, what is the source?

- Central supply of electricity (e.g. national or community grid)       Inverter power  
 Generator       Other (specify):  
 Solar power       None

What percent of working time is electricity available, either through the main source or secondary source?

- 100% of the time       50% of the time  
 75% of the time       25% of the time

Who is your organization's main internet provider?

- (Insert countries Internet providers)

What percent of working time is Internet available?

- 100% of the time       50% of the time  
 75% of the time       25% of the time



The following question requires physical counts to be conducted and/or documentation to be collected to verify the accuracy of the numbers reported.

Please enter the number of ICT infostructure available, and the number required, in your department

- |                                    |                             |
|------------------------------------|-----------------------------|
| — Computers (laptops and desktops) | — Photocopiers              |
| — Tablets                          | — Scanners                  |
| — Phones                           | — Internet modems           |
| — Printers                         | — Other sources of internet |

### SECTION 3: SERVICES AND APPLICATIONS

This section should be repeated for each digital health reported by the department.

Name of digital health tool that is used in your department: \_\_\_\_\_

Owner of the digital health tool (specify government ministry, external partner or private vendor): \_\_\_\_\_

This digital health tool is used for: (*Check all that apply*)

- |   |  |
|---|--|
| <input type="checkbox"/> Disease surveillance and reporting | <input type="checkbox"/> Scheduling and reminders              |
| <input type="checkbox"/> Registration and vital events      | <input type="checkbox"/> Patient education and behavior change |
| <input type="checkbox"/> Health information system          | <input type="checkbox"/> Provider training                     |
| <input type="checkbox"/> Health financing                   | <input type="checkbox"/> Communication                         |
| <input type="checkbox"/> Resource management                | <input type="checkbox"/> Decision support                      |

What is the current status of the digital health tool?

- |  |  |                                      |
|--|--|--------------------------------------|
| <input type="checkbox"/> Working and is being used | <input type="checkbox"/> Working and is not used | <input type="checkbox"/> Not working |
|--|--|--------------------------------------|

What is the primary technology of the digital health tool?

- |   |   |
|---|---|
| <input type="checkbox"/> Mobile application | <input type="checkbox"/> Desktop software |
| <input type="checkbox"/> SMS service        | <input type="checkbox"/> Other (specify)  |
| <input type="checkbox"/> Web-based software |   |

Do you have support available for the digital health tool?

- |                              |                             |                                 |
|------------------------------|-----------------------------|---------------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unsure |
|------------------------------|-----------------------------|---------------------------------|



If yes, what kinds of support is available? (*Check all that apply*)

- |   |  |
|---|--|
| <input type="checkbox"/> Telephone support      | <input type="checkbox"/> Manuals       |
| <input type="checkbox"/> Email support          | <input type="checkbox"/> Workshops     |
| <input type="checkbox"/> Online chat            | <input type="checkbox"/> FAQs          |
| <input type="checkbox"/> Local IT staff         | <input type="checkbox"/> Feedback form |
| <input type="checkbox"/> International IT staff |  |

Are there updates or changes made regularly to the digital health tool?

- Yes       No       Unsure

Has anyone in your department received formal training on this digital health tool?

- Yes       No

If yes, what kind of training support was provided (check all that apply)

- |  |  |
|--|--|
| <input type="checkbox"/> Certification             | <input type="checkbox"/> eLearning training course |
| <input type="checkbox"/> In-person course          | <input type="checkbox"/> User Guide (electronic)   |
| <input type="checkbox"/> In-person workshop        | <input type="checkbox"/> User Guide (hardcopy)     |
| <input type="checkbox"/> mLearning training course |  |

How useful is the digital health tool to improving operations in your department?

- Very useful       Minimally useful  
 Somewhat useful       Not useful

How useful is the digital health tool in supporting the achievement of national health goals?

- Very useful       Minimally useful  
 Somewhat useful       Not useful

#### **SECTION 4: WORKFORCE**

*This section can be used to evaluate which health cadres are trained on key digital health tools.*

Do you have documentation available, outlining the number of health cadres in the (insert geographical scope), and the number trained on (insert digital health skill or specific platform)?

- |  |  |
|--|--|
| <input type="checkbox"/> Doctors   | <input type="checkbox"/> Records / M&E Officer       |
| <input type="checkbox"/> Nurses/midwives                                   | <input type="checkbox"/> Pharmacist                  |
| <input type="checkbox"/> Community Health Officers/<br>Public Health Nurse | <input type="checkbox"/> Lab scientist or technician |
| <input type="checkbox"/> Community Health Extension<br>Workers             | <input type="checkbox"/> Other                       |



Adapt these cadres in alignment with the countries human resources for health system.



In your department, approximately how many staff are trained to develop, manage, support, monitor or evaluate digital health tools? \_\_\_\_\_

In the past 12 months, have there been any digital health capacity building activities for the staff in your department?

- Sufficient capacity building activities have taken place as part of the government's human resources development plan
- Sufficient capacity building activities have taken place, but are dependent upon external support
- Limited capacity building has taken place
- No capacity building has taken place

If yes, what kind of capacity building activities took place?

---

If yes, please describe the specific nature of the capacity building activities

---

## SECTION 5: STANDARDS AND INTEROPERABILITY

Does your department or organization directly support service delivery facilities?

- Yes
- No

If yes, please indicate how many of each, or provide documentation

- Outline types of relevant health facilities here, depending on the countries health system (e.g. primary health facility, hospital)

Do you receive routine reporting data from the supported service delivery facilities?

- Yes
- No

Approximately what percentage of your supported service delivery facilities use electronic methods (i.e. email, web-based software, health information management system, SMS) to submit routine reporting data?

---

Last month, approximately what percentage of your supported service delivery facilities submitted routine reporting data on time?

---



Does your department have access to a centralized data warehouse?

---

How does your department use routine reporting data to improve health administration operations, and service delivery?

---

What platforms exist to share routine reporting data, to inform strategic planning (e.g. meetings, circulars, newsletters)?

---

Does your department have standard operating procedures documented for data management (i.e. accessibility, privacy, analysis guidance)?

- Yes       No       Unsure

#### **SECTION 6: STRATEGY AND INVESTMENT**

Which of the following ICT infostructure, ICT infrastructure and digital health tools does your department have a budget for?

- |  |  |
|--|--|
| <input type="checkbox"/> Electricity       | <input type="checkbox"/> Computers                     |
| <input type="checkbox"/> Computer Internet | <input type="checkbox"/> ICT infostructure support     |
| <input type="checkbox"/> Mobile Internet   | <input type="checkbox"/> Digital health tools support  |
| <input type="checkbox"/> Mobile phones     | <input type="checkbox"/> Digital health tools licenses |
| <input type="checkbox"/> Tablets           |  |

If yes, approximately what percentage of the budget was released? (*Repeat this question for each item*)

- |  |                               |
|--|-------------------------------|
| <input type="checkbox"/> Electricity                   | <input type="checkbox"/> 100% |
| <input type="checkbox"/> Computer Internet             | <input type="checkbox"/> 75%  |
| <input type="checkbox"/> Mobile Internet               | <input type="checkbox"/> 50%  |
| <input type="checkbox"/> Mobile phones                 | <input type="checkbox"/> 25%  |
| <input type="checkbox"/> Tablets                       |                               |
| <input type="checkbox"/> Computers                     |                               |
| <input type="checkbox"/> ICT infostructure support     |                               |
| <input type="checkbox"/> Digital health tools support  |                               |
| <input type="checkbox"/> Digital health tools licenses |                               |



## SECTION 7: DIGITAL HEALTH CHALLENGES

Choose the top three challenges facing digital health tools from achieving its potential of improving health administration and service delivery operations

- Inadequate number of trained personnel
- Lack of digital health skills and capacity
- Lack of available ICT infostructure and infrastructure
- Lack of reliable ICT infostructure and infrastructure
- Lack of adequate training opportunities
- Lack of supportive tools, including reporting forms and guidance manuals,
- Lack of SOPs
- Lack of transportation
- Lack of funding allocated to digital health



## SAMPLE: SERVICE DELIVERY SURVEY

The service delivery survey is designed for leadership at healthcare facilities, including primary health clinics and hospitals. The survey aims to evaluate the availability of supportive systems to introduce and drive adoption of digital health tools that will improve quality of care, costs and operations.

### SECTION 1: ORGANIZATION INFORMATION

Respondent's name (Mr/Miss/Mrs): \_\_\_\_\_

Job role of respondent

- |   |  |
|---|--|
| <input type="checkbox"/> Facility administrator | <input type="checkbox"/> Nurse                     |
| <input type="checkbox"/> Doctor                 | <input type="checkbox"/> M&E Officer or Data Clerk |

In charge of facility?

- |                              |                             |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|

Name of facility: \_\_\_\_\_

Type of facility:

- |  |  |
|--|--|
| <input type="checkbox"/> Hospital      | <input type="checkbox"/> Health Post     |
| <input type="checkbox"/> Health Centre | <input type="checkbox"/> Other (specify) |

Facility ownership:

- |                                 |                                  |                                    |
|---------------------------------|----------------------------------|------------------------------------|
| <input type="checkbox"/> Public | <input type="checkbox"/> Private | <input type="checkbox"/> Franchise |
|---------------------------------|----------------------------------|------------------------------------|

Category of facility:

- |                                       |   |  |
|---------------------------------------|---|--|
| <input type="checkbox"/> Primary care | <input type="checkbox"/> Secondary care | <input type="checkbox"/> Tertiary care |
|---------------------------------------|---|--|

Location of facility:

- |                                |                                |
|--------------------------------|--------------------------------|
| <input type="checkbox"/> Rural | <input type="checkbox"/> Urban |
|--------------------------------|--------------------------------|

State, Local Government, Village/Town

Total number of patients last month

- |              |             |
|--------------|-------------|
| — Outpatient | — Inpatient |
|--------------|-------------|

Do you directly participate in your organization's work with developing, managing, deploying, monitoring or evaluating digital health tools?

- |                              |                             |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|



What is the nature of digital health activity at your organization?

- Active digital health activities (3+ tools)
- Moderate digital health activities (1-2 tools)
- No ICT activity

## SECTION 2: INFRASTRUCTURE

Does your facility have the following working ICT infrastructure available for staff?  
*(Repeat question for each item)*

- |   |  |
|---|--|
| <input type="checkbox"/> 100% of facility staff has access to working computers | <input type="checkbox"/> Computers           |
| <input type="checkbox"/> 75% of facility staff has access to working computers  | <input type="checkbox"/> Landline telephones |
| <input type="checkbox"/> 50% of facility staff has access to working computers  | <input type="checkbox"/> Mobile phones       |
| <input type="checkbox"/> 25% of facility staff has access to working computers  | <input type="checkbox"/> Tablets             |
|   | <input type="checkbox"/> Internet            |

Does your facility provide your staff with mobile phones or tablets?

- Yes
- No

If yes, how would you classify the majority of type of mobile phones or tablets provided?

- |  |                                     |
|--|-------------------------------------|
| <input type="checkbox"/> Basic phone   | <input type="checkbox"/> Smartphone |
| <input type="checkbox"/> Feature phone | <input type="checkbox"/> Other      |

If yes, what operating system do the provided mobile phones or tablets use?

- |                                     |  |
|-------------------------------------|--|
| <input type="checkbox"/> iOS        | <input type="checkbox"/> Symbian           |
| <input type="checkbox"/> Android    | <input type="checkbox"/> Microsoft Windows |
| <input type="checkbox"/> Blackberry | <input type="checkbox"/> Other             |
| <input type="checkbox"/> Java       |  |

If yes, do majority of the provided mobile phones or tablets have Internet available?

- Yes
- No

Does your facility have access to maintenance support for the ICT infrastructure available?

- |   |  |
|---|--|
| <input type="checkbox"/> Great support available      | <input type="checkbox"/> Limited support available |
| <input type="checkbox"/> Sufficient support available | <input type="checkbox"/> No support available      |



If ICT infostructure support is available, who does your organization receive it from?

- ICT staff from the State or Local Government
- External consultants
- Internal staff at facility
- NGOs (specify)
- Other (specify):

What is the main working source of electricity in your facility?

- Central supply of electricity (e.g. national or community grid)
- Solar power
- Generator
- Inverter power
- Other (specify):

If a working secondary source of power is available in your department, what is the source?

- Central supply of electricity (e.g. national or community grid)
- Inverter power
- Generator
- Other (specify):
- None
- Solar power

What percent of working time is electricity available, either through the main source or secondary source?

- 100% of the time
- 50% of the time
- 75% of the time
- 25% of the time

If available, who is your facilities main Internet provider?

- (Insert countries Internet providers)
- No internet available

What percent of working time is Internet available?

- 100% of the time
- 50% of the time
- 75% of the time
- 25% of the time

*The following question requires physical counts to be conducted and/or documentation to be collected to verify the accuracy of the numbers reported.*

ICT infostructure items available, and the number required in your facility:

- Computers (laptops and desktops)
- Photocopiers
- Tablets
- Scanners
- Phones
- Internet modems
- Printers
- Other sources of internet



### SECTION 3: SERVICES AND APPLICATIONS, PART 1

*This section should be repeated for each digital health reported by an organization.*

Name of digital health tool that is used in your facility: \_\_\_\_\_

Owner of the digital health tool (specify government ministry, external partner or private vendor): \_\_\_\_\_

This digital health tool is used for (check all that apply)

- |   |  |
|---|--|
| <input type="checkbox"/> Disease surveillance and reporting | <input type="checkbox"/> Patient education and behavior change |
| <input type="checkbox"/> Registration and vital events      | <input type="checkbox"/> Provider training                     |
| <input type="checkbox"/> Health information system          | <input type="checkbox"/> Communication                         |
| <input type="checkbox"/> Health financing                   | <input type="checkbox"/> Decision support                      |
| <input type="checkbox"/> Resource management                |  |
| <input type="checkbox"/> Scheduling and reminders           |  |

What is the current status of the digital health tool?

- |  |  |                                      |
|--|--|--------------------------------------|
| <input type="checkbox"/> Working and is being used | <input type="checkbox"/> Working and is not used | <input type="checkbox"/> Not working |
|--|--|--------------------------------------|

What is the primary technology of the digital health tool?

- |   |  |
|---|--|
| <input type="checkbox"/> Mobile application | <input type="checkbox"/> Desktop software      |
| <input type="checkbox"/> SMS service        | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Web-based software |  |

Do you have support available for the digital health tool?

- |                              |                             |                                 |
|------------------------------|-----------------------------|---------------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unsure |
|------------------------------|-----------------------------|---------------------------------|

If yes, what types of support are available (check all that apply)

- |   |  |
|---|--|
| <input type="checkbox"/> Telephone support      | <input type="checkbox"/> Manuals       |
| <input type="checkbox"/> Email support          | <input type="checkbox"/> Workshops     |
| <input type="checkbox"/> Online chat            | <input type="checkbox"/> FAQs          |
| <input type="checkbox"/> Local IT staff         | <input type="checkbox"/> Feedback form |
| <input type="checkbox"/> International IT staff |  |

Are there updates or changes made regularly to the digital health tool?

- |                              |                             |                                 |
|------------------------------|-----------------------------|---------------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unsure |
|------------------------------|-----------------------------|---------------------------------|

Has anyone in your facility received formal training on this digital health tool?

- |                              |                             |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|



If yes, what kind of training support was provided (check all that apply)

- Certification
- eLearning training course
- In-person course
- User Guide (electronic)
- In-person workshop
- User Guide (hardcopy)
- mLearning training course
- Not useful

How useful is the digital health tool in improving quality of care and operations in your facility?

- Very useful
- Minimally useful
- Somewhat useful
- Not useful

How useful is the digital health tool in supporting the achievement of national health goals?

- Very useful
- Minimally useful
- Somewhat useful
- Not useful

### **SECTION 3: SERVICES AND APPLICATIONS, PART 2**

Do you use digital health tools for any of the following facility operations? (*Check all that apply*)

- Sending health information or event messages to patients in the community
- To track patients visiting the facility
- Appointment reminders
- To track patient health data
- To help facility staff communicate and coordinate care
- To manage facility finances
- To send health information and/or results between facilities
- To track availability commodities and equipment
- To train facility staff on health concepts
- To order commodities and equipment
- To support facility members with health information for clinical decision making
- To make payments to staff
- To give monetary incentives to patients

### **SECTION 4: WORKFORCE**

*This section can be used to evaluate which health cadres are trained on key digital health tools*

How many of the following types of employees are available are your health facility?

- Doctors
- Records / M&E Officer
- Nurses/midwives
- Pharmacists
- Community Health Officers/Public Health Nurse
- Lab scientist or technician
- Community Health Extension Workers
- Other



How many of each of the following employees in your health facility have been trained on (insert specific digital health tool here)?

- Doctors
- Nurses/midwives
- Community Health Officers/  
Public Health Nurse
- Community Health Extension  
Workers
- Records / M&E Officer
- Pharmacist
- Lab scientist or technician
- Other

*Adapt these cadres in alignment with the countries health system human resources for health system.*

Which of the following digital health skillsets are available within your facility?  
*(Check all that apply)*

- Database management
- Application development
- Information Technology (IT)  
Support
- Transcription
- Data analysis
- Data presentation

In your facility, approximately how many staff are trained to develop, manage, support, monitor or evaluate digital health tools?

---

In the past 12 months, have there been any digital health capacity building activities for the staff in your facility?

- Sufficient capacity building activities have taken place as part of the government's human resources development plan
- Sufficient capacity building activities have taken place, but are dependent upon external support
- Limited capacity building has taken place
- No capacity building has taken place

If yes, what kind of capacity building activities took place?

---

If yes, please describe the specific nature of the capacity building activities

---

## **SECTION 5: STANDARDS AND INTEROPERABILITY**

Does your facility send routine reporting data to the government?

- Yes
- No



How often does your facility send routine reporting data to the government?

- |                                      |                                    |
|--------------------------------------|------------------------------------|
| <input type="checkbox"/> Weekly      | <input type="checkbox"/> Quarterly |
| <input type="checkbox"/> Fortnightly | <input type="checkbox"/> 6-monthly |
| <input type="checkbox"/> Monthly     | <input type="checkbox"/> Yearly    |

In what format does your facility send routine reporting data to the government?

- |   |  |
|---|--|
| <input type="checkbox"/> Paper-based        | <input type="checkbox"/> Health Information Management System (HMIS) |
| <input type="checkbox"/> Web-based software | <input type="checkbox"/> SMS   |
| <input type="checkbox"/> Email              | <input type="checkbox"/> Other (please specify)                      |

If paper-based, how consistently are the following registrars and reporting forms available?

- |   |  |
|---|--|
| <input type="checkbox"/> HMIS reporting forms | <input type="checkbox"/> (insert country-specific reporting formats) |
| <input type="checkbox"/> HMIS registers       |  |

Does your facility have access to a centralized data warehouse?

- |                              |                             |                                 |
|------------------------------|-----------------------------|---------------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unsure |
|------------------------------|-----------------------------|---------------------------------|

How does your facility use routine reporting data to improve health administration operations, and service delivery?

- |  |   |
|--|---|
| <input type="checkbox"/> Facility performance review                   | <input type="checkbox"/> Demand generation planning budgeting |
| <input type="checkbox"/> Staff performance review                      | <input type="checkbox"/> Disease surveillance                 |
| <input type="checkbox"/> Commodities and supply planning and budgeting |   |

Does your facility hold data review meetings?

- |                              |                             |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|

If yes, how frequently are data review meetings held?

- |                                      |                                    |
|--------------------------------------|------------------------------------|
| <input type="checkbox"/> Weekly      | <input type="checkbox"/> Quarterly |
| <input type="checkbox"/> Fortnightly | <input type="checkbox"/> 6-monthly |
| <input type="checkbox"/> Monthly     | <input type="checkbox"/> Yearly    |

Does your facility have standard operating procedures documented for data management (i.e. accessibility, privacy, analysis guidance)?

- |                              |                             |                                 |
|------------------------------|-----------------------------|---------------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Unsure |
|------------------------------|-----------------------------|---------------------------------|

## **SECTION 6: STRATEGY AND INVESTMENT**

Which of the following ICT infostructure, ICT infrastructure and digital health tools does your facility have a budget for?



- |  |  |
|--|--|
| <input type="checkbox"/> Electricity       | <input type="checkbox"/> Computers                     |
| <input type="checkbox"/> Computer Internet | <input type="checkbox"/> ICT infostructure support     |
| <input type="checkbox"/> Mobile Internet   | <input type="checkbox"/> Digital health tools support  |
| <input type="checkbox"/> Mobile phones     | <input type="checkbox"/> Digital health tools licenses |
| <input type="checkbox"/> Tablets           |  |

If yes, approximately what percentage of the budget was released for each item (repeat question for each item)?

- |  |                               |
|--|-------------------------------|
| <input type="checkbox"/> Electricity                   | <input type="checkbox"/> 100% |
| <input type="checkbox"/> Computer Internet             | <input type="checkbox"/> 75%  |
| <input type="checkbox"/> Mobile Internet               | <input type="checkbox"/> 50%  |
| <input type="checkbox"/> Mobile phones                 | <input type="checkbox"/> 25%  |
| <input type="checkbox"/> Tablets                       |                               |
| <input type="checkbox"/> Computers                     |                               |
| <input type="checkbox"/> ICT infostructure support     |                               |
| <input type="checkbox"/> Digital health tools support  |                               |
| <input type="checkbox"/> Digital health tools licenses |                               |

#### **SECTION 7: DIGITAL HEALTH CHALLENGES**

Choose the top three challenges facing digital health tools from achieving its potential of improving quality of care and service delivery operations

- Inadequate number of trained personnel
- Lack of digital health skills and capacity
- Lack of available ICT infostructure and infrastructure
- Lack of reliable ICT infostructure and infrastructure
- Lack of adequate training opportunities
- Lack of supportive tools, including reporting forms and guidance manuals,
- Lack of SOPs
- Lack of transportation
- Lack of funding allocated to digital health



“ Most experts will agree that implementing health information systems in a single facility is an exercise fraught with problems. When we ask Ministries of Health to implement eHealth in all their clinics and hospitals at national scale, we are almost asking them to do the impossible. Yet that is what is required. When governments have a clear assessment of the enabling environment, they can readily identify areas of strength and weakness and systematically and incrementally address them until they reach their goals. We should thus provide these tools to our ministries to help them achieve their national eHealth strategies.

**ALVIN MARCELO**  
UNIVERSITY OF PHILIPPINES MANILA  
AND PHILIPPINES EHEALTH PROGRAM  
MANAGEMENT OFFICE

# **PART 3:**

## Overview of Phase 3



## PHASE 3: DATA APPLICATION

**TIME:** 6-12 months

**RESOURCES REQUIRED:**

Government Leadership  
Program Managers  
Policy Analysts

**RESEARCH APPROACH:**

Participatory Workshops

**TOOLS:**

Sample Digital Health Vision  
Sample Digital Health Theory of Change  
Sample Digital Health Information  
Architecture  
Sample Use Case  
Sample Mapping Assessment Data to  
Digital Health Recommendations

Conducting an in-depth baseline assessment that evaluates a country's digital health environment, data is collected to support the development of a national digital health strategy that is grounded in and informed by current realities.

This process is designed to ensure that national digital health strategies are both visionary and practical, and will increase the likelihood of realizing the implementation of digital health tools and support structures.

The data collected in Phase 1 and Phase 2 of the assessment framework clarifies the gaps in the support systems and key priorities required to strengthen the enabling environment to introduce and adopt digital health tools at scale in a way that meaningfully contributes to the achievement of national health goals. The data collected offers the opportunity for a country's national digital health strategy to reflect and leverage existing efforts to maximize investments and resources.

Phase 3 of the assessment framework outlines how to use the data from the situational analysis and in-depth baseline assessment to inform the development of a digital health strategy, in alignment with the ICT foundational components recommended in the WHO/ITU eHealth strategy toolkit. This section describes six activities for bringing stakeholders together to collaboratively review and integrate the data into shaping the country's national digital health vision, national health information architecture and theory of change, in alignment with national health system goals. Each activity is supported by an example from Nigeria's experience in establishing its national Health ICT strategic framework.



## ACTIVITY 1: **DEVELOP A CLEAR UNDERSTANDING OF NATIONAL HEALTH GOALS**

Understanding a country's national health goals sets the strategic context for digital health. Generally, clear, actionable goals for how a health system will improve outcomes are documented either in a long-term health plan, health system vision statement or health policy document. These goals often align with international initiatives, such as the Millennium Development Goals and Sustainable Development Goals. For instance, in Nigeria, the national health goals were outlined in its National Strategic Health Development Plan (NSHDP), Nigeria Vision 2020 and the (revised) National Health Policy, among other policy documents.



## ACTIVITY 2: ESTABLISH A DIGITAL HEALTH VISION AND THEORY OF CHANGE

Drafting a national digital health vision is a collaborative effort amongst stakeholders and representatives from government ministries, departments and agencies, donor organizations, development implementing partners, academic institutions and private sector partners.

Stakeholders are brought together and facilitated through group and plenary discussions to answer the following three questions:

1. What are the key health system priorities?
2. What are the strategic benefits and outcomes for the health system and population that we want to see achieved?
3. How can digital health support the achievement of the desired health outcomes?

The responses to these questions are synthesized into a single vision statement, and form the basis to establish a comprehensive vision statement that outlines a country's key health system goals, such as increased affordability and quality and improved health outcomes. Finally, the comprehensive vision statement is translated into a theory of change, outlining how each of the goals will be achieved.

In Nigeria, over 50 stakeholders came together and worked in groups to answer the three questions. The exercise yielded a simplified and powerful vision for digital health in Nigeria:

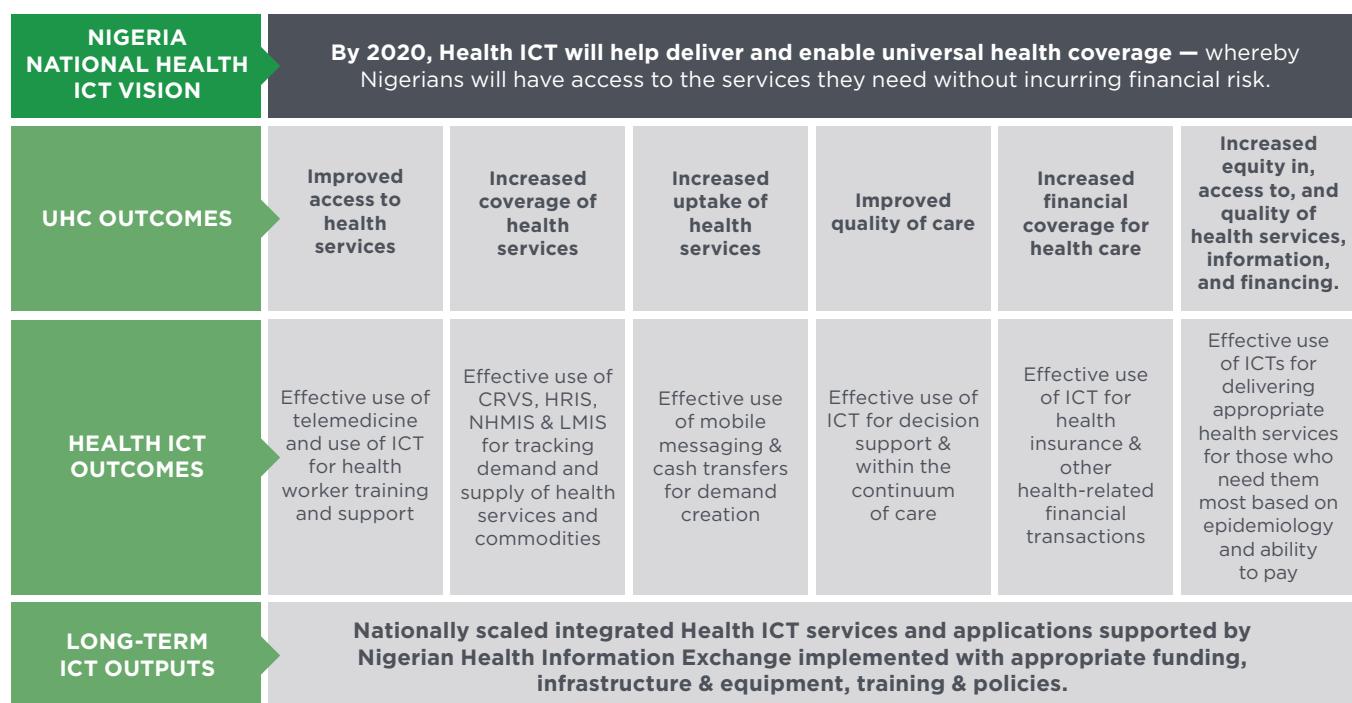
*“By 2020, Health ICT will help enable and deliver Universal Health Coverage.”*

The same stakeholders then reviewed the vision statement in a plenary discussion. The resulting output was a comprehensive draft vision statement. With Nigeria's health system facing significant financial and population pressures relating to cost, access, quality, accountability, and the integration of information and services, the comprehensive vision statement clarified why the adoption and use of digital health technologies within the health sector could help mitigate or eliminate these challenges. The vision articulated why digital health is critical to achieving UHC in Nigeria and improving the quality of, access to and meaningful use of health information and services throughout the country, especially amongst underserved populations in the most remote areas.



TOOL:  
**NIGERIA'S NATIONAL HEALTH ICT VISION**

FIGURE 8: **NIGERIA'S NATIONAL HEALTH ICT VISION**





**TOOL:  
NIGERIA'S THEORY OF CHANGE FOR THE  
NATIONAL HEALTH ICT VISION**

FIGURE 9: **NIGERIA'S THEORY OF CHANGE FOR THE NATIONAL HEALTH ICT VISION**

| NIGERIA NATIONAL HEALTH ICT VISION |  | By 2020, Health ICT will help deliver and enable universal health coverage — whereby Nigerians will have access to the services they need without incurring financial risk.                                |   |  |  |   |  |
|------------------------------------|--|--|---|--|--|---|--|
| UHC OUTCOMES                       |  | Improved access to health services   | Increased coverage of health services   | Increased uptake of health services                                    | Improved quality of care   | Increased financial coverage for health care  | Increased equity in, access to, and quality of health services, information, and financing.  |
| HEALTH ICT OUTCOMES                |  | Effective use of telemedicine and use of ICT for health worker training and support  | Effective use of CRVS, HRIS, NHMIS & LMIS for tracking demand and supply of health services and commodities | Effective use of mobile messaging & cash transfers for demand creation | Effective use of ICT for decision support & within the continuum of care | Effective use of ICT for health insurance & other health-related financial transactions | Effective use of ICTs for delivering appropriate health services for those who need them most based on epidemiology and ability to pay |
| LONG-TERM ICT OUTPUTS              |  | Nationally scaled integrated Health ICT services and applications supported by Nigerian Health Information Exchange implemented with appropriate funding, infrastructure & equipment, training & policies. |   |  |  |   |  |
| SHORT-TERM OUTPUTS (1 YEAR)        |  | Strategic framework, governance structure & Health ICT Fund established  | Guidance on existing policies & gaps identified   | Review and adoption / adaptation of prioritized standards              | Health ICT assessment, curriculum developed, career path developed       | Define minimum package & plan for connectivity, power & equipment                       | Prioritized services & applications identified & requirements gathered   |
| HEALTH ICT ENABLERS                |  | Leadership, governance, strategy & investment  | Legislation, policy, and compliance   | Standards & Interoperability   | Capacity building  | Infrastructure  | Solutions (services & applications)  |



## ACTIVITY 3: **ESTABLISH A CONCEPTUAL NATIONAL HEALTH INFORMATION ARCHITECTURE**

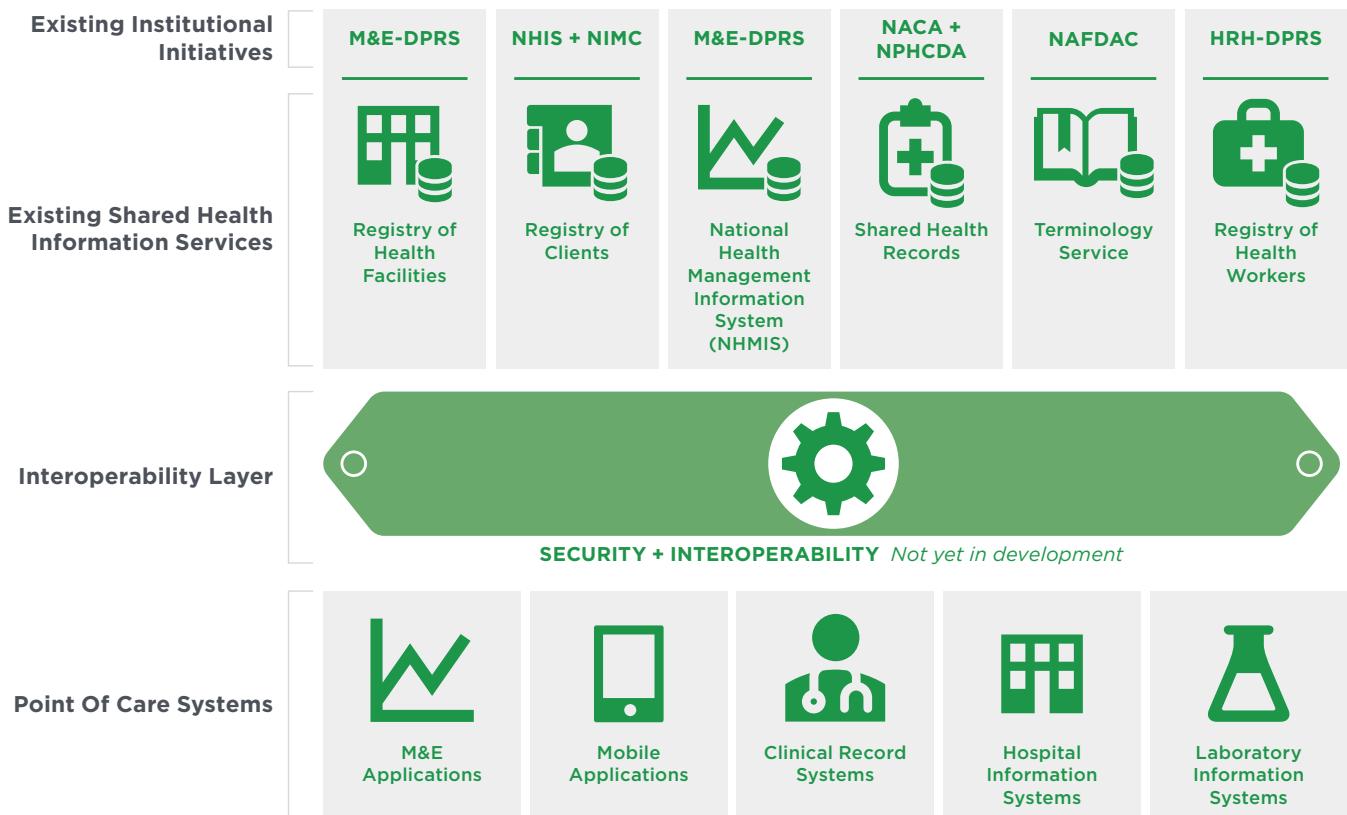
The national digital health vision is shaped by drawing from both existing investments in digital health and plans for future investments. The development of a national health information architecture supports beginning the process of leveraging and integrating existing digital health platforms and tools. The architecture illustrates the government's key digital health priorities, the types of data being collected, and its commitment to establishing an interoperable and secure system, to support service delivery across the health system.

In Nigeria, as part of its Health ICT strategic framework, it established a national health information architecture, drawing from existing initiatives. The schematic outlines the key digital health initiatives and data collected by various government agencies, unified by an interoperability layer, and accessible through various access points such as mobile phones and hospital information systems.



TOOL:  
**NIGERIA'S NATIONAL HEALTH INFORMATION ARCHITECTURE**

FIGURE 10: A NATIONAL HEALTH INFORMATION ARCHTECTURE DRAWING FROM EXISTING INITIATIVES





#### ACTIVITY 4:

### DEVELOP A USE CASE TO ILLUSTRATE THE VISION IN PRACTICE

To illustrate the value and impact of a national digital health vision on a citizen's life, developing use cases is an effective tool. The national digital health strategy document is used to gain continuous buy-in across stakeholder groups through the execution phases. Use cases illustrate the aspirations of an integrated digital health system and its impact on the patient experience and patient care. In Nigeria's Health ICT strategic framework a use case was included that told the story of Fatima's experience delivering her baby within Nigeria's health system.



## TOOL: **NIGERIA'S HEALTH ICT VISION IN PRACTICE**

### SCENARIO: THE HEALTH ICT VISION IN PRACTICE — IMPACT ON STAKEHOLDERS

A few months ago, Fatima registered her and her family in the NHIS\*. Now, Fatima was expecting and due at any time. When she first learned that she was pregnant, she decided to sign up for weekly SMS\* notifications about her pregnancy and to receive appointment reminders and pregnancy-care health information. When Fatima felt contractions, her family members texted the local clinic and called a taxi. Fatima proceeded to the clinic.

Mary arrived at work right on time. She was excited for the day. During shift hand-over, she and her co-worker huddled over one of the clinic's tablets going through the different cases of clients present at the clinic. They prioritized the cases and she got to work. Shortly thereafter, Mary saw that a woman in labor was making her way to the clinic.

When Fatima arrived, she and her husband realized they had left the NHIS card at home in the hurry. But they were lucky, her NIN\* was stored in her husband's phone contact. With the cross-reference she was triaged. During her assessment of Fatima, Mary observed that the baby was in a breech position. When she had a break, she read up on breech deliveries using the clinic tablet. After reading, Mary decided to review Fatima's chart again through the EMR\* system accessible using the tablet. Mary retrieved Fatima's shared health record and learned that her first baby had been breech and did not survive. To be safe, Mary requested a brief consult with the obstetrics/gynecology department at the referral hospital. After speaking with the on-call physician, Mary was instructed to contact the physician through phone or videoconference if any complications arose. Mary felt confident going in to the delivery and provided support to Fatima.

After a successful delivery, Mary updated Fatima's EMR, and updates were automatically sent from the EMR system to the Civil Registration and Vital Statistics database, NHIS database for facility reimbursement, the facility's LMIS\* to account for supplies used during the birth and the NHMIS\* for health services planning. The local government M&E\* officer was reviewing aggregate electronic NHMIS reports and supply requests from each of the LGAs\*; he was pleased to see the decline in maternal and neonatal mortality continue.

Meanwhile, mum and baby were doing fine.

---

\* EMR = Electronic Medical Record

LGA = Local Government Area

LMIS = Logistic Management Information System

NHIS = National Health Insurance Scheme

NHMIS = National Health Management Information System

NIN= National Identification Number

M&E = Monitoring and Evaluation

SMS = Short Message Service (or text)



## ACTIVITY 5: **PROVIDE RECOMMENDATIONS TO STRENGTHEN THE ENABLING ENVIRONMENT**

Strengthening each of the seven components of the digital health enabling environment is critical to realizing the implementation, scale and sustainability of specific digital health opportunities, to achieve national health system goals. The ICT foundational components from the WHO/ITU eHealth strategy toolkit organize the inputs and activities needed for digital health to support the achievement of health outcomes. Success of the health system is dependent upon the digital health environment and other structures being in optimal condition to address and fill gaps in service delivery, and quality of care. The assessment provides the data to outline the current state of each ICT foundational component, along with digital health opportunities and gaps that need to be addressed to achieve a country's digital health vision, and health system goals.

The following table outlines examples from Nigeria's mapping of the data captured from the assessment to recommendations included in the National Health ICT Strategic Framework.



**TOOL:**  
**EXAMPLE OF MAPPING NIGERIA'S BASELINE  
ASSESSMENT DATA TO STRATEGIC RECOMMENDATIONS  
IN THE HEALTH ICT STRATEGIC FRAMEWORK**

TABLE 9: **MAPPING DATA TO RECOMMENDATIONS**

| DIGITAL HEALTH COMPONENT         | SAMPLE RECOMMENDATION  | ASSESSMENT DATA SOURCE  |
|----------------------------------|--|---|
| <b>Leadership and Governance</b> | Establish a Health ICT steering committee under the National Council of Health, supported by a Health ICT technical working group, three expert working groups (standards, data security, manpower and training), a stakeholder advisory group, a national monitoring and evaluation advisory group and a Health ICT project management team | Policy review identified that the National Council of Health will provide strategic leadership across the FMOH and FMCT, but that there was no overarching Health ICT governance structure or coordination platform<br><br> <a href="#">See Activity 2: Conduct a Policy Review, page 43</a>   |
| <b>Strategy and Investment</b>   | <p><b>A.</b> Capitalize on existing funding sources like the Universal Service Provision Fund</p> <p><b>B.</b> Set up centralized fund for Health ICT from taxes, donor, private sector investments, and incentives for entrepreneurs and developers, to promote budget planning, accountability and transparency</p>                        | <p><b>A.</b> Policy review identified lack of National Health ICT framework or strategy, and complimentary funding mechanisms<br/><br/>  <a href="#">See Activity 2: Conduct a Policy Review, page 43</a></p> <p><b>B.</b> Field assessment found limited availability of Health ICT budgets, and percent of budget approved and released<br/><br/>  <a href="#">See Activity 3: Lead a Field Assessment, page 51</a></p> |



| DIGITAL HEALTH COMPONENT                  | SAMPLE RECOMMENDATION   | ASSESSMENT DATA SOURCE   |
|---|---|--|
| <b>Legislation, Policy and Compliance</b> | <p>Increase awareness and application of existing privacy and security policies related to digital health, including Nigeria's Medical Code of Ethics and Constitution and Section 37, 45 and 46 of the Constitution of the Federal Republic of Nigeria</p> <p>Harmonize existing policies to overcome multi-regulation in the digital health environment</p>   | <p>Policy review identified existing policies applicable to digital health, and a fragmented, uncoordinated policy environment that required harmonization to lead a clear path forward</p> <p> See Activity 2: Conduct a Policy Review, page 43</p>  |
| <b>Standards and Interoperability</b>     | <p><b>A.</b> Define a Health ICT architecture that will outline a roadmap for how information from digital health information systems will flow between each other, including data and software standards and interoperability requirements</p> <p><b>B.</b> Use the Open Health Information Exchange (OpenHIE) framework to serve as a starting point for establishing the Health ICT architecture</p> | <p><b>A.</b> Policy review identified a lack of centralized health informatics steering committee and guidelines</p> <p> See Activity 2: Conduct a Policy Review, page 43</p> <p><b>B.</b> Landscape and inventory analysis highlighted fragmented nature of existing digital health tools, and a lack of SOPs for integration into NHMIS, leading to not utilizing health data captured to its full potential</p> <p> See Activity 1: Conduct a Landscape and Inventory Analysis, page 31</p> |
| <b>Capacity Building</b>                  | Establish a cadre of professionals and a career path for those who are responsible for designing, implementing and monitoring ICT activities and systems.   | Field assessment identified that only 32% of LGA Monitoring and Evaluation Officers interviewed and even fewer facility level health workers had been trained in the use of DHIS2  |



## DIGITAL HEALTH COMPONENT

## SAMPLE RECOMMENDATION

## ASSESSMENT DATA SOURCE

### Infrastructure

Establish ongoing funding and investment to support power, network connectivity and maintenance needs of Health ICT activities, especially in rural areas

Establish a basic equipment package for health facilities that would include power, connectivity and computing requirements

Introduce the basic equipment package to facilities based on services and applications prioritized by stakeholders, in addition to population density, disease prevalence and infrastructure needs. Link basic equipment packages to accreditation and regular assessments as well as incentive mechanisms for improved Health ICT

Field assessment identified gaps in availability of basic infrastructure across the sample

 See Activity 3: Lead a Field Assessment, page 51

### Services and Applications

**A.** Select priority Health ICT services and applications that should be scaled up for use in every health facility across the country

**A.** Landscape and inventory analysis highlighted the availability of digital health tools at various levels of scale and maturity, but in a way that was fragmented, and not coordinated at the national level

 See Activity 1: Conduct a Landscape and Inventory Analysis, page 31

**B.** Highlight and disseminate best practices for the implementation of Health ICT services and applications

**B.** Field assessment confirmed this finding, identifying various digital health tools at a small scale, not integrated with national systems or necessarily aligned with national health goals

 See Activity 3: Lead a Field Assessment, page 51



## ACTIVITY 6: ADAPT RECOMMENDATIONS INTO ACTIONABLE ACTIVITIES

Using the theory of change, health information architecture and recommendations, a detailed action plan is developed to direct implementation and realize the country's digital health vision. Each recommendation is translated into actionable and measurable steps that outline the process to its achievement, together producing a detailed action plan. The steps are organized into activities and sub-activities, with dependencies noted. Further, the persons or entities responsible for carrying out each of the activities is clearly defined in the plan.

In Nigeria, a detailed action plan was developed based on the theory of change, which outlined the recommendations along a logical pathway of activities with short- and long-term impact. The activities in the action plan reflected a five-year process, separated into three phases. The phases were:

- PHASE 1: Set-up
- PHASE 2: Deployment
- PHASE 3: Maintenance and support

Set-up and preparation takes place in year 1. During years 2 and 3, activities that reflect deployment to help meet the vision are carried out. The final two years (years 4 and 5) are focused on maintenance activities and progress reviews. Phase 1 was designed to be front-loaded, since important foundational structures and activities have to be established. Some activities are longitudinal and span the entire course of the timeframe, while others are more discrete.

The detailed action plan includes the timeframe needed to meet or sustain each recommendation. Stakeholders in Nigeria believe that revisiting the action plan regularly is important to ensure continued alignment of the activities with achieving UHC. The National Council of Health, as owners of the Health ICT vision, will oversee the action plan and receive support from the Health ICT Steering Committee, Technical Working Group and Project Management Office.

## CONCLUSION

Information communication technologies are powerful and complimentary tools for public health systems in LMICS. Over the last decade, governments, donors, NGO partners, academic institutions and the private sector have experimented and expanded the use of digital health tools – including eHealth and mHealth tools – to improve access to quality care by creating content to increase the transfer and retention of information, and capture data to drive evidence-based priority-setting and decision making. The maturity of this environment has called for governments to establish national digital health strategies that paint a vision for the future and systematically create supportive structures for digital health tools to operate effectively at scale.

This toolkit has been designed to support governments and partners conduct a rigorous assessment to ensure that national digital health strategies are grounded in the realities of its countries health and ICT environments, and reflect both national health system goals and needs. Conducting this assessment produces both the data to develop an informed and pragmatic national digital health strategy, and a baseline to use for ongoing monitoring and accountability.

This work is drawn from the efforts led in Nigeria, in conjunction with the WHO/ITU eHealth strategy toolkit. The FMOH and FMCT in Nigeria have been exemplary leaders in conducting a systematic assessment and approving a contextualized national Health ICT strategic framework, with a clear action plan for strengthening its digital health-enabling environment. Their experiences have enabled a process to emerge for other countries to learn from, and adopt where relevant. As illustrated by examples from South Africa, Tanzania and the Philippines, countries must adopt a process that is reflective of its capacity and alignment with the business processes of its governance structures. In Nigeria, the core of its baseline assessment was its field assessment, whereas in other countries, it was large stakeholder workshops.

We hope that by sharing our experience in supporting the GoN establish its Health ICT strategic framework, other LMICs can more easily navigate the complex, but important process of establishing a digital health strategy and support its continuous efforts in improving the quality of care and health outcomes for its citizens.

## APPENDIX

### List of Reference Country eHealth Strategic Plans and Frameworks

1. **SOUTH AFRICA:** <http://goo.gl/fbajal>
2. **TANZANIA:** <http://goo.gl/TE3fi3>
3. **PHILIPPINES:** <http://goo.gl/zFd54q>
4. **RWANDA:** <http://goo.gl/ukWlcC>
5. **KENYA:** <http://goo.gl/nhIl5t>

## ENDNOTES

1. In Nigeria, the national strategy was named the “national health ICT strategic framework”
2. Development of a national eHealth strategy for South Africa. WHO/ITU Meeting, National eHealth strategy development: country experiences and next steps. July 24-26, 2012, Nairobi, Kenya.
3. Foster, R. (2013). The development of the South African eHealth strategy assessed against the recommendations of the WHO/ITU eHealth strategy framework. Journal of the International Society for Telemedicine and Health. 1:2. Accessed at: <http://goo.gl/zoyTTm>
4. Darcy, N et al. (2014). eHealth strategy development: a case study in Tanzania. Presented at the 9th Health Informatics in Africa Conference (HELINA 2014).
5. The HMN assessment tools can be found at: <http://www.who.int/healthmetrics/tools/en/>
6. More details about the how the Philippines eHealth strategic framework and plan came together is available here: <https://goo.gl/xonFzL>
7. ICT infrastructure refers to electricity and connectivity, whereas ICT infostructure refers to equipment such as computers, tablets, mobile phones etc.
8. The timeframe for obtaining approvals can often vary across regions facilities and impact the overall timeline of the field assessment



