



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

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ICT4SOML LEAD



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List Of Acronyms And Abbreviations

AIRS	Africa Indoor Residual Spraying
ANC	Antenatal Care
ARV	Antiretroviral
BBC	British Broadcasting Corporation
CANI	Computer for All Nigerian's Initiative
CCT	Conditional Cash Transfer
CDC	Centers for Disease Control and Prevention
CDMA	Code Division Multiple Access
CHAI	Clinton Health Access Initiative
CHEWs	Community Health Extension Workers
CHWs	Community Health Workers
DHIS2	District Health Information System 2
eHealth	Electronic Health
EHR	Electronic Health Record
EMR	Electronic Medical Record
eMTCT	Elimination of Mother-to-Child Transmission of HIV
ESMPIN	Expanded Social Marketing Project in Nigeria
ESRI	Economic and Social Research Institute
FCT	Federal Capital Territory
FMCT	Federal Ministry of Communication Technology
FMOH	Federal Ministry of Health
GHAIN	Global HIV/AIDS Initiative Nigeria
GIS	Geographic Information System
GSM	Global System for Mobile Communications or Groupe Spéciale Mobile
HIS	Health Information System
HISP	Health Information Systems Program
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
HMIS	Health Management Information System
ICT	Information and Communication Technology
IMCI	Integrated Management of Childhood Illness
IMNCH	Integrated Maternal, Newborn and Child Health
IVR	Interactive Voice Response
LDP+	Leadership Development Program Plus
LGAs	Local Government Areas
LMICs	Low and Middle Income Countries
LMIS	Logistics Management Information System
MADEX	Mobile Application for Data Exchange
MAMA	Mobile Alliance for Maternal Action
mCBS	Mobile Community Based Surveillance
mCCT	Mobile Payments for Conditional Cash Transfer
MCH	Maternal and Child Health

MDG	Millennium Development Goal
mHealth	Mobile Health
MNCH	Maternal, Newborn and Child Health
MNH	Maternal and Newborn Health
MPA	Mobile Product Authentication
MSS	Midwifery Services Scheme
MTN	Mobile Telephone Network [a telecommunications provider]
NACA	National Agency for the Control of AIDS
NAFDAC	National Agency for Food and Drug Administration
NCC	Nigerian Communications Commission
NHMIS	National Health Management Information Systems
NOMIS	National Orphans and Vulnerable Children Management Information System
NPHCDA	National Primary Health Care Development Agency
ORS	Oral Rehydration Salt
OVC	Orphans and Vulnerable Children
PDAs	Personal Digital Assistants
PHC	Primary Health Care
PMTCT	Prevention of Mother-To-Child Transmission of HIV
PPTCT	Prevention of Parent-To-Child Transmission of HIV
PRRINN-MNCH	Partnership for Reviving Routine Immunization in Northern Nigeria; Maternal Newborn and Child Health Initiative
REW	Reaching Every Ward
SFH	Society for Family Health
SIDHAS	Society for Integrated Delivery of HIV/AIDS Services
SMS	Short Message Service
SOML	Saving One Million Lives
SURE-P	Subsidy Re-investment & Empowerment Programme
UN	United Nations
UNICEF	United Nations Children's Fund
WHO	World Health Organization

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Executive Summary

As Nigeria continues to experience significant economic growth, the health status of its citizens has failed to make equally remarkable advances, despite efforts geared towards health improvement. As part of efforts to address this, the Saving One Million Lives (SOML) initiative was launched by the Nigerian President, Goodluck Jonathan, in 2012. This initiative aims to prevent the deaths of one million women and children under five by the Millennium Development Goals (MDGs) deadline of 2015, through scaling-up access to essential primary health services and commodities. It builds upon the growing international momentum supporting maternal and child survival.

To save one million lives, the government of Nigeria intends to leverage Information and Communications Technology (ICT) to improve access to health services, patient empowerment, health system performance and equality. ICT4SOML is a multi-stakeholder effort to strategically leverage ICT to accelerate the achievement of the SOML targets through the scale up of specific technological approaches, the strengthening of the enabling environment, and the development of supportive policies and guidelines.

Many of the building blocks that can support government-led nationally-scaled ICT for health implementations that improve maternal and child health outcomes are being put in place, such as the National Health Management Information System (NHMIS), national Master Facility List and the national unique identification card system by the National Identity Management Commission. However, the landscape of ICT for health efforts in Nigeria is fragmented and lacks coordination, making it difficult to leverage prior investments and to realize the full potential of health ICTs.

The ICT for health landscape review and accompanying inventory was undertaken to provide a comprehensive picture of existing ICT for health implementations in Nigeria. The findings of the report can inform policymakers, implementers and other key stakeholders on how best to prioritize interventions that will advance maternal and child health efforts. It will also serve as an initial baseline to track and monitor progress of ICTs for maternal and child health implementations as part of ICT4SOML and beyond.

The review focused on ICT implementations that were concerned with SOML program areas directly focused on health, namely: maternal, newborn and child health (MNCH); routine childhood immunizations; scale-up and access to essential commodities; child nutrition; malaria control and the elimination of mother-to-child transmission of HIV/AIDS (EMTCT). The inventory also focused on high priority technology implementations, including the NHMIS, mobile conditional cash transfers (mCCT), demand generation and supply chain management.

The research and review process began in April 2014, and was completed in July 2014. The result is an inventory of projects¹ implemented in Nigeria (84 projects), a compilation of relevant technologies implemented outside of Nigeria and an analysis to help inform the way forward for ICT4SOML. The database is broken down into several areas of interest, including the project's relevance to SOML (i.e., SOML program area, project approach), level of scale, geographic spread, technology involved and more.

It is evident from the review that there is already an established presence of ICT for health initiatives throughout the country and that these initiatives can and ought to be leveraged. Most states have over 20 on-going ICT for health implementations. In addition, 24 initiatives have nationwide coverage. There are a plethora of projects focused on MNCH and a paucity of projects related to malaria and nutrition. In addition, most of the projects have taken advantage of low-cost technology and functionalities to expand coverage given the feasibility of implementing such technologies. As the telecommunications infrastructure continues to be strengthened throughout the country, opportunities exist to strengthen and broaden

1. http://bit.ly/ehealth_inventory_nigeria

ICT for health implementations. Additional explorations should be made to determine how best to address gaps, especially those related to the SOML program areas, and opportunities for ICT for health in Nigeria. Such explorations and expansions should be driven by the government and involve all key stakeholders.

Furthermore, the review confirmed the significant need for a strategy specific to ICT for health in Nigeria, including the promotion of standards, interoperability and collaboration, identifying sustainable funding mechanisms, and training of health workers in the use of ICT for Health. Through addressing the gaps identified in this report (and the related policy-review document, titled 'Assessing the Enabling Environment for ICTs for Health in Nigeria: A Review of Policies'), the enabling environment in Nigeria can become a more conducive environment for scaling up and sustaining ICT for health initiatives, and in the long run, save lives in Nigeria.



Background

MATERNAL, NEWBORN, AND CHILD HEALTH IN NIGERIA

As Nigeria experiences steady population growth and significant economic progress, the health status of Nigerians is yet to experience commensurate advancement. The progress towards meeting all health related Millennium Development Goals (MDG) targets and other set health intervention goals is slow.² Health care and general living conditions in Nigeria are poor, especially for children and women. Maternal and under-five mortality rates (560/100,000 live births³, 124/1,000 live births⁴, respectively) are higher than the African region's average and are significantly higher than the global average (210/100,000 live births⁵ and 48/1,000 live births⁶ for the maternal mortality ratio and under-five mortality ratio, respectively). Another aspect of the weakened primary health care (PHC) system is low coverage of key interventions. This has resulted in the persistence of high disease burdens, particularly from tuberculosis and malaria, with malaria being the highest cause of death of children under five years. Furthermore, life expectancy remains low and is estimated to be about 54 years of age, which is lower than the African region's average of 58 years.⁷ Considerable efforts are being made to address the challenges facing the health system.

All three tiers of government—Federal, State and Local—share responsibilities for providing health services and programs in Nigeria. The Federal Government is largely responsible for providing policy guidance, planning and technical assistance, establishing health management information systems, disease surveillance, drug regulation, vaccine management and training health professionals. The responsibility for management of health facilities and programs is shared by the State Ministries of Health, State Hospital Management Boards, and the Local Government Areas (LGAs). The LGAs are also responsible for training midwives and Community Health Extension Workers (CHEWs) and providing technical assistance to the PHC system. The inadequacy of the public health system has given increasing prominence to the private health sector and international development partners. However, in response to the weaknesses of primary healthcare, and in recognition of the fact that LGAs could not tackle them alone, the Federal Government established the National Primary Health Care Development Agency (NPHCDA) to provide and sustain federal assistance to the LGAs. The NPHCDA develops and revises PHC policies and supports states and LGAs to implement them, often in collaboration with local and international partners.

In addition, over the years, the Government has, with its development partners, initiated other processes to address the declining health status via numerous interventions such as Reaching Every Ward (REW)⁸, Integrated Management of Childhood Illness (IMCI) Strategy⁹, Integrated Maternal Newborn and Child Health (IMNCH) strategy¹⁰, a special MDGs Office at the Presidency¹¹, and most recently the Subsidy Reinvestment and Empowerment Program for Maternal and Child Health (SURE-P MCH) and the Saving One Million Lives (SOML) initiative. These strategies are being implemented as a drive towards the achievement of set health targets.

2. http://www.unicef.org/nigeria/1971_2199.html

3. <http://data.worldbank.org/indicator/SH.STA.MMRT>

4. <http://data.worldbank.org/indicator/SH.DYN.MORT/countries?display=default>

5. http://www.who.int/pmnch/media/news/2012/20120516_unfpa_report/en/

6. http://www.who.int/gho/child_health/mortality/mortality_under_five_text/en/

7. <http://www.who.int/gho/countries/nga.pdf?ua=1>

8. http://www.immunizationbasics.jsi.com/Docs/IMMbasics_Nigeria_RED_Summary_2009.pdf

9. http://www.who.int/maternal_child_adolescent/topics/child/imci/en/

10. http://www.immunizationbasics.jsi.com/Docs/IMMbasics_Nigeria_RED_Summary_2009.pdf

11. <http://www.mdgs.gov.ng/>

SAVING ONE MILLION LIVES

The Saving One Million Lives (SOML) initiative, launched by the present administration under President Goodluck Jonathan in 2012, is an initiative that seeks to save the lives of Nigerians, particularly women and children, through the scale up of access to essential primary health services and commodities. This initiative builds on the growing international momentum behind improving maternal and child health and is focused on evidence based and cost effective interventions that are proven to address the leading causes of maternal and child morbidity and mortality.

SOML builds upon existing policies, strategic documents and frameworks as outlined by the National Strategic Health Development Plan and the President's Transformation Agenda. It is a drive to focus on outcomes, through strengthening the execution and delivery of Nigeria's existing basic health services by setting clear, ambitious targets for real impact. With this approach, Nigeria will aim to save one million lives (predominantly women and children) by 2015.

The six major components identified that will help in saving one million lives are:

- Improving maternal, newborn and child health (MNCH) through delivering an integrated package of interventions in thousands of primary health care clinics with referral links.
- Improving routine immunization coverage and eradicating poliomyelitis.
- Preventing and eliminating mother to child transmission (PMTCT and eMTCT) of HIV through increased access to quality HIV testing and counseling to mothers, treatment of infected mothers, and exploring feasibility of universal access to HIV treatment to all those infected.
- Scaling up access to essential medicines.
- Malaria control through an increased utilization of bed nets and effective antimalarial medicines.
- Improving child nutrition.

The following is a table of the SOML program areas and targets.



The Saving One Million Lives (SOML) initiative seeks to save the lives of Nigerians, particularly women and children, through the scale up of access to essential primary health services and commodities.

TABLE 1. SOML Program Areas and Targets

PROGRAM AREA	TARGETS
Maternal and Child Health	Reduce maternal mortality ratio from 545/100,000 live births to 250/100,000 live births
	Reduce the neonatal mortality rate from 40/1,000 live births to 14/1,000 live births
	Increase the proportion of births attended to by a skilled birth attendant from 38.9% in 2008 to 85%
	Increase the proportion of pregnant women attending 4 or more antenatal care (ANC) visits from 45% in 2008 to 80%
	Increase the number of upgraded primary healthcare facilities from 1,000 MSS sites in 2012 to 5,000 sites
Routine Immunization	Increase number of infants receiving DPT3 ¹² /Pentavalent vaccines in target Primary Health Care facilities and communities to 87%
	Increase percentage of coverage of oral polio vaccine to 87%
Essential Medicines	80% of under-five diarrhea episodes treated with oral rehydration salt (ORS) and zinc
	80% of under-five malaria episodes treated with artemisinin-based combination therapy within 24 hours
	80% of under-five pneumonia episodes treated with cotrimoxazole or amoxicillin
Nutrition	Cure rates: Consistently achieve a cure rate of 75% of children admitted for acute malnutrition from 71.4%
	Case fatality rates: Consistently achieve a death rate of less than 10% of children being treated for acute weight-loss
	Exclusive breast feeding for at least 80% of children under the age of 6 months
	100% of children under the age of 5 receiving vitamin A
Malaria	Increase the utilization rates of children under the age of five years sleeping inside the mosquito nets from 29% in 2010 to equal or greater than 80%
	Increase the utilization rates of pregnant women sleeping inside mosquito nets from 65% in 2010 to at least 80%
	Increase the uptake of all eligible pregnant women receiving two doses of Intermittent Preventive Treatment from 5% in 2008 to equal or greater than 80%
	Improve the uptake of prompt diagnosis and treatment of children under the age of five with fever cases or suspected malaria cases using effective antimalarial from 33% as recorded in 2008 to at least 80%

Elimination of Mother-to-Child Transmission [of HIV/AIDS]	Increase access to antiretroviral (ARV) prophylaxis for all HIV positive pregnant women from 22% to 90%
	Increase access to ARV prophylaxis for all HIV exposed infants from 8% to 90%
	Increase access of HIV positive pregnant women to quality infant feeding counselling to 90%
	Increase access of HIV exposed infants to early infant diagnosis service to 90%
Private Sector Engagement	To increase the amount of data and information reported and available on private sector clinical services, financing, and operational management for improved health system planning
	To implement business models that identify and coordinate private sector providers to achieve increased knowledge, improved quality of services, and economies of scale through shared resources, leading to increased investment-grade enterprises
Quality Improvement	Target(s) Forthcoming
Fiscal Space Analysis	Supporting departments within FMOH & NPHCDA in using the report to develop the 2015 health budget
	Having 30-40% of donors in the Development Partners Group use tool as basis for aid grants
	Increase in the Federal Government's allocation to health
Data Management	Phase 1: Scale-up of SOML in 20 states with the lowest reporting rates (0-25% as of August 2013) by December 2014; 80% reporting in other states.
	Phase 2: Scale-up in the remaining 17 states by December 2015; 80-100% reporting in all states.

Note that this report focuses on the six program areas directly related to health [refer to the section preceding the table].

Components of SOML also include increased domestic funding for commodities, removal of family planning user fees at public facilities, and strategic planning and implementation to improve access to the commodities¹³.

Information and Communication Technologies (ICTs) were identified as a priority strategy for achieving the targets set within the SOML program. Information and Communication Technologies for Saving One Million Lives (ICT4SOML) seeks to leverage various ICT platforms to improve maternal and child health, as a part of SOML. The initiative was launched in January 2013 by the Federal Ministry of Health (FMOH) and the Federal Ministry of Communication Technology (FMCT) and is being led by the UN Foundation and GSMA with support from the Government of Norway.

The application of ICT for health systems strengthening, or mobile and electronic health (m- and eHealth), has been shown to reduce costs, increase product and service penetration,

12. Diphtheria, Pertussis and Tetanus

13. <http://www.everywomaneverychild.org/component/content/article/1-about/460-remarks-by-president-jonatham-at-the-launch-of-nigerias-saving-one-million-lives-initiative->

and improve access to critical care or information. Mobile technologies have been used to create and maintain patient registries, diagnose and monitor ailments, provide point-of-care support to health workers, help reduce or eliminate stock-outs, educate and increase awareness amongst the public, monitor health worker performance and manage payments. The Federal Ministry of Health (FMOH) has identified the application of ICTs as a key strategy to strengthening Nigeria's health system. Accordingly, the FMOH has prioritized the strategic application of ICT to support SOML.

Given the focus of ICT4SOML to support the mitigation of unnecessary deaths, ICT4SOML will target patients, providers and the health system. Accordingly, the following underlying principles govern the use of mobile phones and other ICTs as part of this initiative:

1. Empowering patients (and/or clients)
2. Empowering health workers
3. Empowering the health system
4. Providing a platform for shared accountability, inclusion, and equity and consideration for links to mobile financial services through conditional cash transfers

A situational analysis was conducted in January 2013 and was intended to help develop a clearly articulated rationale for targeted investments into eHealth and mHealth over the course of SOML. The key recommendations made from this analysis include taking advantage of existing movements to achieve early results, economies of scale within the short timeline of SOML, and strengthening the enabling environment for the use of ICTs.

Additionally, four readily actionable areas were identified. They were further validated at a stakeholder workshop in November 2013.

1. Supply Chain/Inventory Tracking of Essential Commodities: Leverage mobiles to reduce the duration and frequency of stock outs of essential lifesaving commodities.
2. National Health Management Information System (NHMIS): Improve quality, comprehensiveness, and timeliness of routine reporting from primary health facilities and increase utilization of NHMIS data to strengthen health system improvement efforts.
3. Mobile phone conditional cash transfers (mCCT) for MNCH: Provide direction for the ICT4SOML mCCT implementation process and a plan for scale up across Nigeria.
4. Demand Generation: Generate demand and awareness around the use of mobiles for health services.

This landscape and inventory report presents a broad overview of the ICT4SOML and ICT for health structures in Nigeria, an inventory and analysis of current ICT-related activities in Nigeria and other low and middle-income countries (LMICs) relevant to SOML, and lessons learned from global best practices. Efforts have been made to connect the findings from this landscape and inventory with a complementary policy review. [Please see the document entitled 'Assessing the Enabling Environment for ICTs for Health in Nigeria: A Review of Policies'.]

Baseline Assessment and Inventory Methodology

The overarching aim of the baseline assessment and inventory is to ensure that all activities within ICT4SOML are informed and contextualized to the Nigerian environment and to identify and assess the current state of SOML-relevant technology platforms implemented in Nigeria and LMICs. This effort in Nigeria is comparable to the first step that other low and middle-income countries have taken to document and assess the current state of technology implementations at the national level. The baseline assessment builds upon the situational analysis conducted in 2013 and other work completed to date, such as progress monitoring of on-going projects and hosting of ICT4SOML workshops. The baseline assessment and inventory analysis includes a list of ICT initiatives that have the potential to scale up and achieve the SOML targets.

Technology applications, platforms, and projects were examined across two axes: (1) the ICT-4SOML priority technology focus areas and (2) health system functions, as adapted from the World Health Organization (WHO) taxonomy developed to classify mHealth applications by function. The list below categorizes the adapted health system functions by ICT4SOML priority technology focus area (please refer to the appendix for more information on the taxonomy).

TABLE 2. Health System Functions by Technology Focus Area

TECHNOLOGY FOCUS AREA:	HEALTH SYSTEM FUNCTIONS:
Scale up of the NHMIS for tracking Progress towards SOML Targets, based on District Health Information System 2 (DHIS2)	Disease Surveillance and reporting
	Registration and vital events
	Health information system
mCCT	Health Financing
Mobile inventory tracking of essential commodities/supply chain	Resource Management
Demand generation	Scheduling and reminders
	Patient education and behaviour change
	Provider training
	Communication
	Decision support

These categories formed the basis for analysing the findings and making recommendations. In addition, global ICT for health projects/initiatives and recommendations that could inform specific SOML targets were also covered. The result is an inventory of relevant ICT for health projects, resources, platforms, and initiatives in Nigeria and a global benchmark of other relevant initiatives to inform gaps and scaling.

The information outlined in this report was gleaned from the following sources:

1. Desk review of databases, gray literature, and existing health ICT landscapes for current ICT for health projects
2. Key informant interviews with stakeholders
3. Resources submitted via an online form¹⁴ by key e- and mHealth stakeholders

Numerous search terms were used, but terms that produced the most relevant results included: “Information Communication Technology and Health”, “mHealth”, eHealth”, “Health Initiatives in Nigeria”, “ICT Health in Nigeria” and “ICT Initiatives in Medicine Nigeria”. Key initiatives were also identified from several websites including Google Scholar, the WHO’s eHealth publications website¹⁵, UNICEF, Health Market Innovations¹⁶ and mHealth Info¹⁷, in addition to the database of initiatives populated by key stakeholders for this project. Other initiatives were also identified from key stakeholders’ websites. The information extracted from all of these initiatives include: geographic coverage and spread, technological platform, funders, level of scale, and interoperability with other systems. In addition to projects identified within Nigeria, health initiatives from similar jurisdictions¹⁸ were reviewed to determine best practices that can be adopted in order to meet the SOML target of saving the lives of one million women and children by 2015. Despite best efforts to capture all relevant Health ICT initiatives in Nigeria, it is possible that projects have been inadvertently left out of the inventory.

14. <http://bit.ly/ict4sobl-inventory>

15. <http://www.who.int/ehealth/publications>

16. www.healthmarketinnovations.org

17. www.mhealthinfo.org

18. Similar jurisdictions were defined as (LMICs) with similar GDP, development status and population to Nigeria.



ICT Landscape in Nigeria

Nigeria has one of the largest and fastest growing telecommunications markets globally, and the country has a subscriber base of roughly 127.2 million.^{19, 20} Since the de-regulation of the telecommunications industry in 2000, the sector has witnessed significant and sustained growth. The industry in Nigeria is currently dominated by four major GSM operators and four major CDMA operators. MTN, Airtel, and Glo share market-dominance, with the most widespread coverage in the country and 83% of mobile subscriptions nationally. According to the Nigerian Communications Commission (NCC), there are an estimated 93 mobile phone subscriptions per 100 people in Nigeria, and the voice market has the most active mobile segment²¹.

TABLE 3. Market Share of the Top Four GSM and CDMA Operators

OPERATOR	TYPE	SUBSCRIBERS
MTN	GSM	57,224,316
Airtel	GSM	25,521,046
Glo Mobile	GSM	23,416,867
Etisalat	GSM	18,722,613
Visafone	CDMA	2,004,010
Starcomms	CDMA	180,235
Zoom/Reliance	CDMA	111,077
Multilinks	CDMA	35,381

Source: NCC Data from March 2014 ²²

All of the GSM Operators in Nigeria have some presence across all the states in the country. However, the telecoms infrastructure present in the North East and North West zones are significantly less dense than that of other zones. Insecurity, sparse distribution of the population, and poor demand are key factors which hinder the spread of telecommunications services to these regions. Therefore, the ICT4SOML initiative will pay particular attention to remote areas.

Although, Internet availability and usage is rising, Internet penetration and broadband subscriptions are still at very low levels. As of 2014, the Internet penetration rate was estimated to be 28.9%,²³ meaning that an estimated 44 million Nigerians were accessing the Internet.²⁴ With huge investments in both an international and domestic fiber optic backbone, the demand for inexpensive, yet high-quality sources of Internet services is expected to be met.

19. Ncc.gov.ng

20. ITU statistics time series data on mobile-cellular subscriptions: <http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>

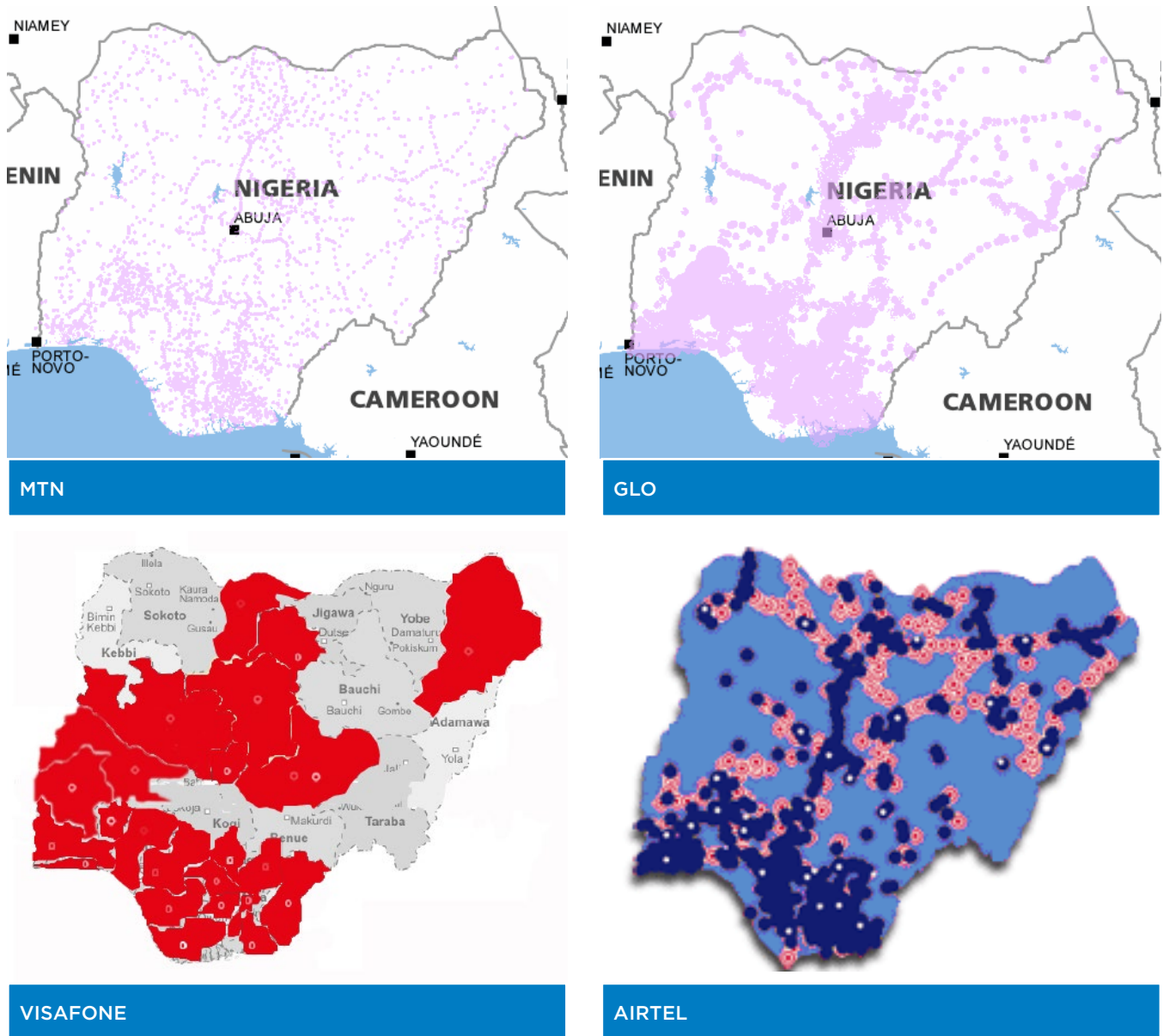
21. Nigerian Communications Commission, ncc.gov.ng - Subscriber data

22. http://www.ncc.gov.ng/index.php?option=com_content&view=article&id=70&Itemid=67

23. Internetworldstat.com

24. World Bank Stats, <http://data.worldbank.org/indicator>

FIGURE 1. Geographic coverage of the four major mobile telecommunications operators in Nigeria



Sources:

MTN: https://mobiledevelopmentintelligence.com/network_coverage [2G filter]

Glo: https://mobiledevelopmentintelligence.com/network_coverage [2G filter]

Visafone: <http://www.visafone.com.ng/map.html>

Airtel: http://www.airtel.com/wps/wcm/connect/africaairtel/nigeria/connect/coverage_in_nigeria

TABLE 4. Key ICT Statistics in Nigeria

S/N	SECTOR	FIGURE
1	ICT services exports (% of service exports)	4.4%
2	PC Penetration (Number of PCs per 100 people)	4.7
3	Mobile Phone Penetration (subscriptions per 100 people)	73
4	Fixed telephone penetration (per 100 people)	0.70
5	ICT goods imports (% of total goods imported)	5.5%
6	Internet Penetration (per 100 people)	38
7	fixed broadband Internet subscribers (per 100 people)	0.01

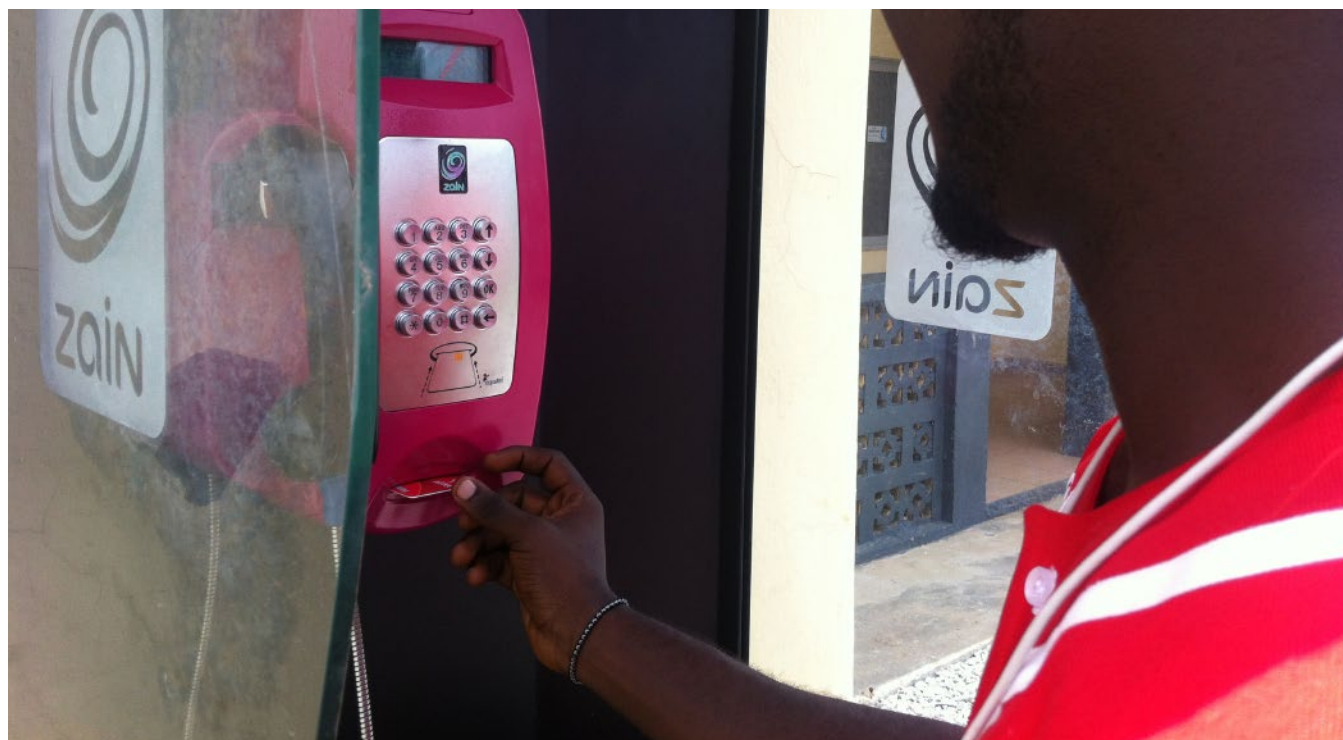
ICT4SOML Stakeholder Report, ncc.gov.ng and World Bank Indicators^{25, 26, 27}

The phenomenal growth witnessed in the telecoms industry over the last 10 years has necessitated substantial investment in infrastructure to accommodate the growing subscriber base. The demand for improved and additional infrastructure will continue to grow as more telecoms operators deploy new technology and expand their current operations.

25. ICT4SOML Stakeholder Report (2013). Available from: <http://aehin.hingx.org/Topics/Detail/1459?name=ict4somal-stakeholder-workshop-re&page=0>

26. http://ncc.gov.ng/index.php?option=com_content&view=category&id=65&Itemid=67

27. <http://data.worldbank.org/indicator>



ICT for Health Inventory in Nigeria

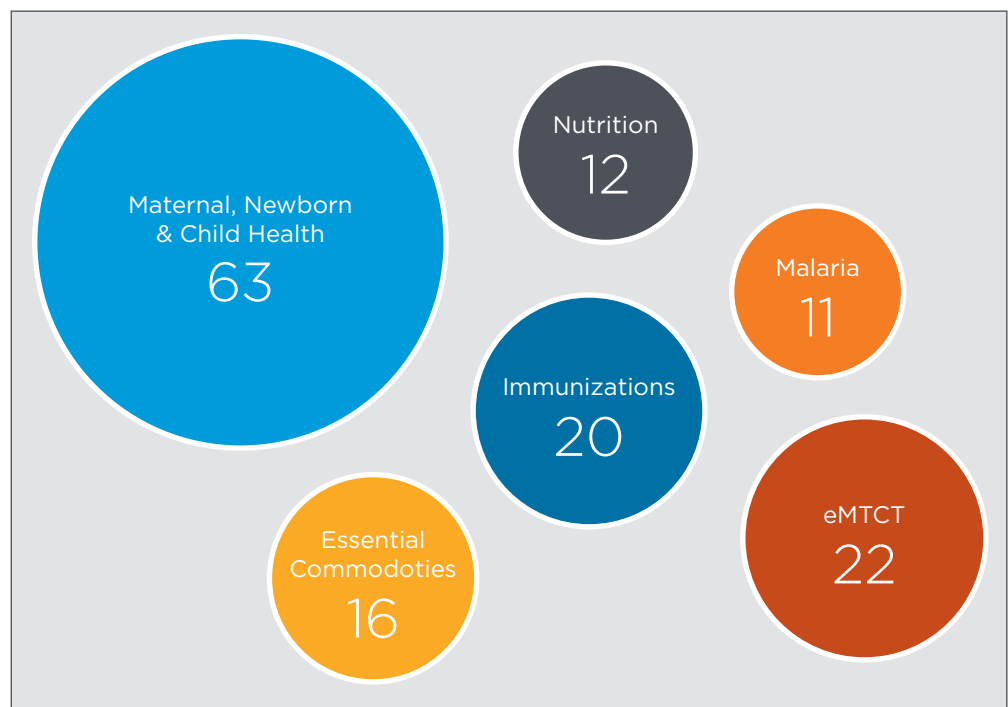
In May 2014, an online inventory data collection form²⁸ was circulated to key stakeholders and known ICT for health implementing agencies to catalogue initiatives in Nigeria. A desk review of several databases was conducted in parallel to the request for submissions. A total of 84 unique ICT for health initiatives in Nigeria were identified. [Please see the appendix for the full list.]

For most projects, information was obtained on a variety of factors, including the SOML program area addressed, geographic coverage, technology used, level of scale, et cetera. The findings from analysis of each of these factors is explored in more detail below.

SOML PROGRAM AREAS AND TARGETS

Each project in the ICT for health inventory was categorized by the SOML program area that it addressed to better understand existing work to use ICTs to achieve SOML targets. A handful of projects were relevant to multiple SOML program areas, and as such, were included in the count for each applicable program area. A graph of the number of initiatives involved across the various SOML target areas is provided below. The following sub-sections provide more detail on the findings of each program area.

FIGURE 2. Inventory analysis based on SOML program area



28. <http://bit.ly/ict4somi-inventory>

MATERNAL, NEWBORN AND CHILD HEALTH

The majority of ICT for health initiatives in Nigeria focus on MNCH. Most of the MNCH-related projects provide information to women and their caregivers on healthy living and risk mitigation. This can be achieved through direct-to-client services and clinical decision support. It is in this program area that financial-based incentives have been explored. Mobile phone-based payment mechanisms can be used as a means to encourage pregnant women to attend antenatal care visits. Challenges faced in this program area include funding, inadequately trained workforce and infrastructure limitations. [These challenges are not unique to this program area.]

Mobile Midwife Nigeria

Mobile Midwife Nigeria is a subscription service that provides MNCH information with a sustainable business model. Mobile Midwife Nigeria delivers targeted, time-specific, evidence-based voice messages containing important health information to pregnant women and new parents in their local language. The model explores the willingness of clients to use premium services. The application leverages the Grameen Foundation's MOTECH "Mobile Midwife" model in Ghana, but has tailored the service to the Nigerian context. The service is available via interactive voice response (IVR) in three languages in Nigeria: Hausa, Pidgin, and English.

Pathfinder International's m4change initiative

Pathfinder International's m4change initiative, launched in 2012, provides Nigerian community health extension workers (CHEWs) with a mobile phone-based application for clinical decision support, data collection, and reminders. The application is focused on the antenatal period and has been implemented in remote areas in Northern Nigeria. Inadequate manpower, technological literacy limitations, and issues with infrastructure (e.g., servers, power lines etc., especially in rural areas) are serious barriers to the effective implementation of this initiative. Other initiatives concerned with information and decision support systems, in the context of MNCH, include m4Change and Clinipak360.

NUTRITION AND MALARIA

Since there was a paucity of information on nutrition and malaria initiatives in the inventory, their analysis has been combined in this single sub-section. Nutrition and malaria were the least represented program areas in the inventory. Only 12 of the projects were catalogued as addressing nutrition and only 11 projects were catalogued as addressing malaria.

mNutrition

mNutrition is a nutrition-based application that provides daily alerts of different food-related benefits for people of various ages. For example, parents can subscribe to 'best natural nutrition for babies'. An initiative that is aimed at malaria prevention is the Africa Indoor Residual Spraying (AIRS). AIRS is a mobile phone-based application developed by Abt Associates to improve environmental compliance for malaria control.

Malaria remains one of the most significant health concerns in Nigeria. Therefore, the low representation of malaria initiatives in the inventory may present an opportunity for ICT for health to bring about greater awareness and addressing of issues related to malaria.

The majority of ICT for health initiatives in Nigeria focus on MNCH.

Nutrition and malaria were the least represented program areas in the inventory.

Polio continues to be endemic in Nigeria, while having been eliminated in most other countries of the world.

ESSENTIAL COMMODITIES AND IMMUNIZATIONS

Essential commodities and immunizations have significant overlap, and accordingly, have been addressed together in this sub-section. There were 16 programs catalogued in the inventory for essential commodities and 20 programs logged for immunizations. Electronic medical records (EMR) have been implemented to help capture information on immunizations and essential commodities, alike. For example, the EMR for immunization records, which uses the OpenMRS platform, has greatly reduced data duplication and streamlined monthly reporting processes in the pilot clinic in Kaduna State.

Overall, in Nigeria, significant effort is being directed towards improving childhood immunization rates against preventable childhood diseases, especially polio. Polio continues to be endemic in Nigeria, while having been eliminated in most other countries of the world. Initiatives that use technology to address access to and demand of essential commodities or immunizations include, but are not limited to, 'OMOMI', m4change/Sure-P MCH mCCT and Mobile Baby-Polio Immunization.

The Mobile Baby — Polio Immunization

The Mobile Baby — Polio Immunization is a Geographic Information Systems (GIS) polio-tracking application designed to improve vaccination rates in pre-identified risk areas. The platform uses Etisalat's data services, smartphones, and a server to generate risk maps and automated reports. The initiative is funded by Etisalat, GIS and ESRI and was launched in 2011. In Northern Nigeria, where polio is still endemic, partners working on polio including the CDC, Rotary international, eHealth Nigeria, etc. launched an emergency response center. The center was designed to respond, in real-time, to polio outbreaks and coordinate prevention activities through the provision of modern technology to health workers and offer a common place for agencies and organizations to pool resources and participate on projects together.

ELIMINATION OF MOTHER TO CHILD TRANSMISSION OF HIV

There were 22 initiatives identified that aim to decrease the incidence of mother to child transmission of HIV/AIDS. The Mobile Interactions' Bringing Hope (MI Hope) initiative ensures pregnant women and their male partners have greater access to testing, treatment, and care, particularly in rural areas. Mobile phones have been used to help facilitate some of the aforementioned processes.

GEOGRAPHIC COVERAGE

Nigeria has six geo-political zones: North East, North West, North Central, South East, South West and South South. While some initiatives such as MTN mHealth, MTN mNutrition and the National Agency for the Control of AIDS (NACA) HIV/AIDS Call Centre have been implemented throughout the country, other initiatives are either local/sub-regional or multi-region.

Out of the identified initiatives, 22 are reported to have nationwide coverage, meaning that they have been implemented throughout the country. There have been 18 which have been implemented in multiple States, an additional 18 have State coverage, and 9 initiatives cover LGAs or smaller areas. [There were 17 projects that had no information on their geographic coverage.] There is already a substantial presence of ICT for health initiatives throughout the country and these initiatives can and ought to be leveraged, directly or with necessary modifications, to reach SOML goals rather than starting from scratch. The most widespread programs are call centers, which support a "one-to-many" approach to providing access to health information and facilitating consultations.

MI Hope has helped ensure greater access to HIV/AIDS testing, treatment and care in rural areas.

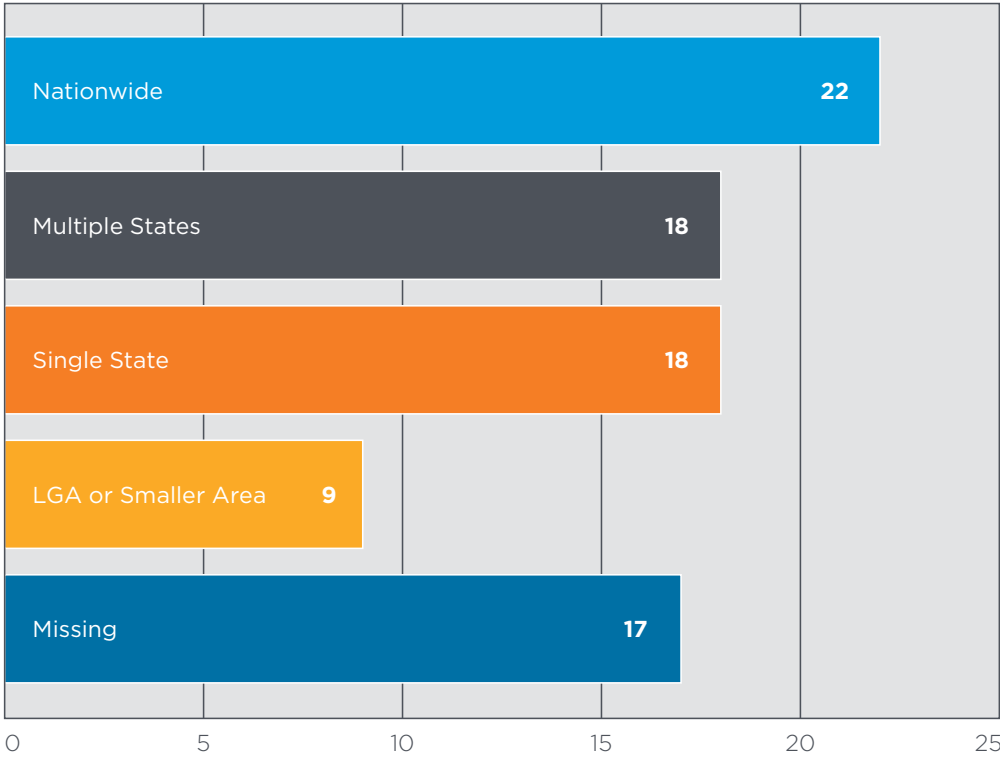
Call centers have the ability to improve health and provide information by reducing the need for a patient to visit a doctor and reducing the time and cost spent in seeking medical advice.²⁹

NACA's HIV/AIDS Call Centre is a toll-free line where callers can receive information on HIV/AIDS and other related diseases. As was identified from an interview conducted with NACA staff, the center is run by the Public-Private Sector Development Initiative with the infrastructure put in place by NACA. A steering committee comprised of stakeholders oversees the implementation of the call centre.

The HIV/AIDS Call Centre has been successful, but work still needs to be done to improve awareness and encourage people to call-in. Other challenges faced by the call center include few numbers of participating stakeholders from the telecoms sector, inconsistent power supply to run the call center, and inadequate funds to upgrade the system amongst others. Despite these challenges, the successes achieved by the HIV/AIDS Call Centre have made it a valuable investment and resource for the community.

In an effort to improve MNCH, Society for Family Health (SFH) also operates a call centre. The MNCH call centre provides a linkage between pregnant women and community volunteers and is also an information hub for all health issues pertaining to pregnancy, nutrition, post-partum care and family planning.

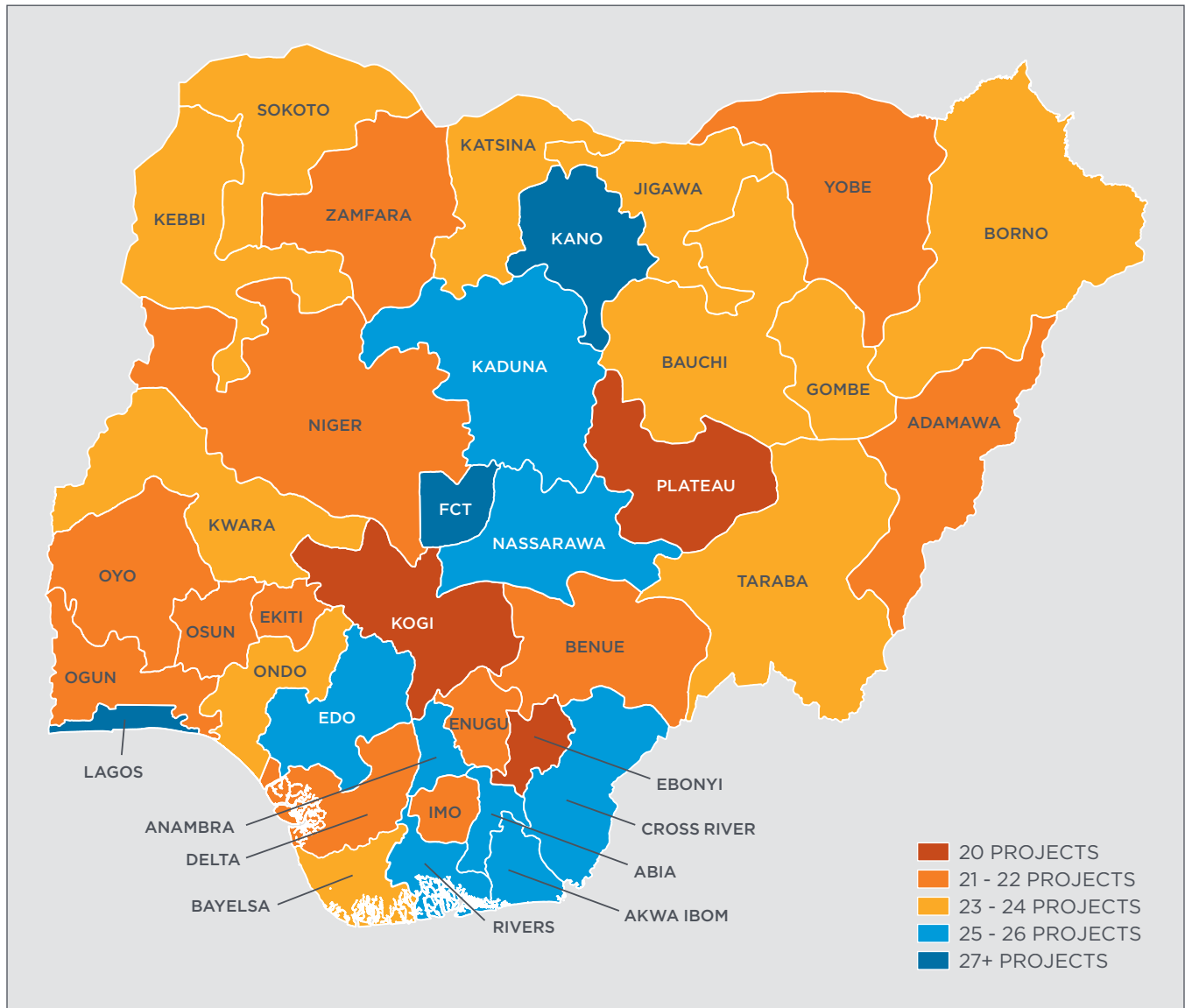
FIGURE 3. Geographic spread of initiatives



A few states have been identified to be only covered by nationwide initiatives, which are Kogi, Ogun, Delta, Ekiti, Plateau and Ebonyi states. Conversely, other states such as Lagos, Federal Capital Territory (FCT) and Cross Rivers, have numerous implementations. All of the states in Nigeria currently have multiple on-going ICT for health initiatives. The range of on-going implementations in each state is 20 to 32.

29. <http://healthmarketinnovations.org/>

FIGURE 4. States and ICT for health initiatives



HEALTH ICT TECHNOLOGIES EMPLOYED

The ICT for health initiatives were categorized based on the type of technology, especially communication technology that they employed. The following five categories were used:

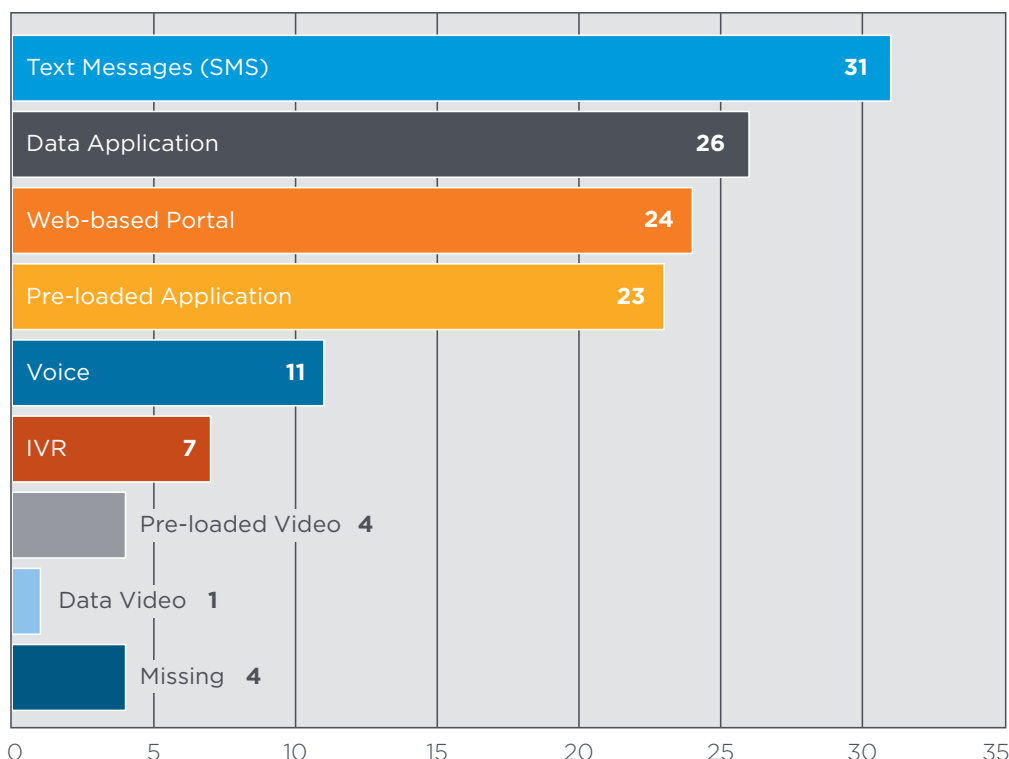
SMS-based applications typically require minimal resources.

1. SMS based applications/support platforms
2. Data/Internet based applications
3. Internet based interactive applications
4. High-speed Internet/broadband requiring applications
5. Applications without Internet or SMS capabilities for dissemination

The type of communications technology may impact the potential uptake of a project intervention, due to complexity, prevalence of compatible mobile devices, dependency on advanced infrastructure or human resource capacity, and feasibility for scale up in the current

environment. SMS-based applications typically require the least effort in terms of adaptability, extent of coverage and ease of adaptation. Applications requiring a broadband connection or high-speed Internet tend to be more costly as they are limited to the type of technology used (typically smartphones or computers) and require significant investments in the infrastructure for appropriate use to be realized. However, such applications may be able to offer more functionality and flexibility than text-based applications.

FIGURE 5. Inventory analysis based on technology involved



Text SMS, data applications, web-based portals and pre-loaded applications make up the bulk of technology in the identified initiatives. Some initiatives used more than one technology. The high prevalence of text and data applications in Nigeria is appropriate given the minimal infrastructure requirements, high likelihood of being compatible with user's pre-existing mobile devices and feasibility for scaling up.

Text messaging, a basic feature of mobile phones, can be used for a variety of functions including information dissemination and data collection. Text messaging has been greatly enhanced by the spread and penetration of mobile networks in the country, especially in rural areas where health interventions are most needed. Data applications and pre-loaded applications that are used on smartphones are mainly used by CHEWs and other health workers for data collection to populate EMRs, disease surveillance systems, decision support systems, etc. An example of a system that links to data applications is the health management information system (HMIS) mobile implementation in Katsina and Yobe States in Nigeria. This application aids health workers in the filing and sending of reports via mobile phones. Data elements collected by the health workers on a monthly basis include: ANC and pregnancy outcomes, mortality and births, family planning, immunization, nutrition and growth monitoring, community outreach services and facility utilization.

Other forms of technology identified through the inventory process include web-based portals, voice, IVR and pre-loaded videos.

Text messaging is a basic feature on mobile phones that can be used for a variety of functions.

SMS based applications/ Support platforms — FrontlineSMS for Awareness and Advocacy

Management Sciences for Health, along with partners, used FrontlineSMS to send out targeted awareness, advocacy and child nutrition SMS messages to the caregivers of orphans and vulnerable children (OVC) and community service organizations. FrontlineSMS is a laptop or PC-based software application used for sending and receiving group SMS messages. It also allows users to conduct surveys and competitions and run automated information services. One benefit of the system is that it does not require an internet connection and works with any GSM network. The software communicates using a mobile phone or modem, which is attached to a computer through a USB cable. Programs that use platforms like FrontlineSMS are highly feasible to implement mainly because of the ability to use any mobile phone, which would allow the program to take advantage of the high mobile phone penetration in the country.

Data/Internet based push/pull applications — CliniPAK360

CliniPAK360 provides a platform to connect mHealth, electronic health records, medical device technology, and program initiatives to improve informed care delivery, patient records, data aggregation, and program level resource allocation and activities. The CliniPAK360 mobile solution wirelessly captures patient data using 3G technology, which is inconsistent and poor in most rural areas across the country. This platform was given a lower feasibility rating than the SMS based applications/support platform initiatives because of the challenges faced in the internet services sector in Nigeria.

Internet based interactive applications — Mobile Baby

Mobile Baby is a tool that enables practitioners to send images and media to referring physicians for remote diagnosis. This is an interactive application and relies heavily on the presence and availability of Internet to be effective. This initiative was given a feasibility score of three because most health workers who are unable to manage cases prefer to refer the patient to another facility, rather than try to diagnose the patient through remote diagnostics. In addition, poor Internet coverage in most rural areas coupled with power shortages makes this initiative less feasible.

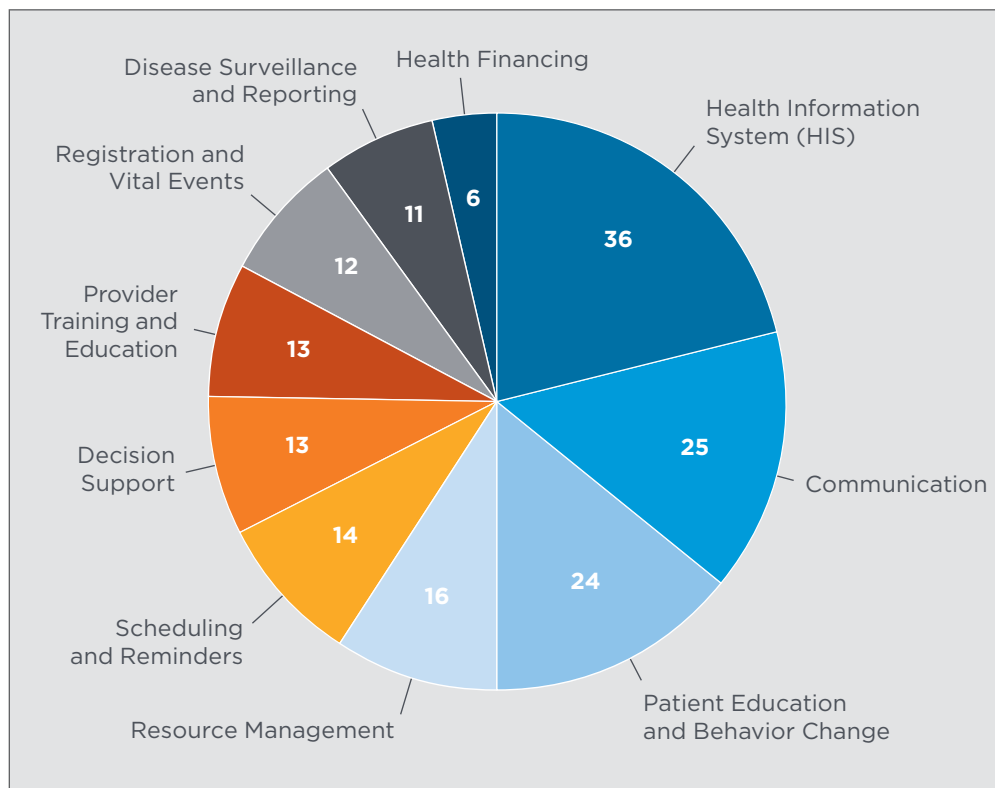


HEALTH SYSTEM FUNCTION

Projects in the inventory were also analyzed according to their health system function. The WHO signal functions for mHealth tools were collapsed into 10 categories. The 10 categories represent various health system functions, including disease surveillance and reporting, provider training, and health financing. Of the functions, health information system (HIS) implementations account for approximately a quarter of all the identified projects and initiatives. HIS are systems that capture, store, and transmit individual or aggregate health information inclusive of electronic health records.

Health information systems capture, store and transmit individual or aggregate health information.

FIGURE 6. Inventory analysis based on health system function



District Health Information System 2 (DHIS2)

Health data collection is very important and is the first step taken before any major intervention can be made. A primary health data collection program used worldwide is the District Health Information System 2 (DHIS2), which is an open source software/tool developed by the Health Information Systems Programme (HISP). DHIS2 is used for collection, validation, analysis, and presentation of aggregate statistical data, tailored (but not limited) to integrated health information management activities. The DHIS2 program is extensively used in Nigeria for data capture and monitoring. The 2013 National Council of Health approved and adopted the DHIS2-based National HMIS as the national platform for data reporting from all facilities in the country. However, there is no policy that requires or provides guidance to ICT for health initiatives to integrate with DHIS2. Data generated by health facilities and broader health systems helps in planning, logistics management, supply management and has a host of other functions. Therefore, the lack of a policy around integration with DHIS2 is a significant gap. However, there are projects that have used DHIS2. These include the Cross River Health and Demographic Surveillance System, which links data collected by CHWs on mobile phones with the NHMIS, and the Strengthening Integrated Delivery of HIV/AIDS Services (SIDHAS) Project, which helps manage all routine data collected around HIV/AIDS.

Another example of a health data collection program that uses technology is the National Orphans and Vulnerable Children Management Information System (NOMIS) developed by FHI360 under the Global HIV/AIDS Initiative Nigeria (GHAIN) project. This platform is a web enabled client level database for managing data from OVC programs. It is used to generate custom reports and charts and is interoperable with DHIS and the Logistics Management Information Systems (LMIS) for MNH Commodities. The platform uses mobile/tablet for stock and consumption data collection.

Decision support systems, which may be used concurrently to collect data, are used by health care providers at the point-of-care to guide patient's treatment, disease management, and care. Patient education and behavior change, which are direct-to-client services that provide information, communication, resource management and disease surveillance make up the other health system functions in the inventory.

ICT for Health tools

ICT for Health tools are also used to enhance communication between health care professionals. This kind of communication is pertinent in every health care system where there is a need for the regular exchange of information among health service providers. The exchange of information can support activities such as patient referrals, health workers trainings, and remote diagnoses in cases where expert medical advice is needed. Consultation between health care professionals, as the name implies, involves all forms of communication between health service providers and, when technology is utilized, can also be referred to as mobile telemedicine.³⁰

One initiative that illustrates provider-to-provider communication through the use of ICTs is the Clinton Health Access Initiative's (CHAI's) mLearning for Health Workers. This initiative developed a mobile intervention that could overcome geographical constraints and provide innovative practice-based tools for training Community Health Workers (CHWs). This mobile intervention was developed with the hope of facilitating increased communication and support between CHWs and their supervisors, as well as to ensure that health workers, especially in remote and underserved areas, are routinely updated with the skills and knowledge needed to tackle health needs. Another initiative in this category that is worth noting is Medexperts, which is a Nigerian online Community of Practice platform. Medexperts uses computers and the Internet to virtually connect health providers and patients. This virtual connection replaces an in-person doctor's visit and aims to improve a health provider's ability to diagnose and treat patients, either through improved training or real-time assistance with clinical decision making.

Challenges that have been faced by these types of programs include low technology literacy, especially amongst most health workers, and Internet and connectivity issues. To improve the efficiency of initiatives under this category, increased effort should be geared towards the training of users, development of simpler apps and platforms for use. Additionally, programs should be designed with a focus on addressing the needs of end users, which could be achieved by including the end users in the design process.

LEVEL OF SCALE

In order to understand the level of scale of the identified projects, the projects were grouped into four categories: proof-of-concept, pilot, scale-up or at-scale. The level of scale was determined by the status of the tool (i.e., beta or test product versus 'final'), distribution of the tool amongst end-users, and dissemination of the tool in implementation (e.g., reach).

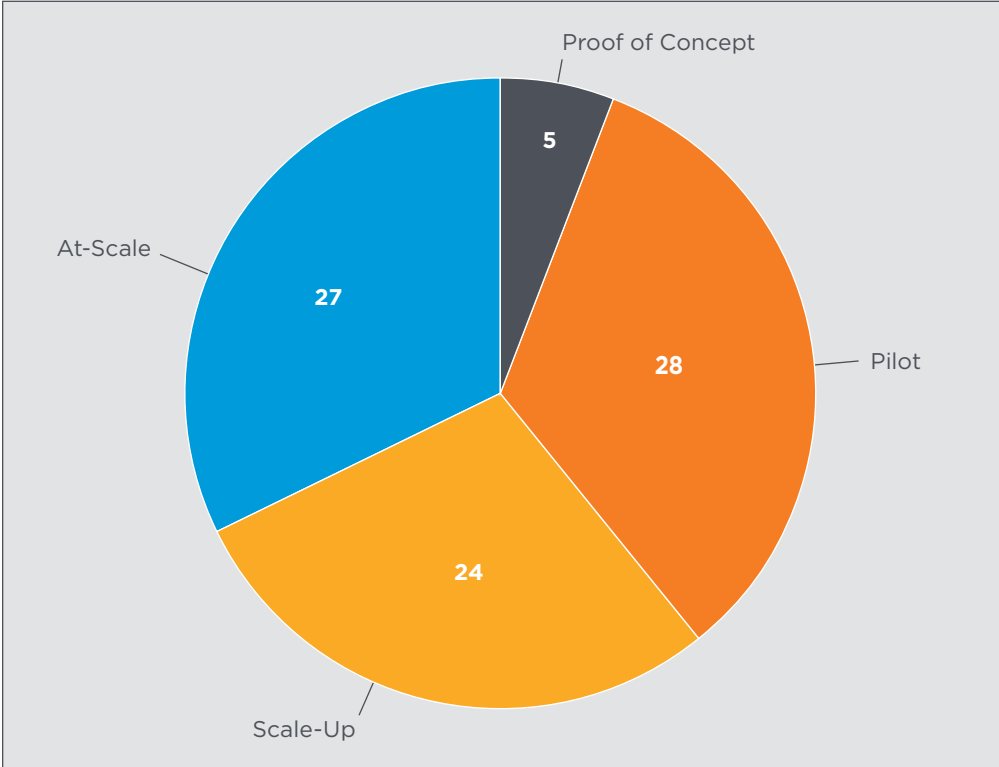
Tools that were identified as proof-of-concept, such as the Clinton Health Access Initiative's Routine Immunization Tracking Tool, were still undergoing short-term feasibility testing in a limited and controlled environment. At the pilot level, tools were still undergoing feasibility

Mobile phones can be used to enhance communication. This can be done through voice, text or other means.

30. Global Observatory for eHealth Series, Volume 3 (2011). Available from: http://www.who.int/goe/publications/ehealth_series_vol3/en/

testing but in the setting of an initial implementation in a 'real world' environment. Examples of pilot projects include CliniPAK360, the SURE-P mCCT programme, and the Mobile Community Based Surveillance (mCBS). Tools that were being scaled-up, like Mobile Baby, had already undergone initial piloting and were expanding the distribution and dissemination of the tool. Lastly, tools that had reached their intended level of scale (i.e., users, geography) were defined as being at-scale. This last level is pre-defined by those implementing the tools. Projects that have been reported as having reached scale include eHealth Nigeria's Electronic Medical Record for Immunization Records in Kaduna State and m4Change across multiple regions. Projects that have reached scale and have nationwide coverage include the DHIS Strengthening Integrated Delivery of HIV/AIDS Services Project; mPedigree and Sproxil's Mobile Product Authentication, which are SMS-based applications that combat medication counterfeiting and the NACA's HIV/AIDS Call Centre.

FIGURE 7. Inventory analysis based on level of scale



All but five of the identified initiatives are pilot projects or fully functional. The total number of initiatives that are either in the pilot stages, being scaled up or already at scale are represented by 79 out of the 84 identified initiatives in the country. This significant representation illustrates that efforts towards improving the health status of Nigerians using ICT are underway and have already made progress. This also supports the feasibility of using ICT to reach SOML goals, as existing projects can be leveraged.

Inventory of ICT for Health

Global Benchmarks

Lessons can be drawn from international implementations to help inform strategies within Nigeria.

In addition to the inventory of Nigeria-based ICT programs, an inventory of select global ICT projects was compiled and analyzed. The projects included in the global inventory were selected based on their relevance to the SOML target areas, reputation, level of establishment, scale, and geographic spread. A total of 35 global benchmarks were identified (please refer to the appendix for the full list). From these benchmark projects, best practices and other lessons can be drawn to inform strategies to overcoming challenges within the ICT for health implementation space in Nigeria.

Over 20 unique countries were represented by the benchmark initiatives, with most implementations located in Sub-Saharan Africa and South Asia. This is highly relevant to the Nigerian context because many countries in these locations face similar challenges, especially related to health systems. Challenges that these countries have in common include limited human and financial resources, inadequate infrastructure, and high burdens of disease. Therefore, because ICT for health implementations have been proven to be highly successful in such settings, the case for Nigeria to systematically and strategically approach ICT for health implementations is strengthened.

Out of the total inventory of global projects, 21 of these projects primarily focused on MNCH. Out of these MNCH projects, four focused on essential commodities, three on PMTCT (which maps to the SOML program area of eMTCT), three on malaria, and one each on nutrition and immunizations. In terms of the project approach or health system function, the most common initiatives were concerned with patient education and behaviour change and primarily provided direct-to-client services. For example, Pregnancy Care Advice offered by the Bangladesh Ministry of Health and Family Welfare, the Mobile Alliance for Maternal Action (MAMA) in South Africa, and Text4Baby in the United States all offer free SMS-based messaging directly to those who enrol in their programs. For all three initiatives, the messages attempt to promote healthy behaviours throughout the continuum of care for pregnancy. Direct-to-client services could be a model explored further as part of ICT4SOML. Given the high mobile phone penetration rates and government's investment and focus on MNCH services, voice or text-based services could be a feasible entry-point for providing such services.

As observed in a recent systematic review of mHealth Support Tools for Frontline Health Workers³¹ and the analysis of the Nigeria inventory, the global benchmark projects had similar technology landscapes to that found in Nigeria. Text SMS, data and pre-loaded applications were the most common. This indicates that focusing on the need and context can yield successful results. Factors that should be taken into consideration include the end-users and their technology literacy levels, the physical infrastructure and financial resources. In Tanzania, Ghana, Kenya, Cameroon and the Democratic Republic of Congo, SMS for Life has helped enhance the monitoring of anti-malarial drugs through an SMS-based monitoring and reporting system. The model is being expanded to other medications and products for other diseases. Project Mwana, in Zambia, has helped improve early infant HIV diagnostic services and follow-up. Built on the RapidSMS platform, results of HIV tests can be sent from laboratories to health facilities, reducing the time to diagnosis and care. On the more advanced, but integrated end, is AMPATH's electronic medical record system. Using Android-based smartphones, data is collected and uploaded directly into the system. Reports can then be generated from a web-based portal.

31. mHealth Support Tools for Improving the Performance of Frontline Health Workers: An Inventory and Analytical Review (2014). Available from: <http://www.mhealthalliance.org/images/content/publications/1822-Inventory-and-Landscape-Report-v6-JH-screen-spreads.pdf>

For initiatives that had information available about their platform, most platforms used by the benchmark countries were open source. An assumption that can be made is that such platforms are more readily integrated with other platforms to enhance interoperability. In addition, initial costs to use such platforms are typically significantly less expensive than proprietary-based software and the platforms tend to be more flexible for adaptation. The MOTECH Suite is a comprehensive suite of well-established open source tools that have been integrated to capitalize on the functionality of the individual components. The tools integrated with each other in the MOTECH Suite are MoTeCH, OpenMRS, DHIS2 and ComCare. DHIS2 has already been implemented in Nigeria. Other open source tools should be explored, and a policy and strategy on interoperability should be developed. [See the policy review report titled 'Assessing the Enabling Environment for ICTs for Health in Nigeria: A Review of Policies'.]

A notable implementation of the MOTECH Suite is the BBC Media Action's Ananya Programme, which has been successfully implemented and scaled up throughout Bihar, India, to provide targeted health information to health care workers.

There was minimal information available on business models, funding, and governance. However, the findings are in alignment with literature that does exist on these topics³². Establishing sustainable sources of funding has been a challenge for ICT for health initiatives. As was the case for the global benchmarks, the projects captured in the inventory primarily had grant-based and short-term funding. Therefore, the life-span of projects is often dictated by the terms of a grant. Long-term, sustainable sources of funding have yet to be identified for most projects. However, identifying government funds or using government financing mechanisms, along with public-private partnerships, can be a more viable solution. Engaging the government as a leader is a key factor for success. Governments not only have the political will to leverage resources, but they can also ensure alignment with health system priorities. They can drive forward the legal and regulatory environment needed to foster an enabling environment for ICT for health and can help promote collaboration for a more coordinated environment. [For more information on sustainable financing, governance and the policy environment, see the policy review report titled 'Assessing the Enabling Environment for ICTs for Health in Nigeria: A Review of Policies'.]

Overall, the benchmark countries serve as useful examples of best practices. As the government of Nigeria continues to work on the strategy for ICT for health, these initiatives and findings can be referred to for key learnings and to help inform the strategy development process.

A notable implementation of the MOTECH Suite is the BBC Media Action's Ananya Programme, which has been successfully implemented and scaled up throughout Bihar, India, to provide targeted health information to health care workers.

32. Sustainable Financing for Mobile Health (mHealth): Options and opportunities for mHealth financial models in low and middle income countries (2013). Available from: http://mhealthalliance.org/images/content/sustainable_financing_for_mhealth_report.pdf

Lessons Learned from Current ICT for Health Interventions in Nigeria

Throughout the landscape and inventory process, key stakeholder interviews were conducted to identify challenges and lessons learned from early investments and experiences in the use of ICT to support health programs in Nigeria. The following is a list of the five most commonly described lessons learned.

1. Proper use of the right ICT within the health sector has been found to increase the quality of services provided, create efficiency, and increase the number of people served by reducing common barriers to accessibility of health information and services especially in rural areas. The potential of mobile devices as a means of communication and data collection within the health sector cannot be over emphasized as mobile devices are relatively inexpensive and are already in use across the country.
2. Large scale ICT for Health projects and initiatives require ministerial-level champions and should have the support of relevant authorities and provisions for them should be made at policy levels.
3. To ensure participation of all stakeholders in both the ICT and health sectors, there should be relevant incentives and adequate sensitization and engagement of all relevant stakeholders (regulators, policy makers, implementers, vendors, users etc.). This will also promote the program sustainability.
4. If clients and health service providers are trained on technologies, it not only reduces the turnaround time for service delivery, but also increases their sense of comfort with these technologies over time.
5. For most ICT for Health initiatives, maintenance and quality assurance are continuous, cost intensive and time consuming. This can be compensated by the efficiency generated in the use of technology.



Recommendations

The document review and stakeholder interviews uncovered a number of key challenges and recommendations for consideration within ICT4SOML and broader use of ICT to achieve health objectives. Many of the challenges are not unique to Nigeria and generally point to the overall need to strengthen the enabling environment, while investing in scalable technology platforms, including 1) funding for scale-up; 2) capacity building; 3) guiding policy; and 4) infrastructure.

FUNDING FOR SCALE-UP

Limited capital and ongoing funding and the lack of sustainable financing mechanisms for health ICT initiatives was identified as a key challenge to scale up. Setting up and maintaining initiatives is costly due to initial inputs such as software development, hardware procurement and training. However, with sufficient funding and sustainable financing mechanisms, initiatives can be brought to scale. In order for sustainable financing mechanisms to be realized, appropriate leadership and governance must be in place. Additionally, a variety of funding mechanisms should be explored. The leadership can ensure that initiatives are in alignment with national health goals and that appropriate accountability is in place to oversee financing. Public-private partnerships, in addition to the earmarking of government funds specifically for ICT for health, could serve as viable financing mechanisms. Further explorations to this end should be conducted to identify all potential funding sources.

Funding: Sufficient and sustained funding was identified as a critical enabler to implement and advance ICT4SOML initiatives at scale, while still ensuring quality. Specific areas where funding is needed include:

- Procurement of ICT equipment such as mobile phones, tablets, computers and accessories, and software. A greater emphasis should be placed on volume, quality, and integration.
- Health workforce training and re-training, including basic ICT skills education, was identified as expensive at scale but necessary, as the current workforce capacity and technology readiness is very low.
- Infrastructure improvements inclusive of extending network coverage and reliable power supplies.

CAPACITY BUILDING

ICT for health initiatives should enhance workforce efficiency and not be a burden. Given the limited number of human resources for health, it will be important to support and streamline their current workloads. Therefore, ICT for health implementation should be designed and evaluated closely with health care providers and other end users. In addition, health care workers may have a varying background or familiarity with ICT for health tools. Basic training and skills-building on ICTs could be provided for current and upcoming health care providers at all levels of the health system, in addition to tailored trainings on specific tools. Such trainings could help garner buy-in and foster the necessary cultural change needed for the uptake of ICT for health.

Capacity: Quantity and quality of staff was identified as another major challenge. Specific issues include:

- **Resistance to change** due to very low levels of technological/computer literacy among a majority of the health workforce – especially Community Health Extension Workers

Public-private partnerships, in addition to government funds, could serve as viable financing mechanisms.

and Volunteer Health Workers who are at the frontline of primary health care services. Reducing resistance will require training and retraining of staff.

- **Low morale among health workers**, especially primary healthcare workers, is due to poor remuneration and non-financial incentives and work overload for the qualified staff due to staff attrition.
- **Poor capacity transfer from federal to local levels.** While the “train-the-trainers” model is useful, there is a dilution of the quality of the training and related services as training moves to the State and LGAs.

GUIDING POLICY

Harmonizing implementations can help minimize waste and efforts.

Fragmentation and duplication are well documented in the ICT for health environment. Currently, there is no overarching policy governing ICT for health in Nigeria. The review confirmed the need for a strategic, national policy specific to ICT for health. The policy could help guide and coordinate the activities of implementing organizations, including government entities. For example, the policy should clearly outline the minimum requirements of each of the tools and implementations, especially requirements related to data safety, standards and interoperability. This would ensure that systems could integrate into national information systems, leading to improved and more informed decision-making in alignment with health system goals, and be resilient to fraud or cybercrime. Harmonizing implementations in this manner can help minimize waste and efforts and lead to the redistribution of resources to help address other aspects of the health system.

Guiding Policy: There is no harmonized policy for ICT for health resulting in limited guidance to implementers in terms of architecture, standards, integration, scale-up, financing or capacity. Specific policy issues that are of urgent need and should be addressed, include:

- **Client/patient security and privacy**, especially for organizations handling large quantities of patient data (e.g., NACA and the other service delivery implementing partners). Adequate system security is also needed for mCCT and other mobile money supported initiatives, which can be particularly vulnerable to fraud.
- **Standards and interoperability** permitting various platforms and databases to feed into a central repository, such as the NHMIS, for improved decision-making capacity.
- **Coordination to improve the integration and harmonization** of ICT initiatives to avoid duplication and waste of available resources.

INFRASTRUCTURE

While significant infrastructure investments and improvements are underway in Nigeria, reliable connectivity and power remain a common challenge, especially outside of urban centers. These infrastructure challenges can be prohibitive to the implementation and uptake of ICT for health tools. The challenges also underline the importance of identifying sustainable financing mechanisms as some funds could be used to support on-going infrastructure improvement efforts. Low-cost and readily available technologies, such as text or voice, may be able to bridge the information and communications gap while data and broadband connectivity is expanded. As the infrastructure is strengthened and expanded, these options could be combined with more sophisticated and complex applications (e.g., interactive Internet or broadband-based applications) for greater functionality.

Infrastructure deficit: Electrical power instability in Nigeria affects the deployment and use of ICT for health tools, especially initiatives that use equipment that requires a constant source of power (e.g., computers). Network coverage is also a challenge. Connectivity problems affect the deployment and uptake of ICT for health initiatives. With a limited ICT infrastructure, the costs of setting-up a project are high due to setting up provisions to fill the infrastructure gap.

Conclusion

ICT for health initiatives exist throughout the country, but high impact initiatives with evidence-based results often do not have nationwide coverage. Therefore, the geographic spread and reach of current initiatives, with evidence of a positive impact on health, should be broadened. In conjunction, health care providers and users of these platforms should be educated and trained on using ICT for health tools. This will ensure the efficient use of these technologies and avoid delay and mistakes that come from a lack of familiarity with the use of these technologies. Furthermore, additional focus should be put on addressing challenges that arise from language and communication barriers between health providers and the target group. Addressing this gap is important to ensure wider acceptance of these initiatives, especially amongst lower literacy populations.

Formative research should be conducted on target groups to ensure that the adopted initiatives address priority issues and needs. Identified initiatives that are under serious consideration for scaled deployment should be subjected to an impact assessment. Such an assessment would help determine the impact each of the projects would have on the target populations and the need to either proceed with the project as is, make modifications, or close the project. Mechanisms should be put in place to track progress of these initiatives against SOML and broader health sector goals and objectives to ensure alignment and interoperability with other technology implementations.

In parallel, there is a need to strengthen the enabling environment for the coordinated implementation and expansion of these initiatives. More efforts should be geared towards regulation, financing, capacity building and interoperability between platforms.

Overall, this inventory is a starting point for understanding the ICT for health landscape in Nigeria and highlights the breadth and depth of ICT interventions that can be leveraged within ICT4SOML. A parallel review of the state of relevant policies has been conducted and published separately. This report will be followed by a field assessment beginning in Quarter 3 of 2014 that will take a detailed look at the current state of implementations and capacity at the level of health workers, facilities, LGAs, and State administrations. Together, these reports and the field assessment will serve as the foundation for the development of the Health ICT Framework for SOML and supportive policies to better govern the use of technology within the health system in Nigeria.

This inventory is a starting point for understanding the ICT for health landscape in Nigeria and will serve as part of the foundation for the development of the Health ICT Framework for SOML and other supportive policies.

Appendix 1

CATEGORY	VALUE	DEFINITION	INVENTORY RULE
Name of Project	Free text	Most common name(s) used to refer to the health ICT Project.	One name per value. Standardize name if multiple uses.
Organization	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.
Name of Tool	Free text	Most common name(s) used to refer to the health ICT tool used in the project.	One name per value. Standardize name if multiple uses.
Vendor/ Developer	Free text	Company(-ies) or organization(s) that are the vendor(s)/developer(s) of the health ICT tool.	List all of the vendor(s)/developer(s) involved, separated by a comma.
Description	Free text	Describe the health ICT tool in 100 words or fewer.	100 word maximum.
Project Approach	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.	
	Scheduling and Reminders	Aids in scheduling appointments and reminders either direct-to-client or to the health worker for patient follow-up.	
	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.	
	Patient Education and Behavior Change	Direct-to-client service that provides education and/or guides behavior change.	
	Provider Training	Distance learning for health workers using mobile phone (mLearning).	

Project Approach (con't)	Resource Management	Commodities and human resources management. Inclusive of supply chain monitoring.	
	Health Financing	Mobile phone-based payment system used to disperse payments to health workers or pay for health services.	
	Communication	Permits and/or enhances communication between health care providers and/or between providers and their patients.	
	Disease Surveillance and Reporting	Indicator reporting in 'real-time', potentially coupled with GIS mapping.	
SOML Target Area	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 target area as main function.
	Essential Commodities	The project primarily focuses on childhood essential commodities and medicine.	
	Nutrition	The project primarily focuses on childhood nutrition.	
	PMTCT	The project primarily focuses the prevention of mother-to-child transmission of HIV/AIDS.	
	Immunizations	The project primarily focuses on routine immunizations or immunization coverage.	
	Malaria	The project primarily focuses on malaria prevention and control.	
State	Any state(s) in Nigeria.	Nigerian state(s) in which implementation is taking place.	New row per state. Only applies to Nigeria inventory.
Country	Any country(-ies) in the world.	Country(-ies) of implementation for health ICT tool.	New row per country. Only applies to global inventory.
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.

Geographic Spread (con't)	Regional	The tool is being implemented at a state, district or regional level within a particular country.	
	Multiple Regions	The tool is being implemented across multiple states, districts or regions within a particular country.	
	Nationwide	The tool is being implemented throughout a particular country.	
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.	
	Scale-up	The tool is being scaled-up after initial piloting.	
	At-scale	The tool has reached intended scale and is on-going.	
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.	
	IVR	Information delivered or accessed through an interactive voice response (IVR) system.	
	Text SMS	Information delivered or accessed through text-based messages (SMS) on the mobile phone.	
	Rich-media SMS	Information delivered or accessed through audio-visual based SMS messages on the mobile phone.	
	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.	

Technology (con't)	Data Video	Videos that require data connectivity (i.e., WAP, 2G, 3G) to operate on a mobile phone.	
	Voice	Utilize live voice (calls) to support the performance of health workers.	
	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.	
	Web-based Portal	Application can be accessed using a web page. Requires Internet connectivity.	
Platform	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.
Platform Compatibility	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.	
	Android Smartphone	Mobile phone enabled with data connectivity and audio-visual capabilities operating on the Android platform.	
	Personal Digital Assistant (PDA)	Mobile phone with data connectivity and audio-visual capabilities.	
	Blackberry	Mobile phone with data connectivity and audio-visual capabilities operating on the blackberry.	
	iPhone/iOS	Mobile phone or tablet with data connectivity and audio-visual capabilities operating on the iOS platform.	
	Windows Smartphone	Mobile phone with data connectivity and audio-visual capabilities operating on the Windows platform.	
	Other Smartphone	Use in cases where type of smartphone is not indicated and/or type is not inclusive of Android, Blackberry, iPhone or Windows.	
	[Mac] OS X	Computer running OS X. Typically Apple computers.	

Platform Compatibility (con't)	Windows OS	Computer or tablet running the Windows OS.	
	Linux/GNU OS	Computer running Linux/GNU OS.	
	Unix OS	Computer running Unix OS.	
	Google Chromium OS	Computer or other device running Google Chromium OS. Device must be able to access the web.	
	All	Compatibility with two or more platforms.	
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.	
	N/A	Information not available.	
Business Model	Free text	Describe the funding sources for the project in 100 words or fewer.	100 word maximum.
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.
Funders/ Stakeholders	Free text	List all of the funders and stakeholders of the project.	Multiple values allowed. Separate multiple values using commas.
Source Data	Free text	Reports or guidelines about the tool or used to inform the tool.	One source per row.
Website	Free text	Primary website of the tool.	One website link per row.
Contact	Free text	Contact details, such as email or phone number, for a primary point of contact for project.	Email address preferred.

Appendix 2

INVENTORY OF ICT FOR HEALTH TOOLS

Abiye Safe Motherhood Mobile Project

Description: Mobiles are provided to women who register their births and attend antenatal services. A toll free number also allows the woman to access emergency medical services — namely transportation. Women return the phones after giving birth as a means of recycling the phones for use within the project.

Project Focus: Communication

SOML Target Area: MNCH

States Implemented: Ondo

Geographic Spread: State

Level of Scale: Pilot

Technologies Involved: Voice (calls)

Platform Compatibility: Basic Mobile Phone

Tools: GSM; Android tablets

Vendor/Developer: NA

Business Model: Government-funded

Funders/Stakeholders: Ondo State Government

Website: http://www.ttwwd.org/casestudy/abiye-safe-motherhood#_U30quPldVuM

Implementing Organizations: Ondo State Government

Africa Health Markets for Equity: MoTECH

Description: The Africa Health Markets for Equity (AHME) partnership will improve health outcomes through the provision of quality private sector health care targeted at the poor in Nigeria, Kenya and Ghana. This will be achieved by increasing the scale and scope of private provider networks and demand-side financing in all three countries. The AHME partnership, led by Marie Stopes International (MSI), comprises six best in class organizations – MSI, Population Services International (PSI), Society for Family Health (SFH), Grameen Foundation (GF), PharmAccess International (PharmAccess) and the International Financing Corporation/World Bank Health in Africa Initiative (IFC/HIA). Grameen will lead the implementation of the MOTECH Suite, which provides a set of services encompassing five key functional mHealth areas: behavior change and demand generation, managing patient data, improving worker performance, last-mile supply chain and patient adherence.

Project Focus: Registration and Vital Events; Scheduling and Reminders; Health Information System; Patient Education and Behavior Change; Health Financing; Communication

SOML Target Area: MNCH; Essential

Commodities; Nutrition; eMTCT; Immunizations; Malaria

States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi; Bayelsa; Benue; Borno; Cross River; Delta; Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT

Geographic Spread: Nationwide

Level of Scale: Scale-up

Technologies Involved: Pre-loaded Application; Data Application; Text Messages (SMS); Web-based Portal

Platform Compatibility: All platforms

Tools: MOTECH Suite

Vendor/Developer: Grameen Foundation

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: Gates Foundation; DFID

Website: <http://www.grameenfoundation.org/what-we-do/health/african-health-markets-equity>

Implementing Organizations: Marie Stopes International; Population Services International; Society for Family Health; Grameen Foundation; PharmAccess; International Financing Corporation/World Bank in Africa

Africa Indoor Residual Spraying (AIRS)

Description: Mobile app, developed by Abt, to improve environmental compliance by providing a phone-based checklist for environmental control officers to document compliance in site visits. The app verifies officer location through GPS, and has broad upload capability for photos and other records to expand data collected.

Project Focus: Disease Surveillance and Reporting

SOML Target Area: Malaria

States Implemented: Nasarawa

Geographic Spread: State

Level of Scale: At-scale

Technologies Involved: Pre-loaded Application

Platform Compatibility: Android platform; Blackberry; iPhone/iOS; Windows smartphone

Tools: AIRS

Free/Open Source: No

Business Model: Donor funded; Government partnership

Funders/Stakeholders: President's Malaria Initiative

Website: <http://www.africaairs.net/where-we-work/nigeria/>

Implementing Organizations: Abt Associates; President's Malaria Initiative

Awareness and Advocacy for support of OVCs using Frontline SMS

Description: eLearning tool was used to send out targeted SMS to Orphans Vulnerable Children (OVC) caregivers and Community Service Organizations directly on awareness, OVC advocacy and nutrition.

Project Focus: Provider Training and Education

SOML Target Area: Nutrition

States Implemented: Gombe; Ekiti; Akwa Ibom; Delta; Taraba; Imo; Bayelsa; Enugu; Rivers; Kebbi; Sokoto

Geographic Spread: Multiple States

Level of Scale: At-scale

Technologies Involved: Text Messages (SMS)

Platform Compatibility: Basic Mobile Phone

Tools: FrontlineSMS

Vendor/Developer: FrontlineSMS

Business Model: Donor funded

Funders/Stakeholders: USAID; PEPFAR; MSH

Website: www.frontlinesms.com

Implementing Organizations: MSH

CliniPAK 360 Mobile Health Application

Description: The CliniPAK360 mobile solution wirelessly captures patient data and provides on-demand reporting, enabling health care administrators to increase productivity and streamline the clinical experience while creating a long-term impact on longitudinal patient health management. Each midwife electronically documents key patient data points, including a mother's blood pressure, fetal heart rate, the existence of malaria and co-morbidities, infant birth weight and maternal and/or infant death.

Project Focus: Registration and Vital Events; Health Information System; Decision Support

SOML Target Area: MNCH

States Implemented: FCT; Kano; Anambra

Geographic Spread: Multiple States

Level of Scale: Pilot

Technologies Involved: Pre-loaded Application; Data Application

Platform Compatibility: Android platform

Tools: Clinipak360

Vendor/Developer: Vecna

Free/Open Source: No

Business Model: Donor funded; Government partnership

Funders/Stakeholders: Qualcomm Wireless Reach; Vecna Cares Charitable Trust; Etisalat; Evidence-For-Action; InStrat Global Health Solutions

Website: <https://www.vecna.com/vecna-cares-featured-in-mhealth-news>

Implementing Organizations: NPHCDA; SURE-P MCH

Community Surveillance System (CSS)

Description: Part of the National and State Health Management Information System Program; CSS links households through a back-end health information system. Health workers use mobile phones to collect the data that feeds up into that system.

Project Focus: Health Information System
SOML Target Area: MNCH

States Implemented: Bauchi; Cross River
Geographic Spread: Multiple States
Level of Scale: Scale-up

Technologies Involved: Data Application
Platform Compatibility: Android platform
Tools: CIETMap; ODK

Vendor/Developer: CIET; Dimagi

Business Model: Donor funded

Funders/Stakeholders: IDRC; Cross river; Bauchi

Website: http://www.idrc.ca/EN/Programs/Global_Health_Policy/Governance_for_Equity_in_Health_Systems/Pages/nehsi-css.aspx

Implementing Organizations: CIET Trust; IDRC; FMOH

Cross River Health and Demographic Surveillance System

Description: Routine data collection from households and communities, by community health workers using mobile phones. Data feeds into the national health management information system.

Project Focus: Health Information System
SOML Target Area: MNCH

States Implemented: Cross River
Geographic Spread: State
Level of Scale: At-scale

Technologies Involved: Data Application
Platform Compatibility: Android platform
Tools: OpenHDS; DHIS2

Vendor/Developer: University of Southern Maine; INDEPTH

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: IDRC; CIDA; University of Calabar

Website: <http://www.jhidc.org/index.php/jhidc/article/view/100>

Implementing Organizations: NEHSI; FMOH; Government of Cross River; IDRC; University of Calabar; University of Southern Maine

Data Collection and Reporting in the Leadership Development Program Plus (LDP+)

Description: The Leadership Development Program Plus (LDP+) empowers teams to face challenges and achieve results and complements them with new approaches tied in to country ownership, national health priorities, and specific health indicators. There is emphasis on governance. Medic Mobile was used for data collection of various health program areas.

Project Focus: Health Information System; Communication

SOML Target Area: eMTCT

States Implemented: Kwara

Geographic Spread: LGA or Smaller Area

Level of Scale: Pilot

Technologies Involved: Pre-loaded

Application; Text Messages (SMS)

Platform Compatibility: Basic Mobile Phone

Tools: Medic Mobile

Vendor/Developer: Medic Mobile

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: MSH; Pro-ACT

Website: <http://www.lmgforhealth.org/ldp-plus-yields-results>

Implementing Organizations: MSH

Health Insurance Enrollment System

Description: Community Health Insurance Enrollment and Authentication System (CHIEASY) is a comprehensive web based enrolment solution used in capturing data and tracking the scheme status of patients in a particular location over patient enrolment time, reenroll after patients expiration of a plan and provisions patients for hospital services. The application also enables the effective generation of reports and analyzes them to meet up with the various needs of key stakeholders in the insurance scheme from the head of the scheme to donors to the facility level.

Project Focus: Health Information System; Health Financing

SOML Target Area: MNCH; Nutrition; Immunizations; eMTCT; Malaria; Essential Commodities

States Implemented: Akwa Ibom; Rivers

Geographic Spread: Multiple States

Level of Scale: Pilot

Technologies Involved: Pre-loaded Application; Data Application; Text Messages (SMS); Web-based Portal

Platform Compatibility: Android platform; Blackberry; iPhone/iOS; Windows smartphone; [Mac] OS X; Windows OS

Tools: CHIEASY

Vendor/Developer: MSH

Business Model: Donor funded

Funders/Stakeholders: MSH; Shell

Website: www.chieasy.org/index

Implementing Organizations: MSH

DHIS - Strengthening Integrated Delivery of HIV AIDS Services (SIDHAS) project

Description: SIDHAS employs the District Health Information System (DHIS) for managing all routine ART, PMTCT, HTC, SRH and LMIS data. Generates pivot tables and automated dashboard. DHIS is the National Health Management Information System platform.

Project Focus: Health Information System; Resource Management

SOML Target Area: "MNCH; Essential Commodities; eMTCT; Immunizations; Malaria

States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi;

Bayelsa; Benue; Borno; Cross River; Delta;

Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT

Geographic Spread: Nationwide

Level of Scale: At-scale

Technologies Involved: Web-based Portal

Platform Compatibility: Java-enabled

Phone; Windows OS; Google Chromium OS

Tools: DHIS2

Vendor/Developer: HISP

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: USAID

Website: www.dhis2.org

Implementing Organizations: FHI360

Electronic Management of Drug Resistance Tuberculosis for the TBCARE I Project

Description: Providing accurate usable Drug Resistance Tuberculosis (DR-TB) patient data was very challenging; this was done with paper-based tools. Through MSH Partnership with the USAID TBCARE I Project, the team embarked on the use of the electronic Tuberculosis Manager popularly called eTB Manager developed by MSH home office Systems for Improved Access to Pharmaceuticals and Services (SIAPS) project team. eTB Manager is cloud-based and is currently hosted with an uptime reliability of 99.5% for access by DR-TB Treatment Centers, Labs and State DR-TB Teams across the federation and can be used on any device that is internet-enabled.

Project Focus: Registration and Vital Events; Scheduling and Reminders; Health Information System; Decision Support; Patient Education and Behavior Change; Resource Management; Provider Training and Education; Resource Management; Communication; Disease Surveillance and Reporting

SOML Target Area: Essential Commodities

States Implemented: Anambra; Enugu;

Akwa Ibom; Adamawa; Abia; Bauchi;

Bayelsa; Benue; Borno; Cross River; Delta;

Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa;

Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara;

Lagos; Nasarawa; Niger; Ogun; Ondo;

Osun; Oyo; Plateau; Rivers; Sokoto; Taraba;

Yobe; Zamfara; FCT

Geographic Spread: Nationwide

Level of Scale: At-scale

Technologies Involved: Pre-loaded Application; Data Application; Web-based Portal

Platform Compatibility: All platforms

Tools: eTB Manager

Vendor/Developer: MSH

Business Model: Privately funded

Funders/Stakeholders: MSH; SIAPS; USAID

Website: www.etbmanagerng.org

Implementing Organizations: MSH; USAID

Embracing Mobile Technology and Mentor Mothers Model to Enhance Antenatal and PMTCT Service Delivery and Uptake.

Description: Mentor Mother Model with Mobile technology is used to improve Anti-Retroviral (ARV) Adherence. In its Pilot stage; Mentor Mothers are supplied with Mobile phones with District Health Information System (DHIS 2.0) mobile client installed to follow-up on Mentee Mothers Antenatal Care (ANC) visits, drug adherence and monthly PMTCT group meetings, as well as the infants.

Project Focus: Scheduling and Reminders; Health Information System

SOML Target Area: MNCH; eMTCT

States Implemented: Niger

Geographic Spread: LGA or Smaller Area
Level of Scale: Pilot

Technologies Involved: Data Application; Text Messages (SMS); Voice (calls)
Platform Compatibility: Java-enabled Phone

Tools: DHIS2

Vendor/Developer: HISP

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: MSH; Pro-ACT

Website: <http://hmis.mshnigeria.org/dhis>

Implementing Organizations: MSH

Emergency Operations Center (EOC) Web portal

Description: EOCs serve as a central command facility for partnering agencies to monitor and respond to polio outbreaks in 'real-time'. EOCs are equipped with high-speed Internet, computers, linked/accessible databases, etc.

Project Focus: Disease Surveillance and Reporting

SOML Target Area: Immunizations

States Implemented: FCT; Kano; Kaduna;

Sokoto; Borno; Katsina

Geographic Spread: Multiple States

Level of Scale: At-scale

Technologies Involved: Web-based Portal
Platform Compatibility: All platforms

Tools: Web portal

Vendor/Developer: eHealth Africa

Free/Open Source: No

Business Model: Donor funded

Funders/Stakeholders: CDC; Rotary

International; Gates Foundation; UNICEF

Website: <http://ehealthafrica.org/projects/emergency-operations-center/>

Implementing Organizations: "UNICEF;

CDC; Rotary International; WHO; eHealth

Africa

EMR for Immunization Records

Description: eHealth Nigeria implemented an electronic medical records system using OpenMRS. This resulted in electronic forms for all clinical areas, greatly reduced data duplication and a monthly reporting process that takes minutes instead of days.

Project Focus: Health Information System

SOML Target Area: Immunizations

States Implemented: Kaduna

Geographic Spread: LGA or Smaller Area

Level of Scale: Pilot

Technologies Involved: Web-based Portal

Platform Compatibility: Unix OS; Mac OS

X; Windows OS; Android platform

Tools: OpenMRS

Vendor/Developer: eHealth Africa

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders:

Website: <http://ehealthafrica.org/projects/family-health-unit/>

Implementing Organizations: "Shehu Idris College of Health Sciences and Technology; eHealth Africa

Expanded Social Marketing Project in Nigeria (ESMPIN)

Description: Mobile numbers are collected from target groups by Inter Personal Communications during encounters, and text messages with health messages are sent on a monthly basis.

Project Focus: Communication; Patient Education and Behavior Change

SOML Target Area: MNCH

States Implemented: Kebbi; Katsina;

Jigawa; Zamfara

Geographic Spread: Multiple States

Level of Scale: Scale-up

Technologies Involved: Text Messages (SMS)

Platform Compatibility: Basic Mobile Phone

Free/Open Source: No

Business Model: Privately funded; Donor funded

Funders/Stakeholders: USAID

Website: <http://www.sfhngigeria.org/projects/expanded-social-marketing-project-in-nigeria-esmpin>, <http://www.arfh-ng.org/esmpin.php>

Implementing Organizations: SFH; PSI;

BBC Media Action; AHRF

Facility Activation Status Tracker by SIDHAS

Description: "SIDHAS is a five year (2011 - 2016) project funded by PEPFAR through USAID with the goal to sustain cross-sectional integration of HIV/AIDS and TB services in Nigeria by building Nigerian capacity to deliver sustainable high-quality, comprehensive prevention, treatment, care and related services. SIDHAS developed the Facility Activation Status Tracker (FAST*) a web based application to monitor the process of rapid activation of about 2500 PMTCT sites. Simple SMS messages are sent to the database server to register user and facility information. Generates charts and reports on status of facility activation on a continuum. Exports metadata to DHIS.

Project Focus: Health Information System

SOML Target Area: eMTCT

States Implemented: Abia; Anambra; Akwa Ibom; Bayelsa; Cross River; Edo; Kano;

Lagos; Rivers

Geographic Spread: Multiple States

Level of Scale: At-scale

Technologies Involved: Text Messages (SMS); Web-based Portal

Platform Compatibility: Basic Mobile

Phone; Windows OS; Google Chromium OS

Tools: Facility Activation Status Tracker (FAST*)

Vendor/Developer: FHI360

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: USAID

Implementing Organizations: FHI360

Family Health Call Center

Description: Information dissemination on maternal and child health issues through the call centre.

Project Focus: Communication

SOML Target Area: MNCH

States Implemented: Gombe

Geographic Spread: LGA or Smaller Area

Level of Scale: Pilot

Technologies Involved: Voice (calls)

Platform Compatibility: All platforms

Tools: Family Health Call Center

Business Model: Donor funded

Funders/Stakeholders: Gates Foundation

Website: <http://www.sfhngigeria.org/projects/maternal-and-child-health-gombe>

Implementing Organizations: SFH

Global Mobile Project

Description: Planned Parenthood Federation of America (PPFA) - Global, through their Nigeria Office located in Abuja is at the start -up phase of a two year pilot period of a five year "Global Mobile" project which will build and implement an ICT information platform for disseminating adolescent and youth friendly sexual and reproductive health information and services in Nigeria and Ecuador with funding from UNFPA.

Project Focus: Patient Education and Behavior Change

SOML Target Area: MNCH

Level of Scale: Pilot

Business Model: Donor funded

Funders/Stakeholders: UNFPA; PPFA

Implementing Organizations: PPFA

GxAlert

Description: GxAlert is a platform that networks data generated by GeneXpert diagnostic TB test devices to national databases in real-time using a 3G USM modem and innovative processes. The devices automatically send SMS text or email alerts to MOH officials when a new multidrug resistance positive TB case is detected, monitors usage and expiration dates of cartridges in the GeneXpert devices, and views machine errors to determine if training or technical support is needed. The faster reporting time allows the Nigerian Federal Ministry of Health to aggregate Multi-Drug Resistant (MDR)

tuberculosis test results in real-time, directly into eTB Manager™, their M&E tool of choice. The GeneXpert machine also tests for influenza, HIV and (by 2017) 37 diseases in total, making the technology solutions built for TB scalable to other health information platforms.

Project Focus: Health Information System; Disease Surveillance and Reporting

SOML Target Area: MNCH

States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi; Bayelsa; Benue; Borno; Cross River; Delta; Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT

Geographic Spread: Nationwide

Level of Scale: Scale-up

Technologies Involved: Data Application

Platform Compatibility: Basic Mobile Phone

Tools: GxAlert; USB modem; open API

Vendor/Developer: Abt Associates

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: Abt Associates; FMOH

Website: <http://www.gxalert.com/>

Implementing Organizations: Abt Associates; FMOH; Cepheid; MSH

healthfolk.net

Description: An online collaborative platform for doctors with interest in Nigeria.

Project Focus: Provider Training and Education; Communication

SOML Target Area: MNCH; Immunizations; Nutrition; eMTCT; Malaria

States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi; Bayelsa; Benue; Borno; Cross River; Delta; Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT

Geographic Spread: Nationwide

Level of Scale: Scale-up

Technologies Involved: Web-based Portal

Platform Compatibility: All platforms

Tools: healthfolk.net

Vendor/Developer: HealthFolk

Free/Open Source: No

Business Model: Freemium

Funders/Stakeholders: HealthFolk; User community; Professional Physician Societies

Website: www.healthfolk.net

Implementing Organizations: HealthFolk

Healthy Moms, Healthy Babies: Safe Motherhood Alliance

Description: An initiative that provides conditional cash transfers to 1,000 women in Nigeria in exchange for healthy prenatal and delivery behaviors. Participation in this program enables pregnant women to earn a monthly stipend conditional upon

prenatal checkups, adequate nutrition, antiretroviral adherence, and delivery with skilled birth attendants.

Project Focus: Health Financing; Patient Education and Behavior Change

SOML Target Area: MNCH; eMTCT

States Implemented:

Geographic Spread: State

Level of Scale: Pilot

Platform Compatibility: Basic Mobile Phone

Tools: Healthy Moms, Healthy Babies: Safe Motherhood Alliance

Implementing Organizations: CHAI

HIV/AIDS Call Center

Description: Toll free call center (dial 6222) for information on HIV/AIDS and other related diseases on Airtel and Etisalat.

Project Focus: Communication

SOML Target Area: eMTCT

States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi; Bayelsa; Benue; Borno; Cross River; Delta; Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT

Geographic Spread: Nationwide

Level of Scale: At-scale

Technologies Involved: Voice (calls)

Platform Compatibility: Basic Mobile Phone

Funders/Stakeholders: NACA

Website: <http://www.naca.gov.ng/article/hivaids-call-centre-receives-boost>

Implementing Organizations: NACA

HMIS Mobile

Description: Mobile application designed to help health workers in the filling and sending of facility reports via mobile phones. It allows for data entry based on periods (monthly). Data sets collected include: antenatal care and pregnancy outcomes, mortality and births, family planning, immunization, nutrition and growth monitoring, community outreach services and facility utilization.

Project Focus: Health Information System

SOML Target Area: MNCH; Nutrition; Immunizations

States Implemented: Katsina; Yobe

Geographic Spread: Multiple States

Level of Scale: Pilot

Technologies Involved: Data Application

Platform Compatibility: Java-enabled Phone

Tools: DHIS2

Vendor/Developer: HISP

Business Model: Donor funded

Funders/Stakeholders: PRRINN-MNCH; Katsina; Yobe; DFID

Website: <http://www.ncbi.nlm.nih.gov/pubmed/20841745>

Implementing Organizations: State Ministries of Katsina and Yobe; PRRINN-MNCH; HISP; FMOH

IHVN and CDC EMR Project

Description: Development and deployment of EMR to all health facilities supported by IHVN using OpenMRS (an open source software). The focus is the ART clinics and immediate target is the M&E/Records management.

Project Focus: Registration and Vital Events; Health Information System; Disease Surveillance and Reporting; Provider Training and Education; Patient Education and Behavior Change; Scheduling and Reminders

SOML Target Area: MNCH; Nutrition; Immunizations; eMTCT

States Implemented: Osun; Ogun; Kano;

Delta; FCT; Nasarawa; Benue; Katsina

Geographic Spread: Multiple States

Level of Scale: Scale-up

Technologies Involved: Pre-loaded Application

Platform Compatibility: All platforms

Tools: OpenMRS

Vendor/Developer: OpenMRS

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: CDC

Implementing Organizations: IHVN

Improving OVC service delivery, accurate data and timely reporting of services provided to orphan and vulnerable children using mobile phone application.

Description: Data reporting for proper management of Orphan Vulnerable Children (OVC) for CSO volunteers to conveniently send in their data to the central office into the District Health Information System (DHIS).

Project Focus: Health Information System; Communication

SOML Target Area: MNCH

States Implemented: Gombe

Geographic Spread: LGA or Smaller Area

Level of Scale: Pilot

Technologies Involved: Pre-loaded Application

Platform Compatibility: Java-enabled

Phone; Android platform

Tools: CommCare

Vendor/Developer: Dimagi

Business Model: Donor funded

Funders/Stakeholders: MSH; MSH Community-Based Support

Implementing Organizations: MSH

Institute of Human Virology Nigeria (IHVN): mHealth

Description: Mobile phone-based tool designed to strengthening health systems and improving quality of care (QoC) for Persons Living with HIV/AIDS.

Project Focus: Patient Education and Behavior Change

SOML Target Area: MNCH; eMTCT

States Implemented: Anambra; Enugu;

Akwa Ibom; Adamawa; Abia; Bauchi;

Bayelsa; Benue; Borno; Cross River; Delta;

Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa;

Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT
Geographic Spread: Nationwide
Level of Scale: At-scale
Technologies Involved: Text Messages (SMS)
Platform Compatibility: Basic Mobile Phone
Tools: IHVN mHealth
Free/Open Source: No
Implementing Organizations: IHVN; University of Maryland; FMOH

IQCare

Description: "IQ Care (International Quality Care) is an open source, browser-based electronic medical record system designed for low resource settings. It captures quality data and provides Decision Support information for healthcare providers and well as program managers.
Project Focus: Health Information System
SOML Target Area: MNCH
Level of Scale: Scale-up
Technologies Involved: Pre-loaded Application
Platform Compatibility: Java-enabled Phone
Tools: IQ Solutions
Vendor/Developer: Futures Group
Free/Open Source: Yes
Website: <http://www.iqstrategy.net/products/iqcare/>
Implementing Organizations: "Futures Group; Catholic Caritas Foundation of Nigeria (CCFN)

IQSMS

Description: A software technology that uses mobile phones to report data to a dedicated centralized computer. This was used in the Family Health Plus Project to help capture number of trained workers and to keep track of available commodities.
Project Focus: Resource Management
SOML Target Area: Essential Commodities
Level of Scale: Scale-up
Technologies Involved: Text Messages (SMS)
Tools: IQ Solutions
Vendor/Developer: Futures Group
Free/Open Source: Yes
Website: <http://www.iqstrategy.net/products/iqsms/>
Implementing Organizations: Marie Stopes; Futures Group

IQTools

Description: IQTools is an easy to use, secure and robust data validation, data mining, communications and reporting framework designed to work with any relational database. It has the ability to link to a wide variety of (health) information systems allowing users to easily build custom and interactive queries for data reporting, validations and messaging

(through phone text messages).
Project Focus: Health Information System
SOML Target Area: MNCH
Level of Scale: Scale-up
Technologies Involved: Text Messages (SMS)
Platform Compatibility: All platforms
Tools: IQ Solutions
Vendor/Developer: Futures Group
Free/Open Source: Yes
Website: <http://www.iqstrategy.net/products/iqtools/>
Implementing Organizations: "Futures Group; Catholic Caritas Foundation of Nigeria (CCFN)

Lafiya Management Information System (LAMIS*) electronic medical records (EMR)

Description: SIDHAS developed the Lafiya Management Information System (LAMIS*) a web based client level electronic medical records (EMR) system for managing ART program data across 141 facilities. Ongoing upgrade will include PMTCT, commodity logistics and general purpose EMR functions. Generates custom reports and charts, schedules appointments and sends SMS appointment reminders.
Project Focus: "Scheduling and Reminders; Health Information System; Decision Support; Patient Education and Behavior Change; Resource Management
SOML Target Area: MNCH; Essential Commodities; eMTCT
States Implemented: Abia; Adamawa; Anambra; Akwa Ibom; Bauchi; Bayelsa; Cross River; Edo; Jigawa; Kano; Lagos; Rivers; Taraba
Geographic Spread: Multiple States
Level of Scale: Scale-up
Technologies Involved: Data Application
Platform Compatibility: Windows OS; Google Chromium OS
Tools: Lafiya Management Information System (LAMIS*)
Vendor/Developer: FHI360
Free/Open Source: Yes
Business Model: Donor funded
Funders/Stakeholders: USAID
Implementing Organizations: FHI360

Learning about Living

Description: Launched in 2007, Learning about Living is an eLearning tool on sexual and reproductive health and rights and is aimed at students (adolescents/young adults) as well as teachers and parents. It is the digital form of the Nigerian Family Life and HIV/AIDS Education (FLHE) program. There is also a Q&A service that uses mobile phone technology to engage young people and offers confidential advice.
Project Focus: Patient Education and Behavior Change
SOML Target Area: eMTCT
States Implemented: Lagos; Cross River; FCT

Geographic Spread: Multiple States
Level of Scale: At-scale
Technologies Involved: Web-based Portal
Platform Compatibility: Windows OS; Android platform; iPhone/iOS; Blackberry; [Mac] OS X; Windows smartphone
Tools: Learning about Living
Funders/Stakeholders: One World UK (Mobiles4Good); Butterfly Works; Action Health Incorporated; NERDC; Education as a Vaccine Against AIDS (EVA); Girls' Power Initiative; Federal Ministry of Education; Federal Ministry of Health
Website: <http://www.learningaboutliving.com/south>
Implementing Organizations: One World UK (Mobiles4Good); Butterfly Works; Action Health Incorporated; NERDC; Education as a Vaccine Against AIDS (EVA); Girls' Power Initiative; Federal Ministry of Education; FMOH

Logistics Management Information Systems for MNCH Commodities

Description: "Facility-level LMIS that uses mobile/tablet for stock and consumption data collection
Project Focus: Health Information System; Resource Management
SOML Target Area: Essential Commodities; MNCH
Level of Scale: Proof of Concept
Technologies Involved: Pre-loaded Application
Platform Compatibility: Android platform; Blackberry; iPhone/iOS; Windows smartphone
Tools: DHIS2
Business Model: Donor funded
Funders/Stakeholders: FMOH; Norad; CHAI
Implementing Organizations: CHAI

m4Change

Description: Launched in 2012, m4Change is a mobile phone-based application that provides clinical Decision Support, data collection and reminders during antenatal in remote clinics in Northern Nigeria for CHEWs.
Project Focus: Decision Support
SOML Target Area: MNCH
States Implemented: Nasarawa; FCT
Geographic Spread: Multiple States
Level of Scale: At-scale
Technologies Involved: Data Application
Platform Compatibility: Android platform
Tools: CommCare
Vendor/Developer: Dimagi
Free/Open Source: Yes
Business Model: Donor funded
Funders/Stakeholders: Pathfinder; Nasarawa; FCT
Website: <http://www.pathfinder.org/our-work/projects/m4change.html>
Implementing Organizations: Pathfinder International; FMOH; Dimagi

Mailafiya Project

Description: Teams of mobile clinics are equipped with tools, including a wire-less-enabled netbook. The teams provide care in rural areas.

Project Focus: Health Information System; Communication

SOML Target Area: MNCH

States Implemented: FCT

Geographic Spread: LGA or Smaller Area
Level of Scale: Pilot

Technologies Involved: Web-based Portal

Platform Compatibility: Android platform;

iPhone/iOS; Windows smartphone;

Windows OS; [Mac] OS X

Business Model: Government-funded

Funders/Stakeholders:

Website: <http://www.fctmdgmailtoafiya.org/>

Implementing Organizations: Intel; FMOH;

FCT

Medexperts

Description: Medexperts is Nigeria's foremost and largest online Community of Practice (CoP) platform designed for health care professionals and those who need them.

Project Focus: Provider Training and Education

SOML Target Area: MNCH

Level of Scale: At-scale

Technologies Involved: Web-based Portal

Platform Compatibility: Windows OS;

[Mac] OS X; Android platform; iPhone/

iOS; Blackberry

Tools: Kollabor8 Software

Free/Open Source: No

Website: <http://medicaexperts.com.ng/ebooks/>

Implementing Organizations: "Employee Energy Technologies For-profit Kollabor8 (Technology Partner)

mediFIX

Description: MediFIX is an on-demand inventory and facilities request service for the medical industry aimed at appropriately allocating and sharing medical resources and facility among medical service providers in Nigeria. It is a location-aware application that leverages on the power of Short Message Service (SMS) to make requests from hospitals which are intelligently routed to the nearest service provider who has it in inventory based on the inventory data collected daily from these medical service providers. This way, it ensures that up to date requests are met by up to date availability in good time and with ease, especially in emergency and critical situations.

Project Focus: Scheduling and Reminders; Health Information System; Resource Management; Disease Surveillance and Reporting

SOML Target Area: MNCH; Essential Commodities

States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi;

Bayelsa; Benue; Borno; Cross River; Delta; Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT

Geographic Spread: Nationwide

Level of Scale: Pilot

Technologies Involved: Data Application;

Text Messages (SMS); Web-based Portal

Platform Compatibility: All platforms

Tools: Databases; Netbeans IDE; Servers

Vendor/Developer: iQube

Free/Open Source: No

Business Model: Privately funded

Funders/Stakeholders: iQube Labs; iDEA

Hub

Website: <https://github.com/iQubeLabs/MediFIX>

Implementing Organizations: iQube Labs

Midwives Service Scheme MADEX

Description: "MADEX is an electronic reporting tool developed under the midwives services scheme mainly used for timely retrieval, storage, processing and interpretation of data from primary healthcare centers under the scheme."

Project Focus: Health Information System

SOML Target Area: MNCH

Level of Scale: At-scale

Technologies Involved: Data Application

Platform Compatibility: All platforms

Tools: Mobile-to-Application Data

Exchange (MADEX)

Vendor/Developer: Galaxy Backbone ICT

Free/Open Source: No

Website: <http://www.wom-endeliver.org/updates/entry/celebrate-solutions-the-midwives-services-scheme-nigeria>

Implementing Organizations: NPHCDA;

Dabar Objects; Galaxy Backbone

Millennium Villages Global Network (MVG-Net)

Description: An open source platform for health information systems centered around OpenMRS as a longitudinal medical record with mobile device connectivity (ODK, CommCare) and DHIS2 reporting.

Project Focus: Registration and Vital Events; Decision Support; Health Information System

SOML Target Area: MNCH; Immunizations;

Nutrition; eMTCT; Malaria

States Implemented: Ondo

Geographic Spread: LGA or Smaller Area

Level of Scale: Pilot

Technologies Involved: Data Application;

Text Messages (SMS); Web-based Portal

Platform Compatibility: Android platform;

Java-enabled Phone

Tools: OpenMRS; DHIS2; CommCare;

Open Data Kit; CIEL Data Dictionary;

Pentaho

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: Millennium Promise; Nigerian Government; UNDP

Website: <http://millenniumvillages.org/videos/commcare-as-a-mobile-health-solution/>

Implementing Organizations: Millennium Villages Project (MVP); Columbia International eHealth Laboratory; Columbia University

mLearning for Health Workers

Description: "Mobile training platform for health workers that aims to overcome geographical constraints, provide innovative practice-based tools for training Community Health Workers (CHWs) and facilitate increased communication and support between CHWs and their supervisors.

Project Focus: Provider Training and Education; Communication

SOML Target Area: MNCH

Level of Scale: Proof of Concept

Technologies Involved: Data Application

Platform Compatibility: All platforms

Tools: "mLearning for Health Workers

Free/Open Source: No

Implementing Organizations: CHAI

Mobile Alliance for Maternal Action (MAMA)

Description: The Mobile Alliance for Maternal Action (MAMA) — founded by the U.S. Agency for International Development, Johnson & Johnson, United Nations Foundation, mHealth Alliance and BabyCenter — is an innovative public-private partnership that engages a global community to deliver vital health information directly to new and expectant mothers and their families through the use of mobile technology.

Project Focus: Patient Education and Behavior Change

SOML Target Area: MNCH

Level of Scale: Proof of Concept

Technologies Involved: IVR (interactive voice response); Text Messages (SMS);

Web-based Portal

Platform Compatibility: Basic Mobile

Phone

Tools: Mobile messages

Free/Open Source: Yes

Implementing Organizations: Wellbeing

foundation; MAMA

Mobile Baby - Polio Immunization

Description: A Geographic Information Systems (GIS) polio-tracking application designed to help achieve vaccination of at least 85% of the child population in the mapped out risk areas. It depends on Etisalat's data services and smartphones and uploaded server information, which are used for map creation (risk mapping) and the generation of automated reports. These reports show the distribution of risk, success, activities, findings and plans for polio teams, program managers, donors & other stakeholders.

Project Focus: Disease Surveillance and Reporting

SOML Target Area: Immunizations
Level of Scale: At-scale
Technologies Involved: Pre-loaded Application
Platform Compatibility: Basic Mobile Phone
Tools: “Mobile Baby – Polio Immunization”
Free/Open Source: No
Website: <https://mobiledevelopmentintelligence.com/products>
Implementing Organizations: Etisalat; ESRI

Mobile Baby Program

Description: Launched in 2011, complete suite of services enabling practitioners to send images and media to referring physicians for remote diagnosis. Suite of tools geared towards supporting frontline health workers (TBAs and midwives) as they manage pregnancies/deliveries. Suite includes guided protocols, mobile payments for emergency transportation and referrals.

Project Focus: Patient Education and Behavior Change; Decision Support; Communication

SOML Target Area: MNCH
Geographic Spread: Nationwide
Level of Scale: Scale-up
Technologies Involved: Pre-loaded Application
Platform Compatibility: Basic Mobile Phone

Tools: Mobile Baby Info
Vendor/Developer: Etisalat
Free/Open Source: No
Website: <http://www.gsma.com/mobile-fordevelopment/etisalats-mobile-baby>
Implementing Organizations: “Etisalat; Qualcomm; D-Tree International

Mobile Community Based Surveillance (mCBS)

Description: Based on the RapidSMS platform, the tool is intended for use by various community-based health workers to help collect and report data on vital event. Urgent reports are forwarded to the Ahmadu Bello University Teaching Hospital for follow-up.

Project Focus: Registration and Vital Events; Decision Support
SOML Target Area: MNCH
States Implemented: Kaduna
Geographic Spread: LGA or Smaller Area
Level of Scale: Pilot

Technologies Involved: Text Messages (SMS)
Platform Compatibility: Basic Mobile Phone

Tools: mCBS Platform
Vendor/Developer: eHealth Nigeria
Free/Open Source: Yes
Website: <http://ehealthafrica.org/projects/mobile-community-based-surveillance-mcbs/>
Implementing Organizations: “eHealth Nigeria; MacArthur Foundation; The Population & Reproductive Health Initiative; The Population Council

Mobile Interactions bringing Hope (MI Hope)

Description: MI Hope aims to ensure pregnant women and their male partners have greater access to testing, treatment and care, particularly in rural areas by improving quality of coaching of volunteers counseling and testing for HIV and to improve data collection through the use of an innovative mobile phone system.

Project Focus: Health Information System
SOML Target Area: eMTCT
Geographic Spread: Nationwide
Level of Scale: Pilot
Technologies Involved: Pre-loaded Video
Platform Compatibility: Basic Mobile Phone
Vendor/Developer: TearFund Innovation
Website: <http://healthmarketinnovations.org/program/mobile-interactions-bringing-hope-mi-hope>
Implementing Organizations: TearFund UK

Mobile Midwife Nigeria

Description: “Mobile Midwife Nigeria is two complementary subscription services which deliver maternal and child health (MNCH) information in Nigeria with a sustainable business model which tests the willingness of clients to use premium services given a relatively cheap information service. This proposed project will leverage Grameen Foundation’s MOTECH “Mobile Midwife” model in Ghana and tailor it to the Nigerian context. Mobile Midwife Nigeria will deliver targeted, time-specific, evidence-based voice messages containing important health information to pregnant women and new parents in their local language. The MM service will be available via IVR in three languages in Nigeria: Hausa, Pidgin, and English.”

Project Focus: Registration and Vital Events; Scheduling and Reminders; Patient Education and Behavior Change
SOML Target Area: MNCH; Immunizations
States Implemented: Lagos

Geographic Spread: State
Level of Scale: Scale-up
Technologies Involved: IVR (interactive voice response); Voice (calls)
Platform Compatibility: All platforms
Tools: MOTECH Suite
Vendor/Developer: Grameen Foundation
Free/Open Source: Yes
Business Model: Donor funded
Funders/Stakeholders: GSMA
Implementing Organizations: Grameen Foundation

Mobile Product Authentication

Description: Developed by Sproxil to enable consumers to verify the authenticity of pharmaceutical products by SMS.
Project Focus: Resource Management
SOML Target Area: Essential Commodities; Malaria
States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi;

Bayelsa; Benue; Borno; Cross River; Delta; Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT

Geographic Spread: Nationwide
Level of Scale: At-scale
Technologies Involved: Text Messages (SMS)

Platform Compatibility: Basic Mobile Phone
Tools: Mobile Product Authentication
Vendor/Developer: Sproxil
Funders/Stakeholders: Sproxil; IBM; Clinton Global Initiative University; IPIHD; Airtel; Malaria No More; World Custom Organization’s IPM Global Network; Fight the Fakes
Website: <http://sproxil.com/sms-verification.html>

Implementing Organizations: Sproxil; IBM; Clinton Global Initiative University; IPIHD; Airtel; Malaria No More; World Custom Organization’s IPM Global Network; Fight the Fakes

Monitoring Supplies with RapidSMS

Description: “SMS for dynamic data collection, logistics coordination and communication care, particularly in rural areas by improving quality of coaching of volunteers in PPTCT and improve data collection by the use of an innovative mobile phone system.

Project Focus: Health Information System; Communication; Resource Management
SOML Target Area: Essential Commodities; MNCH; eMTCT

Level of Scale: Pilot
Technologies Involved: Text Messages (SMS)
Platform Compatibility: Basic Mobile Phone

Tools: “RapidSMS
Free/Open Source: Yes
Website: <https://mobiledevelopmentintelligence.com/products>
Implementing Organizations: TearFund UK; Livingstonia Synod AIDS Programme (Lisap)

mPedigree

Description: SMS against medicine counterfeiting
Project Focus: Resource Management
SOML Target Area: Essential Commodities; Malaria

States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi; Bayelsa; Benue; Borno; Cross River; Delta; Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT

Geographic Spread: Nationwide
Level of Scale: At-scale
Technologies Involved: Text Messages (SMS)

Platform Compatibility: Basic Mobile Phone; Android platform; Windows OS; Java-enabled Phone; iPhone/iOS
Tools: mPedigree
Vendor/Developer: mPedigree
Website: <http://mpedigree.net/mpedigreenet/>, http://www.mpharma.org/mpedigree/index.php?option=com_content&view=article&id=51&Itemid=58
Implementing Organizations: mPedigree; Ashoka Nigeria; Public & Private Development Center; NAFDAC

MTN Foundation (MTNF) Partners Against AIDS in the Community (MTNF PAAC)

Description: Touch screens based in 12 centres are meant to disseminate information on HIV/AIDS in users language of choice.

Project Focus: Communication
SOML Target Area: MNCH; eMTCT
Geographic Spread: Multiple States
Level of Scale: At-scale
Technologies Involved: Data Application
Tools: Interactive Touch Screens
Vendor/Developer: MTN Foundation
Free/Open Source: No
Website: <http://allafrica.com/stories/200611201232.html>
Implementing Organizations: MTN Foundation; NACA; WANGONeT; MTN Partners Against AIDS in the Community Project (MTNF PAAC)

mWoman

Description: Health tips on mobile phones
Project Focus: Communication
SOML Target Area: MNCH
Geographic Spread: Nationwide
Level of Scale: Scale-up
Technologies Involved: Text Messages (SMS)
Platform Compatibility: Basic Mobile Phone
Tools: mWoman
Free/Open Source: Yes
Implementing Organizations: Airtel; VERSE

National HMIS

Description: The National HMIS platform is the decentralized integrated portal for submission of data from all facilities in Nigeria. Based at the Department of Health Planning, Research and Statistics, FMOH
Project Focus: Health Information System
SOML Target Area: MNCH; Nutrition; Immunizations; eMTCT; Malaria; Essential Commodities
States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi; Bayelsa; Benue; Borno; Cross River; Delta; Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT
Geographic Spread: Nationwide
Level of Scale: At-scale

Technologies Involved: Web-based Portal
Platform Compatibility: All platforms
Tools: DHIS2
Vendor/Developer: HISP
Free/Open Source: Yes
Business Model: Donor funded; Government-funded
Funders/Stakeholders: FMOH; Numerous funders
Website: <http://dhis2nigeria.org.ng/>
Implementing Organizations: FMOH; SMOHs; Numerous partners

National OVC Management Information System (NOMIS)

Description: FHI360 developed the National OVC Management Information System (NOMIS) under the GHAIN project. NOMIS is a web enabled client level database for managing data from OVC programs. Generates custom reports and charts. Interoperable with DHIS. Adopted by the FMWASD as the national database for OVC.

Project Focus: Health Information System
SOML Target Area: MNCH
States Implemented: Abia; Adamawa; Anambra; Akwa Ibom; Bauchi; Bayelsa; Borno; Cross River; Edo; Jigawa; Kano; Lagos; Rivers; Taraba; Yobe
Geographic Spread: Multiple States
Level of Scale: Scale-up
Technologies Involved: Web-based Portal
Platform Compatibility: Windows OS; Google Chromium OS
Tools: National OVC Management Information System (NOMIS)
Vendor/Developer: FHI360
Free/Open Source: Yes
Business Model: Donor funded
Funders/Stakeholders: USAID
Implementing Organizations: FHI360

Nomadic and eHealth Program

Description: This program is increasing access to primary care among underserved populations through a network of mobile clinics. The mobile clinics are integrated with an eHealth portal to improve patient data management and reporting.
Project Focus: Health Information System
SOML Target Area: MNCH
States Implemented: FCT
Geographic Spread: State
Level of Scale: Scale-up
Technologies Involved: Pre-loaded Application
Platform Compatibility: Basic Mobile Phone
Website: <http://www.ehealthng.net/>
Implementing Organizations: FMOH; FCT
NURHI Project - Family Planning
Description: Family planning using mobile phone technology and Facebook for family planning messages, appointment reminders and information for youth and health workers.
Project Focus: Scheduling and Reminders;

Patient Education and Behavior Change; Communication
SOML Target Area: MNCH
States Implemented: FCT; Edo; Oyo; Kwara; Kaduna
Geographic Spread: Multiple States
Level of Scale: At-scale
Technologies Involved: Web-based Portal
Platform Compatibility: Android platform; iPhone/iOS; Blackberry; Windows smartphone
Tools: NURHI Platform
Funders/Stakeholders: Gates Foundation
Website: <https://www.jhuccp.org/whatwedo/projects/nigerian-urban-reproductive-health-initiative-nurhi>
Implementing Organizations: JHU-CCP; Gates Foundation; NURHI

OMOMI

Description: "OMOMI (meaning "my child") is an Android-based mobile application that is designed with the child's health needs in mind. The app's unique range of features will enable parents easily monitor their children's health at the touch of a button.
The app has a vaccination reminder and scheduler, a child growth monitor and a GPS locator of the nearest hospital in case of emergencies. The app also has vital information on breast feeding, family planning, food supplementation and dietary options for babies, as well as the home management of diarrhea.
Furthermore the app has a very vibrant MOTHERS COMMUNITY section which provides a safe and secure platform for mothers, with online discussion boards to crowd source answers to mothers' questions concerning their health and that of their children, as well as get answers from medical personnel.
The OMOMI app is the very first app worldwide that focuses on fulfilling ALL of the World Health Organization's (WHO) Childhood Survival Strategies."
Project Focus: Registration and Vital Events; Scheduling and Reminders; Health Information System; Decision Support; Patient Education and Behavior Change
SOML Target Area: MNCH; Nutrition; Immunizations; Essential Commodities
States Implemented: Edo; Lagos; Ondo
Geographic Spread: Multiple States
Level of Scale: Pilot
Technologies Involved: Pre-loaded Application; Data Application
Platform Compatibility: Android platform
Tools: Omomi
Vendor/Developer: MOBicure
Free/Open Source: No
Funders/Stakeholders: MOBicure
Website: <https://play.google.com/store/apps/details?id=com.mobicure.omomi>
www.mobicure.biz
Implementing Organizations: MOBicure

Omowunmi

Description: An application that delivers health education via voice calls and SMS to expectant and new mothers. Women anywhere in Nigeria can subscribe by texting their Last Menstrual Period (LMP) or delivery date to a specified number.

Project Focus: Scheduling and Reminders; Patient Education and Behavior Change

SOML Target Area: MNCH; Immunizations

States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi; Bayelsa; Benue; Borno; Cross River; Delta; Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT

Geographic Spread: Nationwide

Level of Scale: Pilot

Technologies Involved: Text Messages (SMS); Voice (calls); Web-based Portal

Platform Compatibility: All platforms

Tools: Drupal

Vendor/Developer: Premier Medical Systems Nigeria Limited

Free/Open Source: Yes

Business Model: Privately funded

Funders/Stakeholders: Premier Medical Systems Nigeria Limited

Website: <http://www.omowunmi.org/>

Implementing Organizations: Premier Medical Systems Nigeria Limited

Polio Campaign using Smartphones

Description: Android-based application that assists community health workers in their door-to-door vaccination campaigns for polio. GPS-tracking/disease surveillance helps assist with program and care management.

Project Focus: Resource Management

SOML Target Area: Immunizations

Level of Scale: Pilot

Technologies Involved: Data Application

Platform Compatibility: Android platform

Tools: ArcGIS

Vendor/Developer: ESRI

Business Model: Donor funded

Funders/Stakeholders: Gates Foundation

Website: <http://polioinfo.org/index.php/component/content/article/213-as-part-of-a-ground-breaking-public-private-partnership-to-fight-polio-nigeria-is-harnessing-the-power-of-smart-phones-to-monitor>

Implementing Organizations: Global Polio Eradication Initiative (GPEI); ESRI; Etisalat; UNICEF; Gates Foundation

Preventing Hemorrhage, Saving lives: Tapping the power of a narrative

Description: A simple, flexible multimedia intervention (compilation of women's stories) delivered via social networks to empower a rural Nigerian community to learn about and gain access to an inexpensive lifesaving intervention for the prevention of postpartum hemorrhage: misoprostol.

Project Focus: Communication

SOML Target Area: MNCH

Level of Scale: At-scale

Technologies Involved: Pre-loaded Video

Platform Compatibility: Android platform; iPhone/iOS; Windows smartphone; Windows OS; [Mac] OS X

Tools: The Edge of Joy

Vendor/Developer: University of Chicago

Website: <http://www.theedgeofjoy.com/index.html>

Implementing Organizations: University of Chicago

PRRINN-MNCH Nahuche Health and Demographic System

Description: Mobile phones were used for routine health and demographic surveillance.

Project Focus: Disease Surveillance and Reporting

SOML Target Area: MNCH; Immunizations

States Implemented: Zamfara

Geographic Spread: State

Level of Scale: At-scale

Technologies Involved: Pre-loaded Application

Platform Compatibility: Java-enabled Phone

Funders/Stakeholders: DFID; Royal Norwegian Ministry of Foreign Affairs

Website: <http://www.prrinn-mnch.org/>

Implementing Organizations: PRRINN-MNCH; DFID; Royal Norwegian Ministry of Foreign Affairs

Quality TB Care

Description: Intended to strengthen supervisory system for treatment and management of TB through digitizing the paper-based data collection and reporting. The electronic forms were developed using Magpi. Health workers were equipped with smartphones to access and send the forms.

Project Focus: Disease Surveillance and Reporting

SOML Target Area: MNCH

States Implemented: Multiple States

Geographic Spread: Multiple States

Level of Scale: Scale-up

Technologies Involved: Data Application

Platform Compatibility: PDA; Android platform

Tools: Magpi

Vendor/Developer: DataDyne

Free/Open Source: Yes

Funders/Stakeholders: USAID

Website: <http://www.healthsystems2020.org/content/news/detail/85772/>

Implementing Organizations: Abt Associates; Health Systems 20/20; Zaria Institute; Aga Khan Foundation; BRAC University; Bitran y Asociados; Deloitte Consulting; Forum One Communications; RTI International; Training Resources Group; Tulane University's School of Public Health; National TB Program

RapidSMS Bednets Distribution

Description: Implemented as part of the bednet distribution campaign in the National Malaria Control Programme. Helped track and manage supplies.

Project Focus: Resource Management

SOML Target Area: Malaria

States Implemented: Kano; Anambra; Borno; Kebbi; Sokoto

Geographic Spread: Multiple States

Level of Scale: Scale-up

Technologies Involved: Text Messages (SMS)

Platform Compatibility: Basic Mobile Phone

Tools: RapidSMS

Vendor/Developer: UNICEF Innovation

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: UNICEF

Website: <http://rapidsmsnigeria.org/>

Implementing Organizations: UNICEF; IPD

RapidSMS Birth Registration

Description: This initiative uses Rapid SMS for workers in health centers responsible for birth registration enabling them submit the number of registrations bi-monthly to the district managers via SMS, leading to increased performance levels.

Project Focus: Registration and Vital Events

SOML Target Area: MNCH

States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi; Bayelsa; Benue; Borno; Cross River; Delta; Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT

Geographic Spread: Nationwide

Level of Scale: Pilot

Technologies Involved: Text Messages (SMS)

Platform Compatibility: Basic Mobile Phone

Tools: RapidSMS

Vendor/Developer: UNICEF Innovation

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: UNICEF

Website: <http://rapidsmsnigeria.org/>

Implementing Organizations: UNICEF RapidSMS for Maternal and Child Health Weeks (MNCHWs)

Description: Used during maternal and child health weeks to help provide and manage "high impact" interventions.

Project Focus: Resource Management

SOML Target Area: MNCH

Geographic Spread: State

Level of Scale: Proof of Concept

Technologies Involved: Text Messages (SMS)

Platform Compatibility: Basic Mobile Phone

Tools: RapidSMS

Vendor/Developer: UNICEF Innovation

Free/Open Source: Yes

Business Model: Donor funded
Funders/Stakeholders: UNICEF
Website: <http://rapidsmsnigeria.org/>
Implementing Organizations: UNICEF

RapidSMS Vaccines Logistics Management

Description: RapidSMS used to track and respond to immunization non-compliance in communities.

Project Focus: Resource Management
SOML Target Area: Immunizations
States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi; Bayelsa; Benue; Borno; Cross River; Delta; Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT

Geographic Spread: Nationwide

Level of Scale: Scale-up

Technologies Involved: Pre-loaded Application

Platform Compatibility: Basic Mobile Phone

Tools: RapidSMS

Vendor/Developer: UNICEF Innovation

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: UNICEF

Website: <http://rapidsmsnigeria.org/>

Implementing Organizations: UNICEF

Routine Immunization Tracking Tool

Description: "Mobile based tool for tracking routine immunizations and conducting defaulter follow-up.

Project Focus: Scheduling and Reminders

SOML Target Area: Immunizations; MNCH

States Implemented:

Geographic Spread:

Level of Scale: Proof of Concept

Technologies Involved: Pre-loaded Application

Platform Compatibility: Android platform; Blackberry; iPhone/iOS; Windows smartphone

Implementing Organizations: CHAI

Saving Lives Through Clinical Training Videos

Description: Production of high-quality educational videos designed for frontline health workers that are distributed via smart phones, video streaming and DVDs. Videos can be used as complementary teaching tools in training sessions, or as stand-alone health care references for those who do not have access to organized training programs.

Project Focus: Patient Education and Behavior Change; Provider Training and Education

SOML Target Area: MNCH

Level of Scale: At-scale

Technologies Involved: Pre-loaded Video

Platform Compatibility: Android platform;

iPhone/iOS; Blackberry; Windows

smartphone

Tools: Newborn Care Series

Funders/Stakeholders: USAID

Website: <http://www.healthynetwork.org/partner/global-health-media-project>

Implementing Organizations: Global Health Media Project

Shaping Demands and Practices for Family Health

Description: There is growing enthusiasm, emphasized in Nigeria by the SOML initiative, to use mobile technologies to improve the health sector globally. BBC Media Action has valuable momentum using mobile services to drive demand and shape health behaviors, which we now want to utilize in Nigeria. To do so, over a 12 month period we will carry out a research, scoping, and design phase for potential mHealth services for Nigeria. This will allow us to understand and develop the possibility of a robust, sustainable mHealth platform for Nigeria that can create demand around a range of family health issues.

Project Focus: Registration and Vital

Events; Scheduling and Reminders;

Decision Support; Patient Education and

Behavior Change; Provider Training and

Education; Communication

SOML Target Area: MNCH; Nutrition

States Implemented:

Geographic Spread: Nationwide

Level of Scale: Pilot

Technologies Involved: Text Messages (SMS)

Funders/Stakeholders: Gates Foundation

Website: <http://www.pathfinder.org/our-work/projects/kranti-shaping-demand-and-practice-in-bihar-for-up-take-of-priority-behaviors.html>

Implementing Organizations: BBC Media Action

SHOPS Project text message follow-up for trained private providers

Description: SHOPS project provides a range of trainings and support to private providers in Nigeria. These include business skills and family planning services for private health clinics, and sales of zinc and ORS by Proprietary Patent Medicine Vendors (PPMVs). Beginning in 2013, SHOPS provided routine text messages to reinforce training information, and inquire about stock-outs or other problems. thus far 630 private providers and 3300 PPMVs are included in the SHOPS training network.

Project Focus: Scheduling and Reminders; Provider Training and Education; Communication

SOML Target Area: MNCH

States Implemented: Abuja; Nasarawa;

Abia; Benue

Geographic Spread: Multiple States

Level of Scale: Pilot

Platform Compatibility: All platforms

Tools: Bulk text message platform

Vendor/Developer: Abt Associates

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: USAID

Website: www.shopsproject.com

Implementing Organizations: Abt Associates

SHOPS supportive supervision tool to strengthen pharmacist adherence to recommended treatments for pediatric diarrhea

Description: USAID SHOPS project is working with Pharmaceutical Council of Nigeria to provide smartphones with software for pharmacy supervisors to guide assessment of community drug vendors (chemists) practices and develop action plans to improve adherence to recommended protocols. WHO recommends zinc and ORS for uncomplicated diarrhea, a leading cause of death in children under 5, but many chemists sell antibiotics or other non-recommended treatments.

Project Focus: Health Information System;

Decision Support; Provider Training and

Education; Resource Management

SOML Target Area: MNCH; Essential

Commodities

Geographic Spread: State

Level of Scale: Pilot

Technologies Involved: Pre-loaded

Application

Platform Compatibility: Android platform

Tools: ODK; FormHub

Vendor/Developer: Abt Associates

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: USAID

Website: www.shopsproject.com

Implementing Organizations: Abt Associates; Pharmaceutical Council of Nigeria

SIDHAS ODK-based Continuous Quality Improvement System

Description: SIDHAS customized the Open Data Kit an android application to manage data from Continuous Quality Improvement and Data Quality Assessment activities across 242 health facilities in 15 states, with real time synchronization of data to a central server. Generates automated dashboard charts.

Project Focus: Health Information System;

Decision Support

SOML Target Area: Essential Commodities;

eMTCT

States Implemented: Anambra; Enugu;

Akwa Ibom; Adamawa; Abia; Bauchi;

Bayelsa; Benue; Borno; Cross River; Delta;

Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa;

Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara;

Lagos; Nasarawa; Niger; Ogun; Ondo;

Osun; Oyo; Plateau; Rivers; Sokoto; Taraba;

Yobe; Zamfara; FCT

Geographic Spread: Nationwide

Level of Scale: At-scale

Technologies Involved: Pre-loaded

Application; Data Application; Web-based

Portal

Platform Compatibility: Java-enabled Phone; Android platform
Tools: ODK
Vendor/Developer: University of Washington Department of Computer Science & Engineering
Free/Open Source: Yes
Business Model: Donor funded
Funders/Stakeholders: USAID
Website: <http://www.fhi360.org/projects/strengthening-integrated-delivery-hiv-aids-services-sidhas>
Implementing Organizations: FHI360

Strengthening the Midwife Service Scheme with Community Focused Interventions: Randomized Controlled Field Trial in Nigeria

Description: Planned Parenthood Federation of Nigeria (PPFN) has been collaborating with the Abdul Latif Jameel Poverty Action Lab (J-PAL) to evaluate three community-based programs addressing maternal and neonatal mortality and morbidity in Jigawa State in Northern Nigeria. This evaluation, funded by the MacArthur Foundation, is a randomized controlled trial (RCT) and is being conducted in 96 communities with a total population of approximately 290,000 inhabitants. Participating communities were randomly assigned to one of four study arms (three treatment and one control arm). The interventions being evaluated include a CoRPs (Community Resource Person) program in which local women are trained to provide door-to-door education to pregnant women and their families, the CoRPs program plus provision of safe birth kits to pregnant women, and the CoRPs program plus community engagement activities entailing dramas performed within communities to alter perceptions and norms around maternal health.

As part of this study, an innovative RapidSMS based surveillance system was designed and implemented across all study villages in order to track vital events at the community level. Over 260 local female volunteers were selected and trained to monitor vital events including births, maternal and infant deaths, and stillbirths in project villages. Each monitor is responsible for 150 households in her neighborhood and reports events by sending text messages using cellphones provided by PPFN. Text messages are processed and compiled by RapidSMS software, a program that is designed to require only minimal literacy skills. The system automatically sends follow-up text messages to PPFN project staff, enabling enumerators to quickly follow up on cases, and in the event of a death, visit the household and conduct a verbal autopsy. The vital events data can be accessed in real-time through an online database and is of interest as an inexpensive and scalable solution to tracking disease at the

community level. The data currently being captured by PPFN is used to calculate maternal and neonatal mortality rates and is provided to the Ministry of Health on a quarterly basis.

Project Focus: Registration and Vital Events; Disease Surveillance and Reporting
SOML Target Area: MNCH
States Implemented: Jigawa
Geographic Spread: State
Level of Scale: Pilot
Technologies Involved: Text Messages (SMS)
Platform Compatibility: All platforms
Tools: RapidSMS
Vendor/Developer:
Free/Open Source: Yes
Funders/Stakeholders: MacArthur Foundation; Jigawa Ministry of Health; National Population Commission
Implementing Organizations: Planned Parenthood Federation of Nigeria (PPFN); Abdul Latif Jameel Poverty Action Lab (J-PAL)

SURE-P MCH Mobile Conditional Cash Transfer

Description: The CCT programme is in place to increase demand for basic MNCH services among pregnant women in supported communities. CCT targets cash subsidies to key points in the continuum of care frequently missed in Nigeria: focused antenatal care, delivery with skilled attendance, first immunizations, and post-natal care with family planning advice. The total amount obtainable is N5,000; women referred to agreed SURE-P hospitals also receive free obstetric care. SURE-P MCH is partnering with Pathfinder to pilot a mCCT arm of this programme, registering and paying beneficiaries using CommCare applications. This pilot programme will be rolled out in FCT and Kaduna.

Project Focus: Registration and Vital Events; Health Information System; Decision Support; Resource Management; Health Financing; Scheduling and Reminders; Patient Education and Behavior Change
SOML Target Area: MNCH; eMTCT; Immunizations
States Implemented: FCT; Kaduna
Geographic Spread: Multiple States
Level of Scale: Pilot
Technologies Involved: Pre-loaded Application; Data Application; IVR (interactive voice response); Text Messages (SMS); Web-based Portal
Platform Compatibility: Basic Mobile Phone; Java-enabled Phone; Android platform; Windows OS
Tools: CommCare
Vendor/Developer: SURE-P MCH; Dimagi; VAS2Nets
Free/Open Source: Yes
Business Model: Donor funded
Funders/Stakeholders: SURE-P MCH; UN

Foundation; VAS2NET; Starfish Mobile
Website: <http://surepmch.org/cct.php>
Implementing Organizations: SURE-P MCH; Pathfinder International

The Distributed Electronic Clinical System

Description: The system synchronizes the health data collection across all sites (27 health facilities), providing near real-time access to on-demand data analysis, Decision Support, and detailed analytic capabilities for IHVN, State, and Federal Health Agencies. The "system" allows for direct synchronization with District Health Information System, Version 2 (DHIS2), through the World Health Organization's SDMX-HD (data exchange format).
Project Focus: Health Information System
SOML Target Area: MNCH
States Implemented: Nasarawa
Geographic Spread:
Level of Scale: Pilot
Technologies Involved: Web-based Portal
Platform Compatibility: [Mac] OS X; Windows OS; Unix OS
Tools: OpenMRS; DHIS2
Vendor/Developer: eHealth Africa
Free/Open Source: Yes
Business Model: Donor funded
Funders/Stakeholders:
Website: <http://ehealthafrica.org/projects/distributed-electronic-clinical-information-system/>
Implementing Organizations: "IHVN; eHealth Africa

The K4Health/Nigeria Web-Based Continuing Medical Laboratory Education (CMLE) Program

Description: Project providing opportunities for Laboratory Scientists to continuously improve their knowledge, update and sharpen old skills, and acquire new ones. Continuing Professional Development (CPD) is one of the strategies for continuous quality improvement of Clinical and Public Health Laboratory services. The two primary interventions of the K4Health/Nigeria CPD project are:

- The revitalization, launch, and institutionalization of a CPD Policy, making CPD credits a requirement of licensure renewal; and
- Developing, managing, and hosting Nigerian-authored and accredited eLearning courses.

Project Focus: Provider Training and Education
SOML Target Area: Malaria; eMTCT
States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi; Bayelsa; Benue; Borno; Cross River; Delta; Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT
Geographic Spread: Nationwide
Level of Scale: Scale-up

Technologies Involved: Web-based Portal
Platform Compatibility: All platforms
Tools: Moodle Learning Management System
Vendor/Developer: Datasphir
Free/Open Source: Yes
Business Model: Donor funded
Funders/Stakeholders: USAID; PEPFAR Lab TWG; AMLSN; MLSCN
Website: <https://www.k4health.org/projects/nigeria>
Implementing Organizations: K4Health; MLSCN; AMLSN; JHU-CCP

The Nigerian Urban Health Reproductive Initiative's Distance Learning Program or the Interactive Health Education (IHED) system

Description: NURHI launched the Interactive Health Education (IHED) system in November 2013 to provide a platform from which providers can access relevant educational content and resources from Android based smart phones or tablets. IHED was developed in response to the need for re-enforcement of skills post-training and is intended to supplement existing forms of traditional training and supportive supervision. Once loaded via Wi-Fi or GPRS the educational content, quizzes and other resources can be accessed offline. Usage Statistics and quiz results are uploaded to an administrative server when a connection is available making real time monitoring possible and providing a basis for evaluation.

Project Focus: Patient Education and Behavior Change; Provider Training and Education; Communication

SOML Target Area: MNCH

States Implemented: Kwara; Abuja; Kaduna; Oyo

Geographic Spread: Multiple States
Level of Scale: Pilot

Technologies Involved: Pre-loaded Application; Data Application; Text Messages (SMS); Preloaded Video (preloaded on phone); Data Video; Voice (calls)

Platform Compatibility: Android platform
Tools: Adaptation of OppiaMobile and Moodle

Vendor/Developer: Johns Hopkins Center for Communication Programs; Digital Campus

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: Gates Foundation
Website: <http://www.nurhi.org>

Implementing Organizations: JHU-CCP; ARFH; Center for Communication Programs Nigeria.

UN MDGs reporting

Description: The Federal Government has opened the newly-conceived Nigerian Millennium Development Goals (MDGs) Information System, (NMIS) for members of the public, to be used by both governmental and non-governmental stakeholders for policy planning.

Project Focus: Health Information System
SOML Target Area: MNCH; Immunizations
Geographic Spread: Nationwide
Level of Scale: Pilot

Technologies Involved: Pre-loaded Application

Platform Compatibility: All platforms

Tools: National MDGs Information System

Vendor/Developer: Columbia University

Business Model: Donor funded

Funders/Stakeholders: UN

Website: <http://nmis.mdgs.gov.ng/>

Implementing Organizations: Presidential MDGS office; UN; Columbia University

U-Report Nigeria

Description: This project addresses general health topics affecting youths and adolescents through providing a platform for communities to share information on various topics.

Project Focus: Communication

SOML Target Area: MNCH; eMTCT

Geographic Spread: Nationwide

Level of Scale: Pilot

Technologies Involved: Text Messages (SMS); Web-based Portal

Platform Compatibility: All platforms

Tools: U-Report

Business Model: Donor funded

Funders/Stakeholders: UNICEF

Website: <http://nigeria.ureport.in/>

Implementing Organizations: UNICEF

Using Smart phones for Tuberculosis Support Supervision

Description: USAID's Health Finance and Governance project collaborated with NTBLCP's training center to develop a standard, integrated TB supervision checklist to assess and monitor diagnostic laboratories and Directly Observed Treatment Short course (DOTS) services. In Nigeria, health workers are using smart-phones at more than 500 facilities to more accurately diagnose and treat tuberculosis (TB) as a result of a successful program to integrate mobile technology into the TB supervision process. Nigeria has made significant progress in its fight against TB, but the National TB and Leprosy Control Program (NTBLCP) tapped into mobile technology to provide more supportive supervision and improve health services, especially in areas with high defaulter rates, drug stock outs and TB/HIV services integration.

Project Focus: Health Information System; Decision Support; Patient Education and Behavior Change; Provider Training and Education; Resource Management; Health Financing; Communication; Disease Surveillance and Reporting

SOML Target Area: Essential Commodities

States Implemented: Lagos; Rivers; Ogun;

Kwara; FCT; Abia; Kano

Geographic Spread: Multiple States

Level of Scale: At-scale

Technologies Involved: Pre-loaded Application; Web-based Portal

Platform Compatibility: Android platform
Tools: Maggi; ODK

Vendor/Developer: Abt Associates; Avid Database Solutions

Free/Open Source: Yes

Business Model: Donor funded

Funders/Stakeholders: USAID; Abt Associates; National TB and Leprosy Control Program

Website: <http://www.healthsystems2020.org/content/news/detail/85772/>

Implementing Organizations: Abt Associates

vas2net CALL A DOCTOR

Description: CALL A DOCTOR is a one on one medical advice from a Doctors. Customers dial into a short code and get routed to Doctors who can advise them medically and encourage them on patronage of proper health facilities, encourage development of a mutually beneficial relationship with the health practitioner and give necessary first aid information as the need may arise.

Project Focus: Patient Education and Behavior Change; Health Financing; Communication

SOML Target Area: MNCH; Nutrition

States Implemented: Anambra; Enugu;

Akwa Ibom; Adamawa; Abia; Bauchi;

Bayelsa; Benue; Borno; Cross River; Delta;

Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa;

Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara;

Lagos; Nasarawa; Niger; Ogun; Ondo;

Osun; Oyo; Plateau; Rivers; Sokoto; Taraba;

Yobe; Zamfara; FCT

Geographic Spread: Nationwide

Level of Scale: Scale-up

Technologies Involved: Data Application; IVR (interactive voice response); Text Messages (SMS); Voice (calls)

Platform Compatibility: All platforms

Tools: VAS2Nets Platform

Vendor/Developer: VAS2Nets

Free/Open Source: No

Business Model: Privately funded

Funders/Stakeholders: VAS2Nets

Website: <http://v2nportal.com/mhealth>

Implementing Organizations: VAS2Nets; Individual Doctors; Association of pharmacists

vas2net Doctor's chat room

Description: Doctor's chat room: is a voice chat service, where a topic is blasted for the day and customers can call into a conference room and chat with a Doctor who serves as the Moderator. Here, the Doctor will discuss the topic base on request from the callers.

Project Focus: Patient Education and Behavior Change; Communication

SOML Target Area: MNCH

States Implemented: Anambra; Enugu;

Akwa Ibom; Adamawa; Abia; Bauchi;

Bayelsa; Benue; Borno; Cross River; Delta;

Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa;

Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara;

Lagos; Nasarawa; Niger; Ogun; Ondo;

Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT
Geographic Spread: Nationwide
Level of Scale: Scale-up
Technologies Involved: IVR (interactive voice response); Text Messages (SMS); Voice (calls)
Platform Compatibility: All platforms
Tools: VAS2Nets Platform
Vendor/Developer: VAS2Nets
Free/Open Source: No
Business Model: Privately funded
Funders/Stakeholders: VAS2Nets
Website: <http://v2nportal.com/mhealth>
Implementing Organizations: VAS2Nets; Individual Doctors; Association of pharmacists

vas2net mHealth Alerts

Description: mHealth: Daily alerts medical advice on selected services of users e.g. pregnant women can subscribe to daily pregnancy tips from our in-house doctors
Project Focus: Patient Education and Behavior Change
SOML Target Area: MNCH
States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi; Bayelsa; Benue; Borno; Cross River; Delta; Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT
Geographic Spread: Nationwide
Level of Scale: Scale-up
Technologies Involved: Data Application; IVR (interactive voice response); Text Messages (SMS); Voice (calls)
Platform Compatibility: All platforms
Tools: VAS2Nets Platform
Vendor/Developer: VAS2Nets
Free/Open Source: No
Business Model: Privately funded
Funders/Stakeholders: VAS2Nets
Website: <http://v2nportal.com/mhealth>
Implementing Organizations: VAS2Nets; Individual Doctors; Association of pharmacists

vas2net mNutrition

Description: mNutrition: Daily alerts of different food benefits for people as it relates to their health e.g. Parents can subscribe to best natural nutrition for babies.
Project Focus: Patient Education and Behavior Change
SOML Target Area: Nutrition
States Implemented: Anambra; Enugu; Akwa Ibom; Adamawa; Abia; Bauchi; Bayelsa; Benue; Borno; Cross River; Delta; Ebonyi; Edo; Ekiti; Gombe; Imo; Jigawa; Kaduna; Kano; Katsina; Kebbi; Kogi; Kwara; Lagos; Nasarawa; Niger; Ogun; Ondo; Osun; Oyo; Plateau; Rivers; Sokoto; Taraba; Yobe; Zamfara; FCT
Geographic Spread: Nationwide
Level of Scale: Scale-up
Technologies Involved: Data Application; IVR (interactive voice response); Text

Messages (SMS); Voice (calls)
Platform Compatibility: All platforms
Tools: VAS2Nets Platform
Vendor/Developer: VAS2Nets
Free/Open Source: No
Business Model: Privately funded
Funders/Stakeholders: VAS2Nets
Website: <http://v2nportal.com/mhealth>
Implementing Organizations: VAS2Nets; Individual Doctors; Association of pharmacists

WE CARE Solar

Description: WE CARE Solar promotes safe motherhood and reduces maternal mortality in developing regions by supplying cost-effective solar suitcases that power critical lighting, mobile communication devices and medical devices (blood bank refrigerators) in low resource areas without reliable electricity. The provision of mobile phones allows labor and delivery nurses to quickly notify on-call physicians of emergencies, and ask for advice.
Project Focus: Communication
SOML Target Area: MNCH
States Implemented: Kano
Geographic Spread: State
Level of Scale: At-scale
Tools: WE CARE Solar
Website: <http://wecaresolar.org/projects/project-map/>
Implementing Organizations: "WE CARE Solar; Big Ideas @ Berkeley; Blum Center for Developing Economies; Everbright Solar; Health and Sustainability; The Bixby Center for Population; MacArthur Foundation; UBS Optimus Foundation; Venture Strategies

Zamfara PRRINN MNCH

Description: Mobile phones used for data collection and entry into the NHMIS. Data is obtained from the monthly summary forms for health facilities. Mobile phones also used for reporting on DHIS System.
Project Focus: Health Information System
SOML Target Area: MNCH
Geographic Spread: LGA or Smaller Area
Level of Scale: Scale-up
Technologies Involved: Data Application
Vendor/Developer: HISP
Business Model: Donor funded
Funders/Stakeholders: PRRINN-MNCH; Zamfara; DFID
Implementing Organizations: PRRINN-MNCH

Appendix 3

GLOBAL INVENTORY OF ICT FOR HEALTH TOOLS

MedicallHome

Description: MedicallHome is a healthcare company that provides hotline-based services to over 5 million individuals in Mexico. The program provides, in addition to physical infrastructure, a Medical Contact Center and a network of medical services, intended to reduce the cost of health care and expand coverage, allowing: immediate and timely health service, equity in health, population education, increasing efficiency of services, and assurance of confidentiality of information and security.

Country: Mexico

Website: <https://medicallhome.com/MedicallHomeWeb/index.php>

The Medical Concierge Group Call Centre

Organization: The Medical Concierge Group (TMCG)

Name of Tool: TMC Call Centre

Vendor/Developer: The Medical Concierge Group (TMCG)

Description: TMCG provides a suite of services including a call centre, ambulance dispatch, mobile pharmacies and clinics. The call centre provides free access to a doctor or physician 24/7 via phone, email or SMS. The ambulance dispatch service utilizes GPS tracking, fuel monitors and a web portal to manage ambulances to when and where they are needed.

Project Approach: Communication

SOML Target Area: MNCH

Country: Uganda and Kenya

Geographic Spread: Multiple Regions

Level of Scale: Scale-up

Technology: Voice

Business Model: Patients pay for care?

Website: http://tmcg.co.ug/?page_id=334

SIMPill

Organization: SIMpill®, Tellumat

Name of Tool: SIMPill

Vendor/Developer: SIMpill®, Tellumat

Description: SIMpill is a patent-pending system that tracks, manages, and improves a patient's medication adherence in real-time. The system consists of a pill bottle attached to a SIMpill module containing the components of a wireless quad-band GSM/GPRS cell phone. The module is programmed with multiple time windows based upon the dosing schedule of the drug. When the patient opens the bottle, the module automatically sends an SMS message to a central computer system indicating that a dose has been

taken. If the bottle is not opened within the next programmed time window, a text message can be sent to a designated caregiver or researcher, who can then contact the patient by some other means.

Project Approach: Scheduling and Reminders

SOML Target Area: Essential

Commodities

Country: South Africa

Geographic Spread:

Level of Scale: Scale-up

Technology: Text SMS

Website: <http://www.simpill.com/howsimpillworks.html>

MiDoctor

Organization: eHealth Systems, Sustainable Sciences Institute, IDRC, Partners in Health, Dimagi, Harvard Medical School, Catholic University of Chile, Inter-American Development Bank

Name of Tool: MiDoctor

Vendor/Developer: eHealth Systems

Description: Uses SMS to monitor chronic disease patients through reminders and alerts. System includes automated calls, continuous reminders and monitoring.

Is interoperable with eHealth System's ComuniNet telemedicine platform.

Project Approach: Scheduling and Reminders

SOML Target Area: Essential

Commodities

Country: Chile

Technology: Text SMS

Compatibility: All

Open Source: No

Website: <http://ehs.cl/en/solutions/continuous-monitoring/>

Pregnancy Care Advice

Organization: Bangladesh Ministry of health and family welfare

Description: The Ministry of Health and Family Welfare of Bangladesh. The Ministry started a project to increase awareness of its health campaigns by broadcasting SMS text messages to all mobile telephone numbers in the country. These include: National Immunization Day campaign, Vitamin A Week, National Breastfeeding Week, and National Safe Motherhood Day. Other services that use SMS for health promotion aims at increasing awareness and improved coordination among health staff members during emergency health situations, and allowing mobile telephone users to subscribe, at a reduced rate, to an SMS service that broadcasts text messages on diverse health topics. Health workers in communities throughout the country can advise patients on useful topics they can access through their mobile telephones. For instance, pregnant women in remote villages can register their mobile numbers to receive useful prenatal advice that is appropriate to their gestation stage

Project Approach: Patient Education and Behavior Change

SOML Target Area: MNCH

Country: Bangladesh

Geographic Spread: Nationwide

Level of Scale: Scale-up

Technology: Text SMS

Website: <http://dghs.gov.bd/index.php/en/e-health/our-ehealth-eservices/84-english-root/ehealth-eservice/101-pregnancy-care-advice-through-sms>

Mobile Doctors Network (MDNet)

Organization: Africa Aid, Ghana Onetouch, Ghana Medical Association, Lonestar Cell (MTN subsidiary), Liberian Ministry of Health, Liberian Medical and Dental Association, Liberian Medical Board

Name of Tool: MDNet

Vendor/Developer: Africa Aid

Description: Communication-based initiative that creates free mobile phone-based networks (closed user groups) of physicians and nurses in Africa. Members of the networks are able to call one another at no cost.

Project Approach: Communication

SOML Target Area: MNCH

Country: Ghana, Liberia, Tanzania

Geographic Spread: Nationwide

Level of Scale: At-scale

Technology: Voice

Compatibility: All

Open Source: N/A

Business Model: Users subscribe to telecommunications service provider and pay for calls outside of the closed user group and all SMS and data use.

Funders/Stakeholders: [Telecom Providers, Health Care Providers in the network]

Website: <http://www.africaaid.org/programs/mdnet>

Magpi

Organization: DataDyne

Name of Tool: Magpi [Formerly EpiSurveyor]

Vendor/Developer: DataDyne

Description: [Formerly EpiSurveyor]

Mobile phone-based data collection tool. Text and audio messaging can be sent to mobile phones from a desktop. Both free and paid premium versions of Magpi are available.

Project Approach: Disease Surveillance and Reporting

SOML Target Area: MNCH

Country: Multiple Countries

Geographic Spread: Multiple Regions

Level of Scale: Scale-up

Platform: Magpi

Compatibility: All

Open Source: No

Business Model: Funded by paying users (access premium package).

Website: <http://www.datadyne.org/magpi-mobile/>

Disease Surveillance and Mapping Project

Organization: Positive Innovation for the

Next Generation (PING)

Vendor/Developer: PING

Description: For the Disease Surveillance and Mapping Project, PING has created a mobile phone application that allows health facilities to submit regular reports back to the Ministry of Health (MoH), give health workers the ability to report real-time disease outbreak data, tag the data with GPS coordinates, and blast out SMS disease outbreak alerts to all other healthcare workers in the district. Using this system, disease cases can be reported, collected and aggregated in minutes using HP Palm Pre 2 smart phones, donated as part of the project. Compared to a 3 to 5 week process when paper records are used.

Project Approach: Disease Surveillance and Reporting

SOML Target Area: Malaria

Country: Botswana

Geographic Spread: Nationwide

Level of Scale: Scale-up

Technology: Text SMS

Funders/Stakeholders: HP, The Botswana Ministry of Health, Clinton Foundation, Malaria No More, Mascom, MTN
Website: <https://mobiledevelopmentintelligence.com>

Pesinet

Organization: Association Pesinet

Description: Pesinet has developed a service for children under 5 that is currently deployed in Bamako, Mali. The program leverages simple mobile technologies as well as community agents to enable remote monitoring by the local doctor, accelerate disease detection, and facilitate early access to basic medical care.

Project Approach: Patient Education and Behavior Change

SOML Target Area: MNCH

Country: Mali

Geographic Spread: Regional

Level of Scale: Scale-up

Technology: Data Application

Website: <http://healthmarketinnovations.org/program/pesinet>

CommCare ASHA

Organization: Dimagi, National Rural Health Mission in India

Name of Tool: CommCare

Vendor/Developer: Dimagi

Description: CommCare is being used a mobile job aid that assists Accredited Social Health Activists (ASHAs) and other community health workers (CHWs) to reach more people more efficiently and effectively. It supports ASHAs by facilitating better data collection, decision support, forms, checklists, danger signs, communications with clients and health centres, and access to educational training materials.

Project Approach: Health Information System

SOML Target Area: MNCH

Country: India

Geographic Spread: Regional

Level of Scale: Scale-up

Technology: Pre-loaded Application

Platform: CommCare

Compatibility: Android Smartphone

Open Source: Yes

Funders/Stakeholders: D-tree International, University of Washington

Website: http://www.commcarehq.org/users/commcare_asha/

eNUT

Organization: D-Tree, UNICEF, Zanzibar Ministry of Health and Social Welfare, Zantel, Edesia

Name of Tool: eNUT

Vendor/Developer: D-tree

Description: eNUT streamlines the management of information and supports the decision making needs of health workers, helping them to implement the national guidelines for providing effective treatment to children suffering from severe acute malnourishment.

Project Approach: Decision-support

SOML Target Area: Nutrition

Country: Zanzibar

Geographic Spread: Nationwide

Level of Scale: Scale-up

Technology: Pre-loaded Application

Funders/Stakeholders: D-tree, Zanzibar Ministry of Health and Social Welfare,

Zantel; mHealth Alliance (IWG Grantee)

Source Data: http://mhealthalliance.org/images/content/profiles/2011/enut_Zanzibar_ProjectProfile.pdf

Website: <http://aehin.hingx.org/Share/Details/1387>, <http://www.d-tree.org/saving-lives/childrens-lives/nutrition/>, <http://www.healthunbound.org/node/3231>

Interactive Alerts

Organization: Interactive Research and Development (IRD)

Description: IRD (Interactive Research & Development) seeks to eliminate vaccine-preventable illnesses by increasing the timely completion of the EPI schedule among children throughout Pakistan through interactive SMS reminders and a lottery system with cash prizes for participants.

Project Approach: Health Financing

SOML Target Area: Immunizations

Country: Pakistan

Geographic Spread: Sub-Regional

Technology: Text SMS

Compatibility: Java-enabled

Funders/Stakeholders: Interactive Research and Development (IRD)

Website: <http://irdresearch.org/ehealth>

MAMA SMS

Organization: Praekelt Foundation, Cell-life and the Wits Reproductive Health and HIV Institute (WRHI).

Description: The MAMA SMS service is an evidence-based free messaging service that extends the support provided at

health facilities, providing pregnancy, postnatal and baby care information to women. The service aims to help keep women healthy throughout their pregnancies and to encourage HIV testing and adherence to PMTCT programmes.

Project Approach: Patient Education and Behavior Change

SOML Target Area: MNCH

Country: South Africa

Geographic Spread:

Level of Scale: Scale-up

Technology: Text SMS

Funders/Stakeholders: Praekelt Foundation, Cell-life and the Wits Reproductive Health and HIV Institute (WRHI).

Website: <http://www.mobilemamaalliance.org/>

MOTECH Suite

Organization: Grameen Foundation, Dimagi, InSTEDD, University of Southern Maine, Village Reach, OpenMRS

Name of Tool: MOTECH Suite

Vendor/Developer: Dimagi, University of Southern Maine, OpenMRS

Description: Comprehensive suite of tools that are used for behavior change and demand generation, managing patient data, improving worker performance, supply chain and patient adherence. Suite is achieved through integrating the following platforms: MoTeCH, OpenMRS, DHIS2 and CommCare. Notable implementations include the MOTECH Bihar Project, Ananya Project and World Vision implementations.

Project Approach: Health Information System

SOML Target Area: MNCH

Country: Multiple Countries

Geographic Spread: Multiple Regions

Level of Scale: Scale-up

Technology: Data Application

Platform: OpenMRS, CommCare, MoTech Messaging System

Compatibility: Android Smartphone

Open Source: Yes

Funders/Stakeholders: "Bill & Melinda Gates Foundation, United States Agency for International Development (USAID), Government of Norway, Grand Challenges Canada, The World Bank"

Website: <http://motechsuite.org/>

Rapid SMS and mUzuzima

Organization: Ministry of Health Rwanda, UNICEF, WHO Rwanda, UNFPA

Name of Tool: RapidSMS

Vendor/Developer: UNICEF Innovation, Ministry of Health Rwanda

Description: SMS-based application for community health workers to help monitor and promote maternal and neonatal health along continuum of care. Appointment reminders are provided to patients as a direct-to-client service.

Project Approach: Health Information System

SOML Target Area: MNCH

Country: Rwanda
Geographic Spread: Regional
Level of Scale: Scale-up
Technology: Text SMS
Platform: RapidSMS
Compatibility: All
Open Source: Yes
Governance Structure: Led by Government of Rwanda
Funders/Stakeholders: mHealth Alliance (IWG Grantee)
Website: <http://www.rapidsms.moh.gov.rw/>

SMS for Life

Organization: Roll Back Malaria Partnership: Tanzania Ministry of Health and Social Welfare/Ghana Health Service/Kenya National Malaria Control Program, Novartis, Medicines for Malaria Venture, Swiss Agency for Development, Vodacom, PSI Tanzania, Vodafone, IBM, Roll Back Malaria Secretariat; NORAD, mHealth Alliance; Greenmash, President's Malaria Initiative
Name of Tool: SMS for Life
Description: SMS-based supply monitoring and reporting system. SMS system linked to a web-accessible portal for enhanced monitoring. Initially used to monitor anti-malaria drugs but has been expanded to medicines/products for other diseases.
Project Approach: Resource Management
SOML Target Area: Malaria
Country: Sub-Saharan Africa [Tanzania, Ghana, Kenya, Cameroon, Democratic Republic of Congo]
Geographic Spread: Multiple Regions
Level of Scale: Scale-up
Technology: Text SMS
Open Source: No
Business Model: Public-Private Partnership
Governance Structure: Government/Ministries of Health as owner and main user; Roll Back Malaria Secretariat facilitates work of steering committee and advocates and provides guidance; other partners assist with funding, materials, software design, maintenance and implementation and management: <http://rbm.who.int/psm/smsPartners.html>
Website: <http://malaria.novartis.com/innovation/sms-for-life/index.shtml>, <http://rbm.who.int/psm/smsWhatIsIt.html>

Mobile for Reproductive Health (m4RH)

Organization: FHI 360, Text to Change, Sliced Bread Design, Marie Stopes International, Family Health Options of Kenya, PSI, Pathfinder, FHI 360 ROADS Project, GIZ, ISHI Project, Comprehensive Community Based Rehabilitation in Tanzania (CCBRT), the Department of Reproductive Health of the Ministry of Public Health and Sanitation in Kenya, and the Ministry of Health and Social Welfare in Tanzania, Rwanda Ministry of Health
Name of Tool: m4RH
Vendor/Developer: FHI 360 & Partners

Description: Mobile for Reproductive Health (m4RH) is an automated, interactive and on-demand short message service (SMS) system. It provides information on long and short acting family planning methods, about side effects, method effectiveness, duration of use and ability to return to fertility. It also provides a searchable clinic database.
Project Approach: Patient Education and Behavior Change
SOML Target Area: MNCH
Country: Kenya, Rwanda, Tanzania
Geographic Spread: Multiple Regions
Level of Scale: Scale-up
Technology: Text SMS
Compatibility: All
Funders/Stakeholders: USAID
Website: <http://www.fhi360.org/projects/mobile-reproductive-health-m4rh>, <http://www.fhi360.org/projects/progress-mobile-reproductive-health-m4rh>

CycleTel

Organization: Georgetown University's Institute for Reproductive Health (IRH), USAID
Name of Tool: CycleTel
Description: CycleTel is based on the Standard Days Method® (SDM) of family planning and alerts women of their fertile days each month via SMS, indicating when unprotected sex should be avoided to prevent unwanted pregnancies. Women enroll by answering a few screening questions for eligibility and enter their period start date. Thus far, CycleTel has been piloted with over 800 test users in India. Scale-up to 1 million users is underway.
Project Approach: Scheduling and Reminders
SOML Target Area: MNCH
Country: India
Geographic Spread: Sub-Regional
Level of Scale: Proof-of-Concept
Technology: Text SMS
Website: <http://www.cycletel.org/>

SC4CCM

Organization: John Snow Inc., Bill & Melinda Gates Foundation, Dimagi
Name of Tool: cStock
Vendor/Developer: Dimagi
Description: SMS and web-based supply and reporting system. Data from SMSes, sent by community health workers, are collected and aggregated and then SMSes are sent to health centers for resupply.
Project Approach: Resource Management
SOML Target Area: Essential Commodities
Country: Malawi
Geographic Spread: Regional
Level of Scale: Scale-up
Technology: Text SMS
Platform: CommTrack
Open Source: Yes
Source Data: <http://www.com-track.org/static-resources/docs/case-studies/commtrack-cstock.pdf>, <http://sc4ccm.jsi.com/files/2012/10/>

cStock-Using-data-visibility-as-a-tool-to-improve-HSA-logistics.pdf
Website: <http://sc4ccm.jsi.com/countries/malawi/>

Texting to Improve Testing (TextIT)
Organization: Kenya Medical Research Institute (KEMRI)
Name of Tool: TextIT
Vendor/Developer: KEMRI
Description: Texting to Improve Testing (TextIT) Strategy: Text messaging to increase postpartum clinic attendance and rates of early infant diagnosis of HIV is an interactive two-way text messaging intervention to deliver HIV-related information and encourage increased clinic attendance for prevention program Benefits of the program include: impacting the lives of mothers and children in meaningful, tangible ways, supporting global efforts to achieve Millennium Development Goals (reduce child mortality), (improve maternal health) and (reduce the burden of HIV/AIDS, malaria, and tuberculosis).
Project Approach: Patient Education and Behavior Change
SOML Target Area: MNCH
Country: Kenya
Geographic Spread: Sub-Regional
Level of Scale: Scale-up
Technology: Text SMS
Funders/Stakeholders: mHealth Alliance (IWG Grant)
Website: http://www.kemri.org/index.php?option=com_content&view=article&id=370:kemri-wins-catalytic-mhealth-grants&catid=1:latest

Wired Mothers

Organization: Ministry of Health and Social Welfare, Zanzibar- Tanzania Health Sector Programme Support Zanzibar, University of Copenhagen
Description: This program consists of two components: 1) an automated SMS system providing wired mothers with unidirectional text messaging and 2) a mobile phone voucher system providing access to emergency obstetric care through improved communication and referral links from primary health care facilities to hospitals. The aim of the SMS component is to provide simple health education and appointment reminders to encourage attendance at routine antenatal care, skilled delivery attendance and postnatal care.
Project Approach: Scheduling and Reminders
SOML Target Area: MNCH
Country: Zanzibar
Technology: Text SMS
Website: <http://www.enrecahealth.dk/archive/wiredmothers/>

Project Optimize

Organization: PATH, WHO
Name of Tool: Digital Immunization Registry

Description: PATH and the National Expanded Programme on Immunization (NEPI) have created a digital immunization registry system that registers children at birth, tracks vaccines provided to them, and sends SMS reminders to parents before each immunization day.

Project Approach: Registration and Vital Events

SOML Target Area: Immunizations

Country: Vietnam

Geographic Spread: Sub-Regional

Level of Scale: Pilot

Technology: Text SMS

Compatibility: Basic

Funders/Stakeholders: mHealth Alliance (IWG Grantee)

Source Data: http://www.path.org/publications/files/TS_opt_viet_imm_reg_br.pdf

Website: <http://www.path.org/projects/project-optimize.php>

Sesame Workshop

Organization: sesame workshop

Description: It is an innovative program that uses the power of a community radio platform and combines it with mobile phones to reach marginalized communities with information to help children grow up healthy and happy. The program delivers key health and hygiene messages to children and parents and provides community members with a platform to discuss and influence the most critical issues in their towns and cities.

Project Approach: Patient Education and Behavior Change

SOML Target Area: MNCH

Country: India

Geographic Spread: Multiple Regions

Level of Scale: At-scale

Technology: Voice

Website: www.sesameworkshopindia.org

WAHA International Projects

Organization: Women and Health Alliance (WAHA) International

Description: The program uses communication campaigns, sent via SMS, to educate the community about the availability and benefits of maternal and child health services and to address transportation barriers. The project also addresses ineffective communication links between health workers by providing CHEWs, ambulance drivers and key health facility staff with mobile phones so that ambulances can be called out to collect high-priority patients (e.g., women in labor or those experiencing obstetric complications) for urgent transfer to the nearest health facility.

Project Approach: Patient Education and Behavior Change

SOML Target Area: MNCH

Country: Senegal

Geographic Spread: Multiple Regions

Level of Scale: Scale-up

Technology: Text SMS

Compatibility: All

Funders/Stakeholders: mHealth Alliance (IWG Grantee)

Website: <http://www.waha-international.org/?what-we-do=1614>

Project Mwana

Organization: Zambia MOH, UNICEF Innovation, Boston University Affiliate, Zambia Centre for Applied Health Research and Development (ZCHAR), Clinton Health Access Initiative

Name of Tool: Project Mwana

Vendor/Developer: UNICEF Innovation

Description: Programme Mwana, is a Zambian mHealth initiative to improve early infant HIV diagnostic services, post-natal follow-up, and care. Built on the RapidSMS platform, the project sends results of HIV tests from laboratories to health facilities as well as communicating with community health workers and caregivers.

Project Approach: Communication

SOML Target Area: PMTCT

Country: Malawi, Zambia

Geographic Spread: Multiple Regions

Level of Scale: Scale-up

Technology: Text SMS

Platform: RapidSMS: Results360 & RemindMi modules

Compatibility: All

Open Source: Yes

Business Model: Negotiate with telecom companies (for scale); use end-users existing mobile phones

Governance Structure: Aligned with national government/government part of leadership; permanent local software develop team; permanent project manager; government-led working groups; telecom companies involved as key stakeholders

Source Data: Have nice learnings on guiding principles for scale-up on website, in addition to more resources on project.

Website: <http://unicefinnovation.org/projects/project-mwana>

MAMA Bangladesh (Aponjon), MAMA India, MAMA South Africa (SA)

Organization: Global Alliance for Maternal Action, USAID, Johnson & Johnson, United Nations Foundation, mHealth Alliance, BabyCenter, Praekelt Foundation

Name of Tool: MAMA Mobile Messages

Vendor/Developer: MAMA

Description: Pertinent health information (on pregnancy, childbirth and early childhood) is provided to mothers, mothers-to-be and their partners through SMS. Content is adapted to be culturally appropriate for each implementation location.

Project Approach: Patient Education and Behavior Change

SOML Target Area: MNCH

Country: Bangladesh, India, South Africa

Technology: Text SMS

Compatibility: All

Open Source: No

Business Model: Messages provided for free over partnering telecommunication provider networks

Website: <http://www.mobilemamaalliance.org/where-we-work>

Ananya Programme

Organization: BBC Media Action, Bill & Melinda Gates Foundation

Name of Tool: Mobile Academy, Mobile Kunji

Vendor/Developer: BBC Media Action

Description: Community-based health workers equipped with mobile phones access Mobile Academy or Mobile Kunji applications. Mobile Academy is an mLearning application that covers 10 life-saving healthy behaviors. Mobile Kunji is an in-depth information health guide.

Project Approach: Provider Training

SOML Target Area: MNCH

Country: India

Geographic Spread: Regional

Level of Scale: Pilot

Technology: Pre-loaded Application

Open Source: N/A

Funders/Stakeholders: Bill & Melinda Gates Foundation

Website: <http://www.rethink1000days.org/programme-outputs/mobile-kunji/>, http://www.bbc.co.uk/mediaaction/where_we_work/asia/india/india_sdp_overview_august_2012.html

AMPATH Initiative

Organization: AMPATH

Name of Tool: AMPATH Medical Record System (AMRS)

Vendor/Developer: AMPATH

Description: Electronic medical record system that serves as the core of AMPATH's initiatives. Data collection is conducted using smartphones.

Project Approach: Health Information System

SOML Target Area: MNCH

Country: Kenya

Geographic Spread: Multiple Regions

Level of Scale: Scale-up

Technology: Data Application

Platform: OpenMRS

Compatibility: Android Smartphone

Open Source: Yes

Business Model: Public donations go towards the AMPATH Initiative's operations.

Website: <http://www.ampathkenya.org/our-programs/research-informatics/medical-informatics/>

Baobab Health

Organization: Baobab Health, CDC, Malawi Ministry of Health, CHAM, Union Against Tuberculosis and Lung Disease, Luke International, University of Pittsburg, Dignitas International, Lighthouse Trust, Partners in Hope, Partners in Health, Village Reach, World Diabetes Foundation

Name of Tool: Baobab Antiretroviral Therapy (BART)

Vendor/Developer: Baobab Health
Description: Have several electronic medical record system applications that are in use at the facility-level. Applications (or modules) include antiretroviral therapy, patient registration, out-patient diagnosis, antenatal care, maternity, maternal and child health hotline, diabetes mellitus and hypertension, e-pharmaceutical inventory control system, chronic care clinic and module billing. BART — one of their more extensive modules — in particular, focuses on HIV/AIDS care.

Project Approach: Health Information System

SOML Target Area: PMTCT

Country: Malawi

Geographic Spread: Multiple Regions

Level of Scale: Scale-up

Technology: Data Application

Platform: OpenMRS

Open Source: Yes

Website: http://baobabhealth.org/?page_id=23

IQ Solutions

Organization: Futures Group

Name of Tool: IQ Care, IQ Geo, IQ Tools, IQ SMS, IQ Referrals, IQ Reports

Vendor/Developer: Futures Group

Description: Suite of patient management, patient monitoring and data reporting tools that have been designed for use in limited resource settings. Suite includes an electronic medical record system (IQ Care), data linking based on geography (IQ Geo), data validation and mining (IQ Tools), data collection and reporting (IQ SMS), client tracking and referral system (IQ Referrals), dashboards and reports (IQ Reports).

Project Approach: Health Information System

SOML Target Area: MNCH

Country: [Multiple Countries]

Technology: Data Application

Platform: IQ Solutions

Open Source: Yes

Website: <http://www.iqstrategy.net/products/>

mHealth Early Infant Diagnosis

Organization: Clinton Health Access Initiative, Hewlett Packard

Name of Tool: mHealth Early Infant Diagnosis

Description: SMS printers that are able to deliver laboratory test results to rural health posts for early follow-up and expedited care for infants. Focus is on HIV/AIDS.

Project Approach: Communication

SOML Target Area: PMTCT

Country: Kenya

Technology: Text SMS

Funders/Stakeholders: mHealth Alliance (IWG Grantee)

Website: <http://www.clintonhealthaccess.org/news-and-information/videos/mhealth-and-early-infant-diagnosis>

OpenLMIS

Organization: John Snow Inc., PATH, Rockefeller Foundation, Village Reach

Name of Tool: OpenLMIS

Vendor/Developer: John Snow Inc., PATH, Rockefeller Foundation, Village Reach

Description: Consortium of organizations involved in logistics and supply chain management, eHealth/informatics/health information systems, software development and process improvement. OpenLMIS is meant to serve as a repository of tools, products and assessments, encourage collaboration and develop integrated LMIS applications.

Project Approach: Resource Management

SOML Target Area: Essential Commodities

Open Source: Yes

Website: <http://openlmis.org/about-us/>

Text4Baby

Organization: Founding Partners: National Healthy Mothers, Healthy Babies Coalition, Johnson & Johnson, Voxiva, The Wireless Foundation, Grey Healthcare Group; Government Partners: U.S. HHS, White House Office of Science and Technology Policy, US Defense Military Health System, USD, US Consumer Product Safety Commission, Social Security Administration; Media Partners: MVT, VME, Discovery Fit & Health

Name of Tool: Text4Baby

Description: Mobile information service that provides free maternal and child health educational messages to users via SMS.

Project Approach: Patient Education and Behavior Change

SOML Target Area: MNCH

Country: U.S.A.

Geographic Spread: Nationwide

Level of Scale: At-scale

Technology: Text SMS

Compatibility: All

Open Source: No

Source Data: <https://www.text4baby.org/index.php/about/data-and-evaluation>

Website: <https://www.text4baby.org/index.php/about>

mTrac

Organization: FIND Diagnostics, Ministry of Health of Uganda, WHO, UNICEF

Name of Tool: mTrac

Vendor/Developer: FIND Diagnostics
Description: SMS-based monitoring system for malaria control and prevention via disease surveillance and supply chain monitoring.

Project Approach: Disease Surveillance and Reporting

SOML Target Area: Malaria

Country: Uganda

Geographic Spread: Multiple Regions

Technology: Text SMS

Funders/Stakeholders: DFID

Website: <http://www.mtrac.ug/content/mission-vision-objective>

Wazazi Nipendeni (Parents Love Me)

Organization: Government of Tanzania, Centers for Disease Control and Prevention (CDC), CDC Foundation, USAID, Johns Hopkins Bloomberg School of Public Health Center for Communication Programs, Elizabeth Glaser Pediatric AIDS Foundation, and Joining Hands Initiative – Aga Khan Health Services

Name of Tool: Wazazi Nipendeni SMS service

Vendor/Developer: mHealth Tanzania Partnership

Description: National multi-media campaign promoting healthy pregnancies led by the Government of Tanzania. Patients register for the service using the short-code 'MTOTO' (child). Once enrolled, they receive time-relevant messages throughout their pregnancy.

Project Approach: Patient Education and Behavior Change

SOML Target Area: MNCH

Country: Tanzania

Geographic Spread: Regional

Level of Scale: At-scale

Technology: Text SMS

Open Source: No

Business Model: Public-Private Partnership

Source Data: [https://www.jhuccp.org/sites/default/files/WazaziNipendeni-CampaignOverview\(English\).pdf](https://www.jhuccp.org/sites/default/files/WazaziNipendeni-CampaignOverview(English).pdf), <http://www.cdcfoundation.org/blog-entry/wazazi-nipendeni>

Website: https://www.jhuccp.org/resource_center/media/wazazi-nipendeni-safe-motherhood-campaign, <http://www.cdcfoundation.org/what/program/mhealth-text-messaging-campaign-tanzania>

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